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REVIEW OF
**Child Development
Research**

VOLUME TWO

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and
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Editors

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Preface

THIS IS THE SECOND in a series of volumes designed to collate and interpret current research in child development. These collections are intended to place at the disposal of the practicing professions advances in scientific knowledge about children. Although the principal target audience consists of administrators, faculty members in professional schools, and service personnel directly engaged in work with children and families, it is anticipated that these reviews will be equally useful to researchers and students in nonapplied areas. Both volumes have been supported by funds from Russell Sage Foundation and sponsored by the Society for Research in Child Development.

Relevance for professional workers. Several obstacles lie in the way of effective utilization of research by the practicing professional. At the simplest level is the lack of time to keep up with the wealth of relevant theory and research coming from the various disciplines. Further, since research problems are typically selected because of scientific rather than applied considerations, the practitioner often cannot find the data he seeks neatly labeled and ordered according to the categories that concern him. In addition, each study tends to be limited by the few variables that can be accommodated within the research design, thereby precluding a fully adequate portrayal of the complexities of the phenomenon under investigation. The special characteristics of the sample, moreover, may not be appropriate for the particular interest of the practitioner. The findings may thus not be properly applied except within the context of the particular design.

Another important consideration is that the data from any single study are usually probabilistic, and validity rests on the convergence of findings from different studies. Thus, the practitioner may be faced with the problem of evaluating a number of studies and sometimes reconciling contradictory results. And the difficulties in interpretation may be compounded by an overrefinement in technical language in the attempt to obtain precision—especially so, when terms that sound similar have been used almost idiosyncratically by each research team. As a result, despite the potential utility of the research, the literature may at times give the appearance of discrete, sometimes even contradictory, studies which do not add up to any clear conclusions.

The reviews in the two volumes attempt to cope with these problems by organizing the relevant research around topics that articulate with the interests of practitioners, rather than deriving from the more theoretical and methodological issues of greatest concern to the investigators who originally reported the studies. Most of the chapters include a brief historical overview to provide the reader with the sense of continuity and background material needed for a fuller understanding of current and future research. Similarly, methodological issues that may impose limitations on interpretations of research findings are noted, and the convergent and divergent findings which emerge from different research designs and populations are pointed up. Efforts are made to resolve contradictions where possible. Finally, the attempt is made to communicate the research results with a minimum of technical language, while paying due regard to the limitations of existing procedures and without stripping the findings of their necessary qualifications.

To restate briefly our views presented in the introduction to the first volume, we see each volume not as a cookbook with prescriptions for action but as a summary and interpretation of the important research findings. It is the practitioner who must determine the possible usefulness of the research, in conjunction with the detailed knowledge of the individual case which only he can have. But in providing him an opportunity to get a broad view of up-to-date material in many different areas, these reviews should also help him increase his sophistication in evaluating the implications of the research literature for his own work.

Some research studies, of course, have direct practical implications. Examples are those which assess the effectiveness of diagnostic, therapeutic, or educational procedures with different children; those which suggest additions to the practitioner's repertoire of techniques; and those which point up the aspects of the child's functioning which are relatively unchangeable and those most subject to modification. Most studies, however, are useful in providing more general guidelines. Thus, some offer normative standards and frames of reference that can help sensitize the practitioner to the range and variety of child behaviors at different age levels and in different settings, as well as provide objective baselines for evaluating the child's performance and anticipating his potentialities. Other investigations can help the practitioner in making his operating assumptions more explicit and assessing their validity. And still others contribute by identifying group differences which can broaden the perspective of those whose work is confined to a narrow range of the population.

Besides reporting and interpreting such research, the reviews in these volumes offer conceptual schemes that make the research more meaningful, help the professional organize his experiences, and sometimes enable

him to catch new views of familiar events and situations. These conceptual schemes are perhaps of greatest value when they suggest ways of breaking down global concepts into their component parts and thus aid in pinpointing the process by which a given effect is brought about. Most generally, then, although not providing precise answers, these reviews can help reduce some of the guesswork in making professional judgments by providing larger perspectives and frameworks within which to seek facts and examine problems.

In keeping with the view above, each contributor, though asked to point up questions and issues relevant to the practitioner, was cautioned against overgeneralizing and drawing premature action conclusions, and encouraged to consider genotypic concepts that might suggest new ways of thinking about a problem. In contrast to a more direct attempt to answer the practitioner's questions, this seemed the better approach for preserving the integrity of the research and using to best effect the competence of the authors, which is primarily in research.

Topic coverage. The topics were chosen for their potential value to a wide range of professions. The attempt was made in this second volume to include the major areas not considered in the first. Together, the two volumes offer a coverage of those areas seen as most relevant to the work of the practitioners, and for which there is an adequate body of research to report. Though the content was chosen on the basis of pragmatic rather than theoretical considerations, the chapter topics fall into certain general categories.

First, there are several chapters organized around various aspects of the child's social and psychological development: in Volume 1, sex role acquisition, concept attainment, productive thinking, and moral character; in Volume 2, language development, intergroup attitudes, and occupational motives. A second group is organized around environmental influences: early separation from parents, parental discipline, peer interaction, and the mass media in Volume 1; the family and classroom structure in Volume 2. Another group deals with constitutional factors in behavior: genetic influences and neurophysiological substrates in Volume 1; body size in Volume 2. Most of the foregoing topics have early and middle childhood as their primary interest—the time between infancy and adolescence. The influences peculiar to these two anchoring periods are dealt with in the first volume in the chapter on infancy, and in this volume in the chapter on adolescence. Both these chapters cut across the different aspects of development and deal with constitutional and environmental influences, but the focus in each case is on the issues and problems most characteristic of the particular period.

The present volume contains three chapters dealing with influences on

development that focus on deviancy: mental retardation, psychophysiologic disorders, and delinquency. These chapters, as well as the one on testing, deal most directly with topics of special interest to the professions. The chapter on testing in particular was suggested by a number of interested professionals and by our consultants. Though not dealing with a specific problem or content area, this topic was seen as being an especially important and timely one.

Some topics had to be excluded because of an insufficiency of empirical research—for example, emotional development, development of ego functions, and early psychopathology. Others on which there is a rapidly growing research literature, such as the effects of cerebral trauma during pregnancy and infancy, were not included because the stress in Volumes 1 and 2 is on more general topics. It is expected that future volumes will deal with the more specific problems. One timely and important topic that we considered including pertains to cultural deprivation and its effects. But while extensive research was underway at the time these volumes were planned, there did not seem to be enough completed studies to justify special treatment. Some discussion of the cultural deprivation studies, however, will be found in the chapters on language development, mental retardation, development of occupational roles, and testing. The subject index lists references to this and other topics not always apparent from the chapter titles.

The effort has been made in these two volumes to minimize overlap, as well as to achieve some balance in the amount of material covered in the different chapters. Thus, topics that might have been appropriate for several chapters generally are treated extensively only in one. Frequent cross-references are made, and the subject index also will be useful here.

Personnel and procedures. As in the case of Volume 1, an Advisory Committee helped the editors work out the overall approach and suggested topics, authors, and editorial consultants for this volume. The Committee included Nancy Bayley, Leon Eisenberg, Robert J. Haggerty, Ronald Lippitt, Julius B. Richmond, Pauline S. Sears, Irving E. Sigel, and Leon J. Yarrow.

Authors were selected who have conducted research on the particular topic and are thoroughly familiar with the literature as well as the relevant methodological issues involved. Most of the authors also have some familiarity with the problems and interests of the relevant professions, but they are primarily researchers. Therefore to help assure the relevance of the reviews to the widest possible range of professions, a group of editorial consultants were appointed who are actively involved in applied professional work in the various areas and also familiar with the problems of conducting and interpreting the research. Each consultant

posed questions, problems, and controversial issues relevant to all chapters to serve the authors and editors as guidelines, and prepared detailed critiques on two chapters. This group included Aline B. Auerbach, Bernice Boehm, Joseph E. Brewer, Nathan E. Cohen, Leonard J. Duhl, David Fanshel, Helen Heffernan, Alfred J. Kahn, H. Gerthson Morgan, Richard W. Olmsted, Sally Provence, and Myra Woodruff.

A second group of editorial consultants has also reviewed each chapter to ensure that the respective presentations adequately represented the research in the field. Each examined a chapter in his specific area of competence. These consultants were John B. Carroll, Archibald O. Haller, John Harding, Jerome Kagan, Raymond G. Kuhlen, Ronald Lippitt, Kenneth Purcell, M. Sam Rabinovitch, William H. Sewell, Harold W. Stevenson, James M. Tanner, and Stanton Wheeler.

Acknowledgments. We wish to express our appreciation to the authors, members of the Advisory Committee, and the editorial consultants. The authors not only gave an extraordinary amount of effort and thought in integrating and interpreting the research, organizing it along the lines of interest to the practitioner, and communicating it in nontechnical language, but cooperated wholeheartedly in making the extensive revisions deemed necessary.

We also wish to thank Margaret R. Dunne, editor for Russell Sage Foundation, Earl K. Brigham of The Merrill-Palmer Institute, and Joan Barth for the editorial aid they provided; as well as Cathie Fischer and Carol Dick, who assisted with the typing, proofreading, and other clerical work.

Above all, we wish to thank Russell Sage Foundation and in particular its president, Orville G. Brim, Jr., for having launched these volumes and provided us with complete support, wise counsel, and autonomy throughout.

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Family Structure, Socialization, and Personality¹

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IN ALL SOCIETIES, the nuclear family is the initial social matrix within which personality is rooted and nourished. It insures continuity of child care and the primacy of certain relationships above all others. The nuclear family of husband, wife, and children is always a part of a kinship system, which, in turn, is an element of the larger social structure and culture. The family orients the child first to his kin and then to community and society.

The structure of the family—its make-up in terms of number, age, and sex of members, and the organization of their interrelationships—reflects aspects of the economy, religious beliefs, and other values held in the society. Within any society, variations in family structure depend both upon the location of the family among social strata and subcultural groupings and upon the particular personalities of the pair whose marriage created the nucleus of a given unit.

Our task in the following pages will be to explore the ways in which variations in family structure may make a difference in the child's personality. We shall touch only lightly upon the variations found in cultures grossly different from our own; with a few exceptions, available data from the wide range of cultures do not permit us to make defensible inferences as to the specific effects of family structure as such. Even in our

¹ A substantial part of this chapter—that part dealing with the effects of family size and birth order—has benefited from the author's participation in a Workgroup on Family Size and Sibling Position sponsored by the Committee on Socialization and Social Structure of the Social Science Research Council. The other members of the group, to all of whom I am indebted, included at one time or another: Glen Elder, Jr., Paul Mussen, Edward Sampson, William Smelser, Louis Stewart, Ann Stout, and Milton Yinger. The assistance of Francena Hancock, Judith Williams, and Katherine Jako in abstracting much of the recent literature in this field is gratefully acknowledged. The work of the Committee on Socialization and Social Structure is supported by Grant M-4160 from the National Institute of Mental Health, Public Health Service, Department of Health, Education, and Welfare.

own society, where we can draw upon the findings of large-scale studies employing relatively sophisticated research techniques, it is often difficult to unravel the complex interaction of social, psychological, and biological processes in the course of development.

ASPECTS OF FAMILY STRUCTURE

The use of the term *structure* in speaking of the family may be unfamiliar and may for some readers connote concreteness and rigidity. Obviously, a family is a growing, changing thing, both as to its composition and the patterning of its internal and external relations. At any given time, however, it has a definable composition and a reasonably stable organization of joint activities, role relationships, and dominant values or goals. It is these relatively stable patternings of family life that we will examine for their effects upon child development and especially the personality of the child. Our interest is not merely in the correlates of aspects of family structure but in the ways in which their effects are exerted in the process of socialization. The amount of evidence at our disposal varies greatly from one aspect of family structure to another. Certain topics have continued to intrigue social scientists and practitioners in the field of child care for many decades. Other topics, equally important, have been explored by very few investigators. We shall consider briefly the facets of family structure and their potential importance before examining the evidence available on each of them.

Membership Composition

It is useful to distinguish between the nuclear family, consisting of husband, wife, and children, and the extended family, which may include parents and siblings of the married couple or even more distant kin. In the United States, the nuclear family most often lives in a separate household from parents and siblings, though one or more of these other adults may live with the married couple or, more rarely, the couple may reside in the parental home. The most common source of variation in family composition is, of course, the number, spacing, and sex of the children. The only child has a vastly different social environment from the child with a half-dozen brothers and sisters. The boy with no sisters and the girl with no brothers certainly begin their peer relations with a less intimate knowledge of the opposite sex than does the child who has been surrounded from early childhood by all of the evidences of *la différence*—as well as evidences of basic similarities. But how much does this affect

the later years? Do "only children" or children without opposite-sex siblings have more problems in their relations with the opposite sex? Or does the society, through peer group relations, the school, and other means, provide opportunities for boys and girls to learn each other's ways sufficient to offset the effects of the original family composition?

Closely related to the number and sex of siblings is each child's position in the family. Long before psychology became a scholarly discipline, parents and philosophers noted and speculated on the differences between first-born and later-born children. In recent decades, an ever-growing literature has attested to the continuing fascination that this topic holds for the social scientist. Much of the research has been inconclusive, with one study contradicting another. But some clear-cut results have accrued and they have implications for a more adequate understanding of developmental differences.

Perhaps the second most frequent source of variation in family composition comes from the breakup of the original nuclear family through death of one partner or through divorce. Such instances may entail far more than the loss of a parent. They may bring either the idealization or the devaluation of the lost parent. The child may be left in the care of the other parent, with or without subsequently acquiring a stepparent, or he may be placed in a foster home or boarding school. Ostensibly less traumatic in its effects is the temporary loss of a parent through long-enduring or recurrent absences. Certain types of employment, such as the life of the sailor, take the father away from home for long periods. Tuberculosis, mental disorder, military service, imprisonment, or other contingencies of illness or career may have the same result, sometimes with the addition of stigma. These temporary changes in family composition often bring about particular patterns of relationship and division of labor within the family group even when both parents are present.

Role Relationships

Every family has some explicit division of labor and responsibility between husband and wife, parents and children. In Western society, earning a living tends to be the husband's assignment, though more than a fourth of American mothers of children under eighteen were employed in 1960 (Nye and Hoffman, 1963). Families vary greatly in the relative authority and assertion of power by husband and wife, in the allocation of duties and responsibilities among members, and in the characteristic patterns of their interaction. Some parents give children a great deal of autonomy; others place strict limits on or closely supervise the activities

and associations of their offspring. Some parents are in close agreement both as to their goals for the children and the way they handle everyday problems in child rearing; other parents may sharply disagree. Again we shall try to ascertain the consequences of such emphases and such tendencies.

Parental Personalities, Values, and Family Processes

Each family is in a sense unique. A marriage brings together two persons whose experiences and expectations cannot possibly have been identical, even if the partners come from similar backgrounds. In general, marital choice heavily favors similarities in background and personality, even though there is evidence that a measure of complementarity of needs and attributes may also be served—e.g., a submissive person may choose a more forceful or domineering one (Winch, 1963). And despite the uniqueness of each choice, certain regularities or tendencies to recurrent combinations do occur. It may stretch the concept of family structure to make it encompass personalities, dominant values, and interests of the parents, but insofar as certain constellations tend to occur with some regularity, they are appropriate for brief—if not for full—examination in this chapter.

PROCESSES AND TASKS OF SOCIALIZATION

The term *socialization* designates the processes whereby the infant and child is led to take on the way of life of his family and of the larger social groups in which he must relate and perform adequately in order ultimately to qualify for full adult status. Techniques of infant care and training are a part of the apparatus of socialization, but they are by no means the major part. Much of the necessary orienting to society and the skill training that takes place within the family is so closely intertwined with other ongoing social processes that it has been taken for granted by students of child development until very recently. To assist in analyzing the ways in which family structure may influence the socialization process, let us consider the generic tasks to be accomplished in transforming a helpless but markedly reactive organism into a member of society.

Most basic, of course, is the initial provision of nurturance and protection to insure the survival of the infant. Beyond his physiological needs, the infant appears to require a somewhat stable relationship with a loving person or persons and enough attention to develop responsive accommodations to others. The establishment of a degree of trust in those to

whom the child must look for nurturance would seem to be a precondition for the infant's learning to respond in ways desired by the caretaker (Erikson, 1950). Gratification of physical needs—for food, drink, elimination, and so on—becomes channeled into socially appropriate forms, though societies differ tremendously in their tolerance of alternative forms, their scheduling, and the extent to which guidance or training becomes a matter of issue or even of awareness.

Aggressive impulses and other expressive impulses must likewise be brought under a degree of control if the child is to become an acceptable group member. To progress toward competence, the child must be motivated to acquire essential skills—physical, cognitive, and social. Here explicit training will depend on the values or goals which parents have for their children and on the environmental hazards that surround the child. Certainly the great bulk of early skill training will come through the child's being immersed in situational contexts where he can imitate others and hear their commentary on the nature of the situational demands and on his own performance. The child must achieve familiarity with this physical and social environment, learning to discriminate what behaviors are appropriate to given situations and to given categories of persons. He must to some degree incorporate values and moral norms which stabilize behavior over a wide range of situations. In complex industrial societies that place a premium on the development of technical skills (requiring years of education or apprenticeship), the child must develop goals that will orient his striving and prepare him for future attainments.

The limits of the child's physical and social environment must broaden sufficiently to give him at least some experience in confronting the variety of standards and expectations that he will have to cope with as an adult. Gradually he must achieve autonomy from his parents and other caretakers, but preferably without sharp disruption of family ties. He must be able to relate to other adults in ways that are mutually gratifying, contributing to the effective pursuit of individual and group goals.

Early in this process of becoming an independent person, the child acquires the use of language and develops a sense of self. Language serves not merely as a means of communicating to the child his parents' wishes and cultural imperatives, but also as the medium whereby the appraisals and commentaries of others can be rehearsed and made part of himself. Language may be used to make explicit interpretations of one's feelings and one's thoughts; at times it may also be used to deny the importance of messages which are communicated through facial expressions, gestures, or other nonverbal means. The development of language

is the topic discussed by Susan Ervin-Tripp in the second chapter of this volume; here we merely note the tremendous importance of language usage for all aspects of socialization.

Socialization is thus a cumulative process, phased according to the child's developing abilities as these are recognized in a given society. In any given social milieu there are certain "programmed" expectations. These entail the scheduling of parents' activities and the child's induction into the larger social order in accordance with cultural norms and with the child's abilities, activities, and needs. In the account above, the word "must" has often appeared—for example, "the child *must* achieve autonomy." Obviously, not all children do. Yet a substantial degree of autonomy in a variety of situations is probably required of the adult in all societies. Individual differences may be great in any society and societal differences in tolerance of variation may be substantial, but at some level of performance there are expectations that must be met by learned behavior. Failure to reach expected performance at any given phase of development is likely to lead to increased pressures for performance. Continued failure may lead to changes in the expectations for a given individual or to sharp conflict between the agents of socialization and the child.

With this cursory consideration of the tasks to be accomplished by the efforts of the family and other agents of socialization, we turn now to a consideration of the ways in which the nature of the family structure itself may make a difference for the developing child.

FAMILY COMPOSITION

The nuclear family of husband, wife, and children is clearly the dominant form of household in which children are reared in the United States and other urban, industrial societies. The major departure from this pattern occurs when one parent is absent. Eleven per cent of all American households with children under eighteen had only one parent present, according to the 1960 Census. In the great majority of these units, it was the father who was absent. In perhaps another 10 per cent of families with children, one of the parents—most often the father—is a stepparent (Bowerman and Irish, 1962). The next most important departure from the pattern of the nuclear family occurs in those households—five per cent and two per cent, respectively—in which either a grandparent or one or more uncles or aunts of the children live with the children's parents. We shall consider later in this section the effects of absence of the father or the mother upon the development of the children; first we

shall examine briefly the child's ties with relatives other than his parents.

Involvement of Relatives Other Than Parents

There is little research to report on the effects of grandparents or aunts and uncles in the home. Cross-cultural studies, utilizing characterizations of family structure and of the general tenor of child-rearing practices, suggest that in extended families, where there are several representatives of the parental generation, children are more consistently controlled but also treated less harshly than when their parents are the only adults in the household. For example, children's aggression is most severely prohibited in societies with extended family households, but techniques of control are indirect, and children are less likely to be spanked or yelled at (Whiting and Whiting, 1960). This would seem to be a reasonable expectation for urban America as well as for preliterate societies. The more adults present, the more likely it is that children's noise and aggression will be curbed in order not to annoy adult members of the household, and the more likely it is that someone will be in a position to exercise supervision over the children.

Anthropologists have also noted that in extended families where the mother's mother or sister is available to minister to the young child's needs, emotional ties between the child and his biological parents are likely to be less intense. For the infant and young child, the availability of other relatives in the home may mean greater continuity of care and nurturance, especially in those instances in which the mother is employed outside the home. In Western society, relatives living with the nuclear family are most likely to be parents or siblings of the wife, primarily, it would seem, because this arrangement is most consonant with harmonious sharing of the household.

Grandparents tend to enjoy close, warm relationships with their grandchildren, especially when they do not bear major responsibility for supervision and discipline (Apple, 1956). Being relieved of such responsibility and perhaps coming increasingly to see childhood as a period to be enjoyed, they are likely occasionally to ally themselves with their grandchildren in instances of parental sternness (Young and Willmott, 1957). Even when such coalitions do not occur, the three-generation household provides the child with an opportunity to see his parents as subject to the commentary of an older generation, perhaps rendering the parents less remote, more humanly fallible in their judgments. At the same time, the grandparents provide another model of what adults are like, a model to which the child can relate with comfortable familiarity.

Most often, of course, grandparents and other relatives are not members of the nuclear household. The high mobility and the residential independence of nuclear families in urban industrial societies so impressed students of the family that until recently these social scientists tended to underestimate the significance of links with grandparents and other kin. But recent research in England and the United States has made it very clear that contacts with relatives constitute a major part of the social life of many families (Sussman and Burchinal, 1962).

In a study of working-class families in Bethnel Green, a section of East London, Young and Willmott (1957) found that "over half the married women saw their mothers within the previous 24 hours and 80 per cent saw them within the previous week" (p. 45). Often they took their children along. As a consequence, children's contacts with their maternal grandmothers were more frequent and ties closer than they were with paternal grandparents. In those families where both sets of grandparents were alive, the eldest grandchild saw the maternal grandmother 3.8 times a week and the paternal grandmother 1.8 times a week, on the average. A recent study by Alice Rossi showed the same tendency for families in Chicago. Rossi (1964) examined the nature of the child's *close* ties with relatives (as reported by mothers), rather than merely their contacts. For young children, the closest ties were with the maternal grandmother; for older children, whose grandparents were less often living, the key figure among relatives was the maternal aunt.

Knowledge of the effects upon the child's personality of the involvement of grandparents and other relatives in child rearing is based largely on clinical impressions. Although Koller (1954) and others have suggested that the splitting of authority in the three-generation household leads to bewilderment on the part of children, the one study located that has assessed attitudes and activity patterns in such families indicates no significant differences between matched groups of two- and three-generation families (Stone, 1962). Studies of disturbed children frequently reveal disturbed parents, and not infrequently grandparents are implicated (Bell, 1962). In some families the transmission of neurotic patterns over several generations is clearly manifest (Cleveland and Longaker, 1958; J. Henry, 1951). On the other hand, one team of clinicians investigating the role of the grandmother in the psychopathology of the child also notes that:

For many of the severely disturbed children we see at our clinic, whose mothers are themselves so disturbed, the direct experience with a warmer, more accepting, permissive and consistent grandmother, of whom the child may be a favorite, may be a saving factor that compensates in some

degree for his emotional deprivations (LaBarre, Jessner, and Ussery, 1960, p. 184).

For more normal families—those that do not produce a markedly disturbed child—available case studies suggest that the influence of other relatives with whom the child has a close tie will depend in large part on intergenerational harmony and on the extent to which the attitudes and values of these significant figures are consonant or conflicting with those of the parents. If they are not consonant, and if the child is exposed to contradictory demands, confusion and anxiety are likely to be a consequence. But usually there is reason to assume that a long-lasting, close relationship with an accepting adult will serve as an ego-enhancing and stabilizing influence on the child.

Number of Children in the Family

The size of a group markedly influences the patterning of interactions and relationships among members. In a very small group that has lived and worked together for a time, decisions can be arrived at by informal give and take; each person tends to be easily aware of the views and feelings of others and, to some degree, sensitive to them. As groups increase in size, however, they become characterized by an increasing centralization of leadership and the development of explicit rules governing duties, responsibilities, and appropriate behaviors for achieving group goals.

Among students of the family, the sociologist Bossard was especially interested in the relationship between family size and the ways in which children are reared. On the basis of exploratory research, Bossard described the large family—with six or more children—as placing high valuation on organization and leadership, with emphasis on cooperation and conformity; as fostering specialization of roles and tasks, leading to close interdependence among members; as relying heavily upon the older children for care and control of their younger siblings; and as showing less possessive and demanding attitudes in parent-child interaction (Bossard and Boll, 1956). Within the larger family, the amount of parental time and energy devoted to any given child must be curtailed, though the most recent arrival is likely to receive top priority from his mother. The strain on economic resources is obviously greater in the large family; not only luxuries but many expenses regarded as necessities may become problematic—new clothes, transportation, medical care, specialized or advanced education.

In attempting to assess the influence of family size *as such* upon the child's development, however, it is necessary to recognize that differences in family size to a substantial degree reflect differences in the values and

aspirations of parents. A major reason for family limitation is to be able to achieve a higher standard of living and to provide children with greater opportunities and more of the benefits money can buy. It would be surprising if there were not other very considerable differences in values and attitudes between parents who plan for only one or two children and those who have a half-dozen or more. Some of these differences are, of course, associated with religion and with socioeconomic status. Very large families are somewhat more likely to be Catholic or to be of low socioeconomic status, even though recent decades have witnessed a substantial increase in the number of children of upper-middle class Protestants. Personality factors are also entailed. Enjoyment of young children—or conversely, pronounced discomfort in the parental roles—would be expected to influence plans to have additional children. We must expect, then, to find the effects of family size interwoven with effects of more general social characteristics and of specific motivational orientations. Unfortunately, much of the research on the effects of family size has failed to examine the complicating influences of these other characteristics and has therefore produced inconsistent and inconclusive findings.

We shall ask first how the number of children in the family is related to parental behaviors and to patterns of interaction, and shall then examine the differences in personality and behavioral outcomes for children from large and from small families.

The parental behaviors which seem to be most closely related to family size are those entailed in the exercise of authority and control within the family group. Elder and Bowerman (1963), in a study of a very large sample of junior and senior high school students in Ohio and North Carolina, found that the proportion of children reporting either parent to be autocratic or authoritarian increased as family size increased. The finding held for both middle-class and working-class families. Further, children from large families were more likely to feel that their parents had not relaxed control in recent years (as would seem appropriate to the child's taking greater responsibility for himself), and were also more likely to report that their parents often did not explain the rules of conduct that they imposed on the children. Parents in larger families were more likely to use physical punishment and less likely to use symbolic rewards as techniques of control or discipline. Comparable findings with reference to physical punishment were obtained by the writer (1965) in a study of fifth-grade children in Washington, D.C. It may be of interest to note that in both studies, differences in frequency of physical punishment associated with number of children were in general greater than differences between working-class and middle-class families of the same size.

To the extent that a family contains a number of children fairly close together in age, the mere performance of the routine tasks of child care, coupled with the inevitable turmoil of interacting children, places a considerable burden upon the parents and especially, of course, on the mother. Collective activities are likely to be dependent largely upon the convenience of the parents and not on the whims of individual children. As children mature, the older ones tend to take over supervisory responsibilities for the younger. Such delegation of parental authority often rests upon explicit rules governing various situations and contingencies. At the same time, there is also the possibility of mutual support among siblings in opposition to parental stands deemed unreasonable. Although pertinent research is both meager and methodologically inadequate, the available evidence does attest both to the greater reliance on rules and to a greater frequency of "back-talk" by children in larger families (Bartow, 1962; Bossard and Boll, 1956).

The reported happiness and adjustment of the parents seems to bear a relationship to the number of children produced, but the picture is a complicated one. Marriages in which there are no children are most likely to terminate in divorce, in part because the highest frequency of divorce comes in the early years of marriage. But a significant proportion of families with only one or two children also are broken by divorce, while fewer large families are so broken. On the other hand, Reed (1947) and others have found an inverse relationship between marital adjustment and number of children in studies of predominantly urban, Protestant families. The data also suggest that family size as such is less important than success in fertility control; when couples wanted and planned for all their children, there was a slight *increase* in marital adjustment with increasing family size.

In a very intensive longitudinal study of a small number of families, Stout (1960) found that parents who had only one child were rated less close to each other than those who had several children. Marital adjustment of parents of an only child was rated lower, as was the mother's frankness and demonstrativeness. Parents of an only child tended to be somewhat older at the birth of the child than were parents of several children at the time their first was born.

If some parents limit the number of their children in order to be able to afford them greater opportunities, it seems reasonable to assume that parents with few children should on the average have higher occupational and educational aspirations for their offspring than those with many children. Further, in the small family one would more often expect the parents to set high goals and to impose standards of excellence for their child to attain. These assumptions have guided several studies of the

relation of family size to achievement orientation. In general, children from smaller families do show higher achievement motivation and academic performance than those from larger families (Elder, 1962; Rosen, 1961) though it is not clear whether this is primarily due to greater intelligence, to independence-training and the setting of standards by the parents, to the thwarting effects of parental dominance in the large family, or to other factors influenced by family size. A small-scale study by Rosen (1964) investigated the similarity of responses of mothers and sons to a set of statements expressing value orientations related to achievement. The findings suggest highest value similarity in medium-sized families and lowest similarity in larger families, but the small size of the sample precluded an adequate assessment of interrelationships with other relevant characteristics.

A large number of studies have indicated that children from small families tend to make higher scores on intelligence tests than children from large families, even when social class is held constant. Most impressive is the evidence provided by a longitudinal study of a stratified sample of all children born in Britain in one week in March, 1946 (Douglas, 1964). Data on intelligence and school performance at ages eight and eleven were secured for more than 97 per cent of the designated children remaining alive in England or Wales—a population of more than 4,000. Intelligence test scores at both ages eight and eleven showed a decline with increasing family size, a decline that was most marked in families of manual workers. The poor performance of children from larger families was as pronounced by age eight as by eleven. Although less great at the higher status levels, the differences in favor of children from smaller families were found even among children of professionals.

Nisbet (1961) has suggested that in the large family there is less intensive interaction between parents and children, leading to a deficit in verbal ability on the part of children from such families. The findings have also been interpreted as resulting from bad home conditions and deficiencies in child care within very large families (Douglas, 1964). Some decades ago the first evidence of lower intelligence among children from larger families was cited as heralding a genetic drift downwards: the genetically inferior were said to be reproducing at a higher rate.

Several studies have found that both achievement motivation and school performance are more influenced by family size among Protestants than among Catholics (Elder, 1962; Floud, Halsey, and Martin, 1957). Research on the relationships between fertility and education reveals that among Protestants the better educated parents desire and ac-

tually have fewer children than do the less well educated, while the reverse tends to be true of Catholics (Freedman, Goldberg, and Slesinger, 1963; Westoff *et al.*, 1961). Insofar as the valuing of a large family may be associated with better child care than if many children are unwanted, the relative deprivation associated with distributing the family's resources over a larger number of members might be somewhat attenuated. Moreover, if there should be even a very slight relationship between social status and genetic potential, as some human geneticists maintain, this relationship would tend to be linked with family size for Protestants but not for Catholics.

In both the middle class and the working class, infant care and to a lesser degree infant management had been rated less adequate in the case of children from larger families (Douglas, 1964). Middle-class parents' manifest interest in the child's school progress and their aspirations for his attendance at a grammar school were not markedly related to family size except for families of four or more children, and here both interest and aspirations declined.² In the working class, however, parental interest in school progress and aspirations for grammar school declined progressively from the families with a single child to the largest family groups. Poor housing, lack of parental interest, and poor schooling all appeared to account for some, but not all, of the deficit shown by children from larger families. For any given level of intelligence as revealed by tests at ages eight and eleven, the child's actual school performance—as indexed by his securing admission to a grammar school—was not related to family size for families with one to three children and was only slightly lower for children from families of four or more children. To anticipate a topic to be dealt with in the next section, *intelligence test scores* were *not* related to position in the family—to being first or last born, for example—but *school achievement*, indexed by the proportion of elementary school pupils who were admitted to the highly selective British grammar schools, was markedly influenced by order of birth.

Since superior intelligence, higher educational attainment, and high motivation to achieve are all ingredients of occupational success, one might expect that children from small families would more often achieve

²At eleven years of age the British child takes an examination to determine whether he will be admitted to a grammar school or will have to attend a "secondary modern" or "comprehensive" school. Graduation from a grammar school is virtually essential for college and for the highest status occupations but the number of students who can be accommodated in such schools is markedly limited; hence the selection process and the significance of aspiration for grammar school attendance.

a high degree of occupational success than those from large families. This is, indeed, the case; children from small families are more likely to rise above their father's status than are those from large families (Svalastoga, 1959, pp. 404-406).

The large family may not be the most effective producer of striving, achievement-oriented individuals, but does it perhaps reward its members with a more satisfying, relaxed way of looking at the world and getting along with others? Surely the happy large family of literary fame was a great source of satisfaction to its members. *Cheaper by the Dozen* (Gilbreth and Carey, 1948) portrays one such rollicking family, as seen by a couple of its members. Certainly there are happy large families, just as there are highly eminent persons who were reared in large families, but research does not suggest that, on the average, the large family bestows any particular psychological advantage on its members.

Studies of the general adjustment of school children suggest that those from larger families do not have any advantage over those from smaller families. Hawkes, Burchinal, and Gardner (1958) found slightly more evidence of daydreaming, feelings of personal inferiority, and problems of social adjustment among children with five or more siblings than were found among children from smaller families in a sample drawn from small towns and rural areas in the Midwest. Chombart de Lauwe (1959), in a systematic and well-controlled study of 3,000 children seen in child guidance clinics in France, found that only children were under-represented among the patients and that children from families with five or more offspring were overrepresented.

Family size, then, does appear to make a difference in the way children are reared and in the attributes they develop, but the effects are small and depend upon a number of circumstances. For example, the researches of both Douglas and Chombart de Lauwe suggest that overcrowding of large families in inadequate housing accounts for some of the difficulties or decrements in performance by children from large families. The mean level of noise and commotion must impinge upon the parents and upon the child trying to prepare his homework. Research on the verbalization of physical complaints suggests that persons reared in large families are more likely to report pain for a given disorder or disability than are those from small families (Gonda, 1962). This finding suggests that the person from a large family has learned to shout about his problems in order to be heard. Insofar as there are problematic consequences of large family size, they appear to derive primarily from the pressures upon available resources—and from the likelihood that par-

ents will deal with their children in an authoritarian fashion as a response to such pressures.

Birth Order

Few if any aspects of family structure have so intrigued psychologists and the general public as has birth order. Birth order, i.e., the position of an individual among his siblings, is obviously closely linked with family size. It is also linked with age of the parents, since first-born children will tend to have younger and last-born children older parents. Moreover, the sex of siblings and their spacing may contribute substantially to the meaning of a given position. Being first, middle, or last may tend to have certain meanings and consequences, but so may being the only boy or girl in a family with several children of the opposite sex. In reviewing the voluminous literature on the topic, one finds that relatively few studies have specified the various interacting components of position in the family with sufficient precision to disentangle their effects.

A review by Harold Jones of research prior to 1932 contained more than 80 references, but few clear-cut generalizations could be made from them. Jones (1933) noted the disparity both of findings and of theories and interpretations. His analysis of methodological problems and the confounding effects of such factors as size of family, stage of family completion, mother's age at birth of child, varying sex ratios, differential mortality, and changing birthrates provided a potential guide for future research, but few subsequent investigators have so much as shown awareness of these possible effects. Fewer still have attempted to control for them, largely because of the difficulty of securing sizable samples to permit adequate control. Despite methodological deficiencies that lead to many inconclusive findings, however, certain regularities have emerged to indicate that position within the family does make for a number of predictable—if modest—differences in child-rearing practices and in child personality when one is dealing with statistical tendencies for large groups of individuals.

The great majority of research on the topic has aimed at establishing differences in some aspect of personality or performance which are associated with one or another way of characterizing sibling order. When differences have been found, they are "explained" in terms of some known or assumed difference in life experience associated with order of birth. A much smaller number of studies have sought to examine *how* position in the family makes a difference by examining its effects on parental behavior and on the individual's socialization experiences. We

shall begin with consideration of effects on the organism, turn next to the socialization experience, and then briefly review studies of outcomes.

Effects on the organism. The genetic make-up of the individual is not subject to birth-order influences, but the first-born child has a more difficult launching through the birth canal and there appear also to be differences in the intrauterine environment in the course of successive reproduction. The first-born has, on the average, the smallest birth weight, yet for all races studied he is, within one to two years, consistently heavier and taller than are later-born children at the same stage (Crump *et al.*, 1957; Lowe and Gibson, 1953; Millis and Seng, 1954; Salber, 1957). The smaller size of the first-born is, of course, a desirable attribute in view of the difficulties of initial births. It appears to be a genuine function of birth order rather than one of the mother's age. Even so, the first-born experiences longer duration of labor, greater head compression, and greater likelihood of forceps delivery than do subsequent infants (Wile and Davis, 1941). Neonatal mortality tends to be highest for this group, but it is not clear what the net effect is upon surviving infants. The rapid growth of the first-born appears to be a reflection of his favorable environmental situation and the typically intensive nurturance he receives in the early years. But by adulthood, no significant differences remain between eldest and later-born siblings in stature or weight (Howells, 1948).

Socialization and position in the family. Every first-born child is for a time an only child, unless there are adopted children or children from another marriage. In the characterization of Alfred Adler (Ansbacher and Ansbacher, 1956, pp. 376-383), the first-born is "dethroned" by the birth of a second child. Unless there are special circumstances, no other child is likely to receive the amount of attention (time, energy, concern) as is the first-born prior to his dethronement. The first-born is most likely to be planned for and wanted, and is likely to be breast-fed for a longer period of time (Scars, Maccoby, and Levin, 1957). But he has inexperienced parents, who are likely to be unsure of themselves and therefore less consistent and more likely to communicate their anxieties to the infant. The first-born will tend to learn to speak earlier and more precisely (Koch, 1956b). In most instances he will be learning to speak before a second child is born, and he will in all probability receive a great deal more verbal stimulation from his parents than will any later-born children, who must compete for the parents' attention (Lasko, 1954). Even this very limited description of a few aspects of the situation of the first born vis-à-vis later-born siblings suggests that there are likely to be both favorable and unfavorable consequences of being the first child in the

family. Being the center of love and attention for several years may have very positive consequences; whether they would be entirely negated by displacement is a moot question. Indeed, it is not entirely clear that the older child must inevitably be displaced or dethroned. He will almost certainly have to yield his claim to first priority for the mother's nurturance when other infants appear, but he may retain a favored role in other respects.

Moreover, the development of the first-born and the effects of sibling position are not confined to the first few years. The first-born is likely to continue to be the child to whom the parents direct their commentaries on performance, the one at whose level conversation is pitched (Bossard and Boll, 1956; Koch, 1954). The first-born is likely to serve as a model for later-born siblings. In general, he will be bigger, stronger, and able to exert dominance over them, but his use of these attributes on his siblings is also likely to evoke strong negative reactions from his parents.

The relationship of ordinal position to parent-child affectional ties and to the allocation of authority is not entirely clear. The one study that has examined changing patterns with successive children in the same families suggests that the first-born initially receives slightly greater warmth and affection than does the second-born, that the tendency is reversed at the three- to six-year age level, but that by age seven or eight there are no consistent differences (Lasko, 1954). A number of studies have found that the first-born child is more likely than a middle- or last-born child to feel that a sibling is favored by his parents (Bossard and Boll, 1956; Koch, 1960). When parents themselves are questioned, they most often state that no child is favored, but if they do acknowledge a favored child, he or she is most often oldest or youngest. Similarly, in a study focusing upon a ten- or eleven-year-old child within a sample of 300 families, it was found that at this age an only child or a youngest child was most likely to be called by an affectionate name (in place of his given name) while a middle child was least likely to be called by an affectionate name (Clausen, 1965).

There is some consistency to the finding that in a larger family the father tends to play a relatively greater authority role with the oldest child and the mother tends to be more closely involved (perhaps in both affection and authority) with the youngest (Clausen, 1965; A. F. Henry, 1957; Sears *et al.*, 1957). The Sears study found that mothers tended to be more demonstrative of affection with the youngest child, but only in families of three or more children.

One of the most consistent findings with reference to parental behavior toward children of different ordinal positions relates to the use of physi-

cal punishment. At any given age level the youngest son or daughter is less likely to be spanked or slapped than is a first-born son or daughter of the same age. This seems to be true for children of five (Sears *et al.*, 1957) and for children of ten or eleven (Clausen, 1965). Among fifth-grade boys for example, 44 per cent of the last-born had been physically punished within the previous six months, as against 84 per cent of those who were first-born; among a comparable sample of girls the differences in proportions physically punished were less great—43 per cent of last-born as against 55 per cent of first-born—but the first-born were much more likely to have been spanked more than once or twice. Differences in punishment received by first-born and later-born children are much sharper for families of three or more children than for two-child families.

There is evidence that parents become somewhat more consistent in their child-care practices as they gain experience with a second and third child (Lasko, 1954; Stout, 1960). A high proportion of parents report themselves more relaxed with later-born children than with their first-born (McArthur, 1956; R. R. Sears, 1950). One might expect somewhat greater permissiveness on the part of parents with their later-born children, especially in terms of tolerance of a wider range of behaviors and less readiness to invoke harsh measures of control. It appears that age of the parents is also a relevant consideration; older mothers of young children appear to be both warmer and more indulgent even with a first-born than are younger mothers (Rosen, 1964; Sears *et al.*, 1957). On the other hand, with increasing family size there is, as we have seen, a greater tendency to impose rules. Moreover, in mediating between children and coping with increased pressures, parents are likely to respond more in terms of the immediate situation and perhaps less consistently in terms of abstract principles. There are then countervailing influences which may well cancel each other out.

Equally significant influences derive from changing patterns of attitude and practice in child rearing, especially in the middle class. The first-born child reared "by the book" in the late 1940's, when permissiveness was the order of the day, probably experienced a somewhat different regime from that experienced by a first-born reared by the book in the late 1950's, when limit-setting was again being stressed. Such variation associated with social change may well obscure differences in permissiveness associated with sibling order. The differences in parental restrictiveness and control between first-born and later-born children that have been observed in the studies cited above are slight and suggest that family size and other factors do, indeed, exert countervailing influences.

Parental behavior toward the child is only one aspect of the socializa-

tion experience that is influenced by sibling order and composition. The first-born child has not, within the family group, a child model. His siblings do.

The role of siblings in socialization. An older sibling may be caretaker, teacher, pacesetter, or confidant for a younger one. The older may (and perhaps almost inevitably does) regard the younger as a rival and may initially express jealousy and hostility but he may also be extremely proud and protective of his younger sibling. A degree of sibling rivalry seems especially likely if the older child is displaced while still highly dependent upon his mother (Stendler, 1954). Not only is the displaced child more vulnerable because of his needs, but it is more difficult to give him an understanding of the advent of a sibling and make him a participant in this family event. Subsequently, on the other hand, siblings closely spaced may be much more closely associated in a variety of activities, especially if they are of the same sex (Koch, 1956a).

The child with an older sibling not too much his senior will be subject to much more child-level interaction in the first years of life than was his first-born sibling. He will have a less predictable companion, one whose behaviors are more influenced by mood than by internalized norms. Thus, one might anticipate that the younger sibling would acquire greater sensitivity and responsiveness to the moods of other children and would be more comfortable with peers once he has begun to move outside the family. Sampson (1965) has suggested that the early self-concept of the first-born is based very largely on the appraisals reflected by his parents, while that of later-born children has a large component of peer reflections, afforded largely by siblings.

It has also been suggested (Dittes and Capra, 1962; Zimbardo and Formica, 1963) that the first-born, confronted by powerful adults, learns to conceal aggressive tendencies while the later-born, having a close sibling with whom he can identify as well as contend, can more readily express aggression. Moreover, parents are likely to impose constraints on the older, stronger child who aggresses against a younger sibling while they may actually encourage the younger child to stand up for his rights. On the other hand, the older sibling has the possibility of feeling more powerful and competent when he compares himself with a later-born. The literature contains much speculation but little data.

There is, however, a rather clear indication that an older sibling can be a helpful model for learning sex-appropriate behaviors. Thus, Brim (1958) has demonstrated that a boy with an older brother exhibits more masculine behavior and one with an older sister exhibits more feminine behavior, at least at the preschool level. Similar findings, suggesting the

persistence of such tendencies in later childhood, are reported from a study of fourth- through sixth-grade children, though the pattern appears to hold only in two-child families (Rosenberg and Sutton-Smith, 1964).

Intelligence, achievement, and eminence. One of the most consistent findings relating to birth order is that first-born children achieve eminence in higher proportion than do their siblings. As Schachter (1963, p. 757) notes in a recent article,

. . . marked surpluses of first-borns have been reported in samples of prominent American men of letters, of Italian university professors, of the starred men in *American Men of Science*, of the biographies in *Who's Who*, of ex-Rhodes scholars and of eminent research biologists, physicists and social scientists.

There appear to be several reasons for the excess of the first-born among persons of eminence, but perhaps most important among these is earlier achievement in academic pursuits. Studies of school achievement have found, in general, that the first-born perform more effectively in the classroom than do later-born children (Douglas, 1964; Elder, 1962; Lees and Stewart, 1957). The superior school performance of the first-born is not evidence of intelligence superior to that of their siblings, however. It appears rather to be a resultant of greater striving to achieve within the school setting, which, in turn, seems to derive both from the influence of parental aspirations and pressures and from a number of personality attributes which slightly incline the first-born toward greater acceptance of conventional or adult-approved activities—traits that lead to the labels *adult-oriented*, *conscientious*, *studious*, *serious*, and so on (McArthur, 1956).

Not only do first-born tend to perform more effectively in the classroom but, on the average, they go farther in school than their later-born siblings (Rossi, 1965; Schachter, 1963). Moreover, Rossi found that children of first-born mothers tended to go significantly farther in school than children of later-born mothers. The father's birth order, on the other hand, had relatively little relationship to the child's educational attainment.

Harold Jones' review (1933) of available research relating to birth-order differences in intelligence led him to the conclusion that such statistically significant differences as had been reported were largely a consequence of methodological shortcomings in the research (especially the failure to standardize scores by age). Recent studies of I.Q. variation as related to birth order support his conclusions for children of kindergarten age (Koch, 1954), elementary school children (Schoonover, 1959), and children on the threshold of adolescence (Douglas, 1964).

There is a tendency for first-born children to score slightly higher in tests of verbal intelligence, especially at younger ages, as would be expected in terms of the early advantage the first-born has in learning language from adult models. The later-born child, on the other hand, tends to score slightly higher in tests of ability to make perceptual discriminations. More striking than the effects of ordinal position per se, however, is the finding (for two-child families) that boys or girls with a male sibling tend to achieve significantly higher test scores than those with a female sibling (Koch, 1954; Schoonover, 1959). No adequate explanation has been offered for the apparently greater stimulus value of a boy.

Harris (1964) has suggested that there is a basic difference in the cognitive styles of first-born and later-born sons. He characterizes first-born sons as manifesting "connectedness"; they move toward synthesis, abstraction, and determinism and tend to have an inner focus and inner direction. The later-born sons are seen as manifesting and valuing "disconnectedness"; they tend toward analysis and particularistic, non-deterministic thinking. They are more other-directed. The data presented on behalf of this formulation—drawn unsystematically from literary and scientific sources—are only suggestive, but the formulation appears worthy of further research.

Returning to the topic of achievement and eminence, we may note that, although the superior school performances of the first-born and their greater frequency among eminent scientists and men of letters is a highly consistent finding, it is not at all clear that first-born children strive comparably or excel in other pursuits. Indeed, studies which have attempted to assess achievement motivation by the use of projective techniques or self-report have shown markedly inconsistent findings (Moore, 1964; Rosen, 1961; Sampson, 1962). And there is at least suggestive evidence that outstanding professional athletes are more likely to be later-born than first-born (Chen and Cobb, 1960).

To the extent that the superior academic achievement of the first-born serves as a basis for selecting those who will receive the highest quality of training in secondary school (as in Great Britain's grammar schools) or in influencing who will go to college and graduate school, there will be a larger pool of highly educated first-born individuals from whom eminent scientists and scholars will be drawn. One may assume that in small families and among the relatively well-to-do, a high proportion of high-achieving first-borns will be able to realize their educational and occupational aspirations. Among the less well-to-do, however, especially in larger families, the first-born child is likely to have to leave school and go to work, since his parents will have several younger children to sup-

port and will frequently expect the oldest child to contribute to the family income as early as possible. By the last year of school—when many children have reached working age—the excess of first-borns in the selective academic schools in Great Britain very largely disappears except for only children (Lees and Stewart, 1957).

To sum up, measured intelligence (I.Q.) is not appreciably related to sibling order (though certain dimensions of intelligence are differentially related). Achievement motivation (striving for excellence) appears to be significantly higher for the first-born primarily within the academic intellectual sphere. Achievement itself is a function of abilities, motivation, and opportunity; first-born children tend to achieve eminence in scientific and scholarly fields but it is not clear whether they are any more likely to be high achievers in other fields of endeavor.

Affiliation, conformity, susceptibility to influence. The greater intensity of the parent-child relationship for the only child and for the first child in his initial years, as contrasted with the later-born child with several siblings, might be expected to have consequences for his subsequent relationships with others. Much recent research on sib order has dealt with affiliative behavior, especially when the individual is anxious or is in an ambiguously defined situation. Closely related are the studies which investigate the tendency to conform to conventional norms or to the wishes and influences of close associates.

The most influential work in this area has been that of Schachter, who first noted the tendency of the first-born children to want to be with others when in situations of experimentally induced anxiety or fear (Schachter, 1959). Schachter's subjects were primarily female college students. Subsequent studies have only partially sustained his findings; there is some indication that affiliative tendencies may be stronger among first-born females than among first-born males (Gerard and Rabbie, 1961; Radloff, 1961; Sarnoff and Zimbardo, 1961; Schooler and Scarr, 1962). In the absence of fear or anxiety or of the arousal of evaluative needs, there appear to be no differences in desire to be with others. Much of the recent research has been designed to establish whether such affiliative behavior serves primarily to provide information on the responses of others and hence enhance self-evaluation, or whether it has a direct influence in reducing anxiety. There is evidence for each of these alternatives but the variability of findings suggests that participants in these studies may define the experimental situation in other terms than the experimenter has intended; other motives than affiliative needs may be involved, thereby attenuating relationships with birth order.

Apart from situations entailing anxiety or need for self-evaluation,

there is no consistency in findings relating affiliation needs or affiliative behavior to birth order. One study using projective assessment of affiliative needs finds them less among only and first-born children than among later-born (Connors, 1963); another study using a different projective technique finds the reverse (Dember, 1963). Other studies which rely upon the characterization of parents and teachers suggest with some consistency that it is the later-born siblings who are most often characterized as sociable, approachable, and comfortable with peers, while only children and first-born children are seen as having greater difficulties, tensions, and sensitivities in their peer relations (Bossard and Boll, 1955; Douglas, 1964; McArthur, 1956; R. R. Sears, 1950). On the other hand, with preschool children Koch (1957) found no significant differences between first- and second-born in friendship patterns or number of friends.

The various studies which have examined susceptibility to influence generally agree that first-born males are more readily influenced than are later-born males. First-born males, for example, are more likely to yield to group pressures (Becker and Carroll, 1962), are more suggestible (Staples and Walters, 1961), and are more influenced in academic performance by the level of their roommate's performance (Hall and Willerman, 1963). First-born females, on the other hand, seem, if anything, less susceptible to influence than do later-born females (Sampson, 1962). As Sampson makes clear in a recent review (1965), the effects seem to depend on the level of anxiety or potential reward inherent in the experimental situation, as well as upon the social roles which first-born males and females tend to occupy.

Another aspect of interpersonal influence has been examined by Singer (1964). He studied the relationship between manipulative tendencies—using a scale of “Machiavellianism”—and college grades. He found no difference by birth order in scores of manipulative attitudes but a significantly higher correlation between manipulative scores and grades for later-born males than for first-born. These findings suggest that later-born males are more effective in the use of manipulative skills to get higher grades. For girls, however, it was the first-born who appeared most successful in influencing their grades, in this instance by the more attractive first-born girls making themselves especially visible to the instructor.

Other aspects of personality. A number of the proclivities of the first-born child have been “explained” at least in part in terms of the greater anxiety-proneness and dependency of the first-born. With some consistency, mothers report the first-born to be more fearful and anxious or tense than later-born children (Macfarlane, Allen, and Honzik, 1954;

P. S. Sears, 1951). Such reports may, of course, represent a projection of maternal anxiety. In situations of experimentally induced fear, several studies found first-born college students to be more often acutely anxious (Schachter, 1959), though in similar situations other studies (Weller, 1962; Wrightsman, 1960) found no such tendency. In situations where test-taking was entailed, later-born subjects were usually found to be more anxious than first-borns (Rosenfeld, 1964; Sampson and Hancock, 1962), though there are also exceptions (Yaryan and Festinger, 1961). On the basis of present evidence, it would appear that the first-born tend toward timidity but that overall differences in anxiety-proneness are probably less significant than are differences in the kinds of situations in which anxiety is aroused. This view is supported by the work of Stotland and his students, who found that later-born subjects more often identified with models in experimental situations, so that when the model exhibited high anxiety, the later-born subject experienced more anxiety than did the first-born (Stotland and Dunn, 1962; Stotland and Walsh, 1963).

Data relating to dependency or submissiveness likewise do not lend clear support to the notion that the first-born are more dependent or submissive. A number of studies (e.g., Abernethy, 1940; Sampson and Hancock, 1962) have found the first-born to be more self-sufficient or autonomous, while others have reported the first-born to be more dependent (Haeberle, 1958; Macfarlane *et al.*, 1954; McArthur, 1956). The reader who wishes a more detailed discussion of the available evidence is referred to the excellent review by Sampson (1965). As Sampson notes, a number of the studies find the first-born female to be relatively more responsible, aggressive, and competitive than later-born females, while the reverse tends to be true for males.

Although the greater timidity and lesser social ease of the first-born child might lead one to expect the first-born to have lower self-esteem, research findings afford only meager support for the notion. Several early studies reported the only child and the first-born as being introverted and dissatisfied with self (Busemann, 1929; Goodenough and Leahy, 1927), but a recent study of a large sample of high school students by Rosenberg (1965) found only children to have the highest self-esteem. Apart from only children, Rosenberg found self-esteem to be unrelated to family size or birth order. On the other hand, he noted that a boy born into a family with only older girls was especially likely to have enhanced self-esteem.

In Rosenberg's sample of high school students, self-esteem was related to academic performance. Since first-born children tend to excel academically, this would suggest at least one source for status enhancement. An-

other source is suggested by Rossi's (1964) finding that the first-born child is more likely to have a close affectional tie with and be highly valued by grandparents and other kin than are his later siblings. The failure, then, to uncover any stable relationships between birth order and self-esteem may be a result of divergent influences, and empirical controls may be needed to highlight the more direct effects.

Deviance and pathology. Many of the early studies of the effects of birth order were concerned with problematic or pathological behavior—delinquency, various behavior problems of children, mental disorder, alcoholism. With reference to delinquency, there has been no recent evidence that would change the conclusion of Murphy, Murphy, and Newcomb (1937) that no clear-cut relationships with birth order exist. Studies of alcoholics, early and recent, also present contradictory evidence: Navratil (1956) and Martensen-Larsen (1957) find the last-born overrepresented, while Smart (1963) finds no relationship with birth order and Moore and Ramseur (1960) find more first-born than last.

There is some consistency in the finding that first-born children are more often presented as problems at child guidance centers (Chombart de Lauwe, 1959; Phillips, 1956; Rosenow, 1930; Rosenow and Whyte, 1931) but it is not clear whether this tendency reflects greater frequency of problems or the relative inexperience and anxiety of parents in dealing with the first-born through the childhood years. Macfarlane's longitudinal study of a small cross-sectional sample of subjects born in a single community suggests a greater frequency of problem behaviors—as reported periodically by the mothers—among first-born girls. There was, however, little difference between first-born and later-born boys in the number of problems presented. On the other hand, among boys the *types* of problems presented varied by birth order, with the first-born being more timid, oversensitive, demanding of attention, and restless in sleep while the later-born were more often overactive, negativistic, destructive, and given to lying (Macfarlane *et al.*, 1954). Some of the clinic studies also suggest the greater frequency of overt aggression and hyperactivity among the later-born (Chombart de Lauwe, 1959; Wile and Davis, 1941). It is of interest that insofar as jealousy of a sibling is reported as a problem among children seen at these clinics, it is as often noted in younger as in older children.

The one study that provides a fully adequate sample—the longitudinal study of British children born in March, 1946—reports that first-born children in this group were more often taken by their mothers to welfare centers for medical services during the first five years than were those who were later-born. Yet the later-born had twice as many infectious

diseases by age four and a half as did the first-born, largely because the later-born had contact with older sibs who picked up infections at school (Douglas and Blomfield, 1958). On the other hand, once the study group entered school, it was the first-born who were more often absent by virtue of illness; the later-born had already acquired immunity (Douglas, 1964). In this population, youngest children were most often reported by their mothers as bedwetters, as having nightmares, and as having problematic personal habits. On the other hand, eldest children were most often reported as having problems in relations with their peers.

A number of authors have recently reviewed the literature on birth order and mental disorder (see especially Gregory, 1958; Schooler, 1961) as well as adding to the available evidence. Some studies suggest a very slight tendency for schizophrenia to occur more frequently among children in the latter half of the birth order (Schooler, 1961) but this may be related to age of mother rather than to birth order as such. Other than this, birth order appears unrelated to mental disorder.

Chen and Cobb (1960) have reviewed a voluminous literature on effects of family structure upon health. Perhaps most striking among their findings is the consistency with which asthma is reported as more frequent among first-born children and duodenal ulcer among youngest children.

Birth order—a summary. Each child has to work out his own identity within the network of relationships and social roles that characterizes his place in family, kinship, and neighborhood. Each member of a group of siblings has a somewhat different set of capacities at birth and each finds a somewhat different environment. Certain capacities may be more fully developed in one position within a constellation of siblings; others will flourish in a different position. Insofar as overall development is concerned—whether labeled “adjustment,” “happiness,” “competence,” or “health”—it does not appear that any position or constellation is to be preferred appreciably to any other. The effects of birth order are, for the most part, indirect, deriving from tendencies toward patterning of the psychological environment. But most of these patternings are subject to greater influence from a number of other sources. Even the direct impact of displacement of the first-born is subject to attenuation by parents who are aware that their preoccupation with a new infant is bound to be resented by the child who has until then had all of their attention. Indeed, it would appear that the primary value of examining the ways in which birth order may influence personality development is to enhance sensitivity to subtle patternings of relationships within the family. Such sensitivity can increase understanding of the situation of a given child and

perhaps permit a measure of modification of potentially harmful influences.

Broken Families and Stepparents

As earlier noted, the 1960 Census of Population revealed that slightly more than one household in ten, among those containing children under eighteen, had only one parent present. For the most part these were families broken by death, divorce, or separation, and in the great majority of these families it was the father who was absent. Most women who are widowed while the children are young manage to maintain a home for their children, even when they do not subsequently remarry. Men whose wives die while the children are young are much more likely to place the children with relatives or in an institution, and are more likely to remarry in order to provide a home for the children. And in the case of divorce or separation, custody of the children is given to the mother roughly nine times out of ten (Goode, 1956). The proportion of children who come from broken homes is actually much higher than the proportion living with only one parent at any given time, since many widowed or divorced parents remarry. Population surveys in urban centers suggest that by age eighteen between 30 and 40 per cent of all children have experienced a broken home (Langner and Michael, 1963). Few studies of children from broken homes have attempted to distinguish the effects of various structural arrangements to which the child is subject over the span of childhood years.

The effects of maternal deprivation, of father absence, and of institutional placement during early childhood have been discussed by Leon Yarrow in the first volume of this series. Here we shall merely note certain of the general effects of such patterns and the available evidence bearing on absence of either parent later in childhood.

Discussions of the effects of parental absence from the home have especially stressed the consequences of deprivation of intensive nurturant care during the early years in the instance of maternal absence and the consequences of lack of a masculine role model for boys when the father is absent (see chapters by Yarrow and by Kagan in Volume I). In addition to providing nurturance and guidance to their children and serving as role models, parents orient and help to induct their children into a variety of groups and social situations to be encountered in the larger society. In early childhood and the years of latency, then, one would expect some deficits in the experience of children reared by a single parent. But it is not at all clear how important such deficits may become for later personality development. Beyond the early years of childhood, most

boys and girls have many opportunities to learn sex-appropriate behavior. The widowed or divorced mother who attempts to rear sons without a husband may have brothers or other male relatives of her own generation who can serve as masculine role models. Neighbors, teachers, peers can all help provide meaningful male relationships.

Perhaps more important than the absence of a male role model for the boy reared by his mother will be her expressed attitudes about the boy's father and other men, on the one hand, and the amount of time and affection the mother has for her son on the other. Derogation of males by a mother who is the source of both nurturance and authority might be expected to produce deep feelings of self-doubt in a son and to imbue distrust of all males in a daughter. Equally devastating, however, would be the fear of abandonment on the part of a child whose mother permitted romantic involvements with a succession of males to take priority over her relationship to the child.

Our evidence as to the long-range effects of broken homes and rearing by a single parent is extremely meager. One of the most thorough studies of adult mental health—the Midtown Manhattan project—found that people who had experienced a broken home in childhood had only slightly higher risk of psychiatric symptomatology than those from intact homes (Langner and Michael, 1963). For those of comfortable economic status, indeed, there was no difference at all. There was, however, a marked increase in the average level of symptomatology among those whose remaining parent remarried, especially in those instances when the same-sex parent remarried. Thus, it would appear that the consequences for the child's later mental health of being reared by a single parent are not nearly so great as might be assumed from studies of temporary problems in childhood and, indeed, may be less problematic than being reared in a home with a stepparent.

The difficulties of being a stepchild are legendary. Studies of children reared by a remarried parent suggest that ambivalence toward the stepparent and interpersonal friction are extremely common, especially when the child is nearing or has entered adolescence (Bowerman and Irish, 1962). The new spouse is almost inevitably a rival for the affection and attention of the remaining original parent. Moreover, in instances in which a deceased parent has been idealized, the remarriage of the widowed parent may in itself be interpreted as a betrayal of the one lost.

The varied meanings that may attach to the original breaking of the family—whether it was by death or divorce—and the even more com-

plex web of meanings surrounding the remarriage of the remaining parent make difficult both systematic research and generalizations for practical guidance. No one would argue that the death of a parent or the dissolution of a marriage is in general a desirable experience for a child, though some research suggests that children from broken homes fare better than those from unhappy unbroken homes (Chombart de Lauwe, 1959; Nye, 1957). Although Langner and Michael's data suggest that children reared by a single parent may develop somewhat more favorably, on the average, than those reared in a reconstituted family, there are many instances in which an understanding and accepting stepparent becomes a powerful force for healthy development of the children.

THE STRUCTURE OF FAMILY RELATIONSHIPS

In every culture there are norms or ideal conceptions of what a family should be—conceptions of ideal family size and composition, of proper marital relationships and ties with kin, of ways in which “good parents” care for and control children, of the appropriate division of authority and labor, and other matters of relationship and sentiment within the family. These norms may be narrowly specific, widely shared, and rigorously sanctioned so that parents or children who depart markedly from them are quickly ridiculed or punished, or they may be relatively diffuse, admitting of many alternatives and variations within different segments of the population, so that deviations may draw only mild disapproval. The latter case tends to represent modern industrial societies, and American families show a wide range of variation in the intensity and exclusiveness of affectional relations among members and in the allocation of authority and division of labor between the two parents and between parents and children. Even so, there are conceptions of the way in which a “good child” or a “good parent” ought to behave, and conceptions of ideal husband-wife and parent-child relationships (Duvall, 1946; Kohn, 1959a).

Nearly forty years ago, Burgess (1926) characterized the family as “a unity of interacting personalities.” Few studies have examined the whole family and the patterning of interactions among its members. It is difficult to study more than a few families at a time if one wishes actually to witness interaction processes. There are problems of access to families and problems of data collection and analysis. It is simpler and in many ways more efficient to use one or two family members as informants, but the reports of any given member of the family tend to reflect his feelings about what goes on in the family group. What is “reality” for a parent is

not necessarily so for a child, and the perceptions of sons are often different from those of daughters. Such methodological issues are discussed by Hoffman and Lippitt (1960).

Those studies that have been based on observation of the whole family in interaction have seldom been able to handle adequately the complexities of systematic data recording and conceptualization. The richest data often prove indigestible. When holistic concepts have been used for statistical grouping they are usually overly global—like “cohesiveness.” On closer examination, internal variations often prove more interesting than the global classification, but these can seldom be delineated with precision unless foreseen before data collection is complete. For these reasons, most of the research on the structuring of family relationships has concentrated on specific dimensions such as power relations, or division of functions.

Of the many “dimensions” or attributes that have been used to characterize families, relatively few have been studied for their influences upon child personality. Among these, the distribution of power and authority in the family has perhaps been most often considered, yet we are only beginning to unravel the complex interactions among cultural norms, parental and child personalities, and situational influences upon the use of power and its effects on the child. Cultures tend to allocate authority—legitimized power—on the basis of age and sex. We shall deal initially with the generational difference—the power and control of parents over children—and subsequently with sex differences—the relative power of husband and wife vis-à-vis each other and in their involvements with the children.

Parental Power and Control Over Children

By virtue of their greater strength and competence and their command of family resources, parents have almost unlimited power over young children. This power can be freely used to direct and coerce the child, imposing parental wishes and whims and restricting extra-familial experiences, or it can be exercised with restraint and explanation. Parental readiness to exercise control over the child's behavior is itself a function of the child-rearing principles subscribed to by the parent, the influence of the other parent (or other reference figures), and the personalities of parent and child. Thus, it is a gross oversimplification to deal with parental power as a simple “variable” to be measured. There are many aspects to the uses and abuses of power which are not easily dealt with in quantitative research, though efforts have been made to measure such aspects as restrictiveness of parental regulations, readiness

of enforcement, severity of penalties, democracy of regulation, and coerciveness of suggestions (Champney, 1941).

It is obvious that the uses of parental power will be manifest in part in the modes of discipline used and the circumstances in which parental discipline is exerted. These are topics which have already been discussed by Becker in his chapter, "Consequences of Different Kinds of Parental Discipline" in the first volume of this series. Becker has dealt primarily with the consequences of direct power assertion (especially punishment) and of parental restrictiveness, particularly as parents place demands and restrictions upon the child and insist on compliance in such areas as sex play, modesty, table training, aggression to sibs, parents and peers, and so on. He has drawn upon a number of studies which suggest that the effects of parental restrictiveness or permissiveness depend in part on the warmth of the parents but that in general restrictiveness fosters well-controlled behaviors, often tending toward fearfulness, dependency, and submission, while permissiveness fosters outgoing, sociable, assertive behaviors and intellectual striving, and is often associated with lack of persistence and with increased aggressiveness.

It becomes increasingly clear that at any given age level there is an optimum range of parental control; too much may lead to submissiveness and timidity (or later to rebelliousness), while too little may be associated with immaturity and irresponsibility (Bronfenbrenner, 1961a). The power differential between parent and child is so great that the young child can seldom effectively challenge the assertion of that power. By adolescence, however, the child approaches physical and intellectual equality with his parents. If in the intervening years an increasing measure of autonomy is accorded the child, there will be relatively fewer areas in which parental restrictions are imposed, and if explanations and understanding have accompanied parental control, there will be fewer situations in which parental power is asserted as such. By adolescence, the use of sheer power assertion by the parents becomes psychologically if not physically impossible in that such use transforms the family into a recurrent battleground. Hence, such restrictions as parents suggest must to a large extent be consonant with the adolescent's own long-range goals and self-image if they are to be accepted.

Extreme restrictiveness and parental dominance generally entail the denial of autonomy to the child. At times, nevertheless, the use of power to coerce the child to conform with parental wishes may be coupled with the granting of considerable autonomy and responsibility to the child. Hoffman, Rosen, and Lippitt (1960) postulated that parental coerciveness not only arouses hostility in the child but, especially in boys, also

evokes needs for self-assertion. If such needs are met by the granting of scope for independent action, they reasoned, the combination of parental coerciveness and autonomy should result in boys who are successfully assertive outside the home. Data secured from third- to sixth-grade boys, teacher ratings, and classroom sociometrics generally bore out the prediction. The group that had experienced high coerciveness coupled with the granting of autonomy (only about six per cent of the total sample) were significantly superior to the remainder in academic performance, use of directiveness, success of influence, group leadership, and active friendliness.

Several other studies have explored the ways in which use of parental power relates to the child's attitudes, achievement motivation, and actual performance in school. There is general agreement that authoritarian parents (especially authoritarian, coercive fathers) tend to have children who are less highly motivated to achieve and to continue their education. Elder (1963) reports greater self-confidence and higher educational aspirations on the part of high school subjects whose parents give them a voice in decisions affecting themselves as against students whose parents are autocratic. The legitimization of parental coerciveness by explanation of the parent's reason was found to modify the effects of autocratic parental control, however. Almond and Verba (1963) and Elder (1965), conducting further analyses of the Almond-Verba data, report a marked association between authoritarian behavior by parents and authoritarian attitudes and low educational attainment on the part of the children in the United States, Great Britain, West Germany, Mexico, and Italy.

In an intensive study of the correlates of school achievement, Strodtbeck (1958) found that "the less the mother and son are dominated by the father, the greater the disposition of both to believe the world can be rationally mastered." Boys whose fathers were highly successful occupationally and dominant in the family situation tended to feel relatively impotent and to assume a somewhat passive role. The supportiveness of a dominant father seemed, if anything, to contribute to greater dependency in the son. Rosen (1962), in a study of achievement motivation among Brazilian boys, has also noted the thwarting effect of the powerful, authoritarian father.

A study by M. L. Hoffman (1963) demonstrates the complexity of power relations between parents and children. He started with the hypothesis that parents who held authoritarian attitudes would be more coercive of their children. This tended to be true only of middle-class mothers and of lower-class fathers. The assertion of power over the chil-

dren by middle-class fathers and by lower-class mothers was, however, significantly related to authoritarian attitudes of the *spouse*. Hoffman suggests that the display of power over a child may result from pent-up resentment from previous encounters with a power-motivated spouse. An alternative explanation is that a power-oriented or authoritarian husband or wife may put direct pressure upon the spouse to be firm with the child. A finding similar to Hoffman's may be noted from a study by Bowerman and Elder (1964). Even in families in which the mother is reported dominant in the conjugal power structure and dominant in child rearing, it is the *father* rather than the mother who is more often perceived by the child as autocratic or authoritarian, especially in the working class. Moreover, working-class sons are more likely to perceive their mothers as authoritarian when *father* is the dominant parent than when mother is. The tendency of a parent to dominate his children is then to be understood partly in terms of the general structuring of power relations between husband and wife, to which topic we now turn.

Power and Authority in the Marital Relationship

The traditional family in Western, Judeo-Christian society of earlier centuries tended toward the patriarchal, investing the father with maximum authority over both his wife and his children. This pattern prevails currently in many societies, especially Oriental, Moslem, and Latin Catholic societies. In contemporary America, however, both law and public opinion put definite limits on the power of the husband relative to his wife. The marriage relationship most commonly held up as a model in the United States is one in which joint decisions are reached. Nevertheless, when this ideal does not work out, the husband is expected to be the head of the house (Sirjamaki, 1960; Williams, 1960). Research on family decision processes suggests that in most American families husbands and wives do share in major family decisions and that insofar as one partner has a stronger voice, it is more often the husband (Blood and Wolfe, 1960; Bowerman and Elder, 1964; Clausen, 1962). Recent evidence on generational changes in the allocation of authority within the American family indicates that there has been some decline in the authority of the father in the past generation, coupled with an increase in his participation in child rearing and perhaps in household chores which were previously regarded as woman's work (Bronfenbrenner, 1961a; Bronson, Katten, and Livson, 1959). We shall first consider the effect on child personality development of the relative power of husband and wife in the marital relationship, and then take up the ways in which power and authority are allocated in dealing with the children.

In general, power in social relationships depends upon the relevant norms, each person's control of resources, and personal qualities such as competence, attractiveness, and the like. Within the American family it appears that the relative power of the spouses depends on the husband's occupational status, the couple's comparative education, the wife's work participation, the involvement of the wife with small children, and the personalities of husband and wife (Blood, 1963; Blood and Wolfe, 1960; Heer, 1958, 1962, 1963). The upper-status, well-educated, and somewhat aggressive husband comes closest to fulfilling cultural expectancies both for personal qualities and for the economic and social resources he provides. He tends to carry authority in the family without having to be coercive and he tends to be regarded by his wife and others as a good role model for his sons. Conversely, the ineffective husband who is dominated by his wife is seen as a poor role model. In families where the father is seen as dominant, there is a greater tendency for boys to identify with the father, to show a preference for the male role, and to be rated masculine—especially if the father is also nurturant (Hetherington, 1965; L. W. Hoffman, 1961b; Mussen and Distler, 1959).

Maternal dominance, on the other hand, appears to be a source of maladjustment and psychopathology, especially for boys. The husband and father who is dominated by his wife is likely to be derogated. He does not measure up to the cultural norm as to who should "wear the pants." Under these circumstances, both boys and girls are likely to devalue males and—boys particularly—to identify with the mother. Their relationships with their peers are likely to be adversely affected (L. W. Hoffman, 1961b). Moreover, tension levels are likely to be high in such a family, since the father's low power is at least in part indicative of his contributing less than is expected of him. In a recent study of several hundred students, satisfaction with both parents and the reported compatibility of parents correlated negatively with power and dominance of the mother (Distler, 1965).

Although some studies (e.g., Bronfenbrenner, 1961b) have suggested that maternal dominance should enhance achievement orientation in boys, others (Elder, 1962; Straus, 1962) found no evidence for this. Using as an index of parental power the reported "bossing" of one parent by another, Straus found that boys from families in which neither parent tended to boss the other were as high in school achievement and were most often characterized by an active, future perspective, satisfaction with parents, and minimal anxiety. Most anxious and rejecting of parents were boys from mother dominated homes. Those from homes in which both parents tried to boss each other—resulting in conflict—were next

highest in anxiety and rejection of parents and least characterized by an active, future orientation.

Maternal dominance has been found to be a frequent correlate of schizophrenia (Kohn and Clausen, 1956; Lidz *et al.*, 1957a), of heroin addiction among adolescents and young adults (Chein *et al.*, 1964), and of duodenal ulcers (Goldberg, 1958; Ruesch *et al.*, 1948). It must be recognized, however, that the harmful effects of maternal dominance do not simply derive from a strong maternal figure. They appear to be a consequence of a constellation of attitudes, competencies, and relationships, strongly influenced by the occupational position and personality of the father, and affecting the whole atmosphere of family life. In families where the father is reasonably competent and there is mutual affection and respect between spouses, it is very doubtful whether a slight tendency toward maternal dominance would have any significant effect except perhaps on tendencies toward identification and sex role learning. This is, of course, a significant part of personality development, but it is almost certainly not the explanation of why maternal dominance is so frequently associated with pathology. Even with respect to identification, it appears that a mother's approval of her husband may make a considerable difference in such families, for such approval has been found generally to increase the strength of a boy's identification with his father (Helper, 1955).

Allocation of Role Functions

The maintenance of a family entails general functions of mediation both with the larger society and within the family unit, as well as the carrying out of specific tasks of socialization and of household operation. In general, the husband and father is expected to be the primary provider and mediator with the outside world and the mother the balance wheel and mediator within the family (Farber, 1964). Parsons has suggested that a clear-cut division of parental role functions, with father fulfilling primarily instrumental (economic, task-related) functions and mother expressive (affectional, nurturant) functions tends to facilitate proper sex role identifications for children (Parsons and Bales, 1955).

Studies of the allocation of various child-rearing functions and activities in the American family are almost unanimous in showing the mother to be preeminent in both instrumental and expressive or affectional role behaviors within the home. With smaller children the mother is, of course, directly involved in child care and training during most of the child's waking hours. The father tends to have a modest part in day-to-day child care, though he may be an important participant evenings and

weekends. As the years go by, the child is in the home less during the day but is there and awake more of the time when the father is available. Adequate data are yet to be supplied, but it seems reasonable to assume that the relative significance of the father's participation with the children goes up as they mature. Nevertheless, Bronfenbrenner (1961b) found that even with fifteen- and sixteen-year-olds, mothers exceeded fathers in performance on 17 out of 20 dimensions of parent-child relationship. Both sons and daughters reported that their mothers were the primary source not only of nurturance, affection, and protectiveness, but also of general discipline, material rewards, and the making of decisions affecting the adolescent. Daughters reported that mothers surpassed fathers in all aspects of parent behavior studied; sons reported fathers more likely to be the agent of physical punishment and also more likely than mothers to take part in activities and projects with them.

Similar evidence of the mother's primary involvement in discipline as well as nurturance has been reported by Radke (1946), Kohn (1959b), and others. The sheer predominance of the mother in interaction with the child requires that she fill both instrumental and expressive functions but it is nevertheless true that mothers are in general *relatively* far more expressive and nurturant than are fathers. There is also evidence that fathers tend to be involved more directly in decision-making, discipline, and companionship with sons than with daughters. Aberle and Naegele (1952) have noted the tendency of middle-class fathers to be more demanding in expectations for their sons than for their daughters. Moreover, middle-class fathers play a more active and supervisory role and are more supportive toward sons than are working-class fathers (Bronfenbrenner, 1961b; Kohn and Carroll, 1960).

Several studies have found—especially among boys—that when the father rather than the mother is the disciplinarian, the child is more likely to be assertive, feel anger, and express aggression directly. Maternal discipline has been related to inhibition of anger and hostility, and to certain psychosomatic ailments (Funkenstein, King, and Drollette, 1957; A. F. Henry, 1956, 1957; L. W. Hoffman, 1961b; King and Henry, 1955). These findings have generally been interpreted in terms of the following theory: The mother is usually the primary source of affection. When the father is the primary source of discipline, authority and affection are lodged in different individuals and resentment or rebellion against the disciplinarian does not necessarily threaten the child's tie with the more nurturant parent. When authority and affection come from one parent, on the other hand, expressing—even feeling—hostility toward the punishing parent is too threatening and the child tends to repress any

anger he might initially feel and becomes intrapunitive. An attempt to test this theory was made by L. W. Hoffman (1961b) with inconclusive results. She suggests, as one alternative explanation, that the different effects of mother and father discipline may derive simply from differences in the techniques typically used by each. Fathers tend to use power-assertive techniques which give rise to overt aggressive tendencies, while mothers use love-oriented techniques which give rise to repression and intrapunitiveness. While there is lack of clarity as to the way in which the effects come about, there is considerable evidence that it does make a difference for the child whether father or mother is the disciplinarian.

Division of Labor in Household Tasks

In the traditional American family, husbands' and wives' tasks were sharply differentiated. As authority patterns have changed so also has the division of labor changed, especially in urban households where there are few heavy chores that require a man's muscle. Nevertheless, there is a much greater tendency toward the traditional division of labor in household tasks than toward the traditional pattern of authority, especially if the wife is not employed (Blood and Wolfe, 1960).³ In general, husbands and wives share household tasks most fully early in the marriage, move toward greater specialization when there are children, and reach the greatest degree of role specialization in the later years. When wives are employed, however, there is a very considerable reallocation of tasks, with the husband taking over a larger share, including helping with some tasks normally regarded as "woman's work."

The division of labor between husband and wife is both a reflection of cultural norms defining "woman's work" and "man's work" and a means by which the child first comes to perceive such norms. Hartley (1959) asked children how they would tell a visitor from Mars what men and women in this world need to know or are able to do. Roughly two-thirds of the women's activities mentioned fell into the traditional domestic realm having to do with household care and management, child care, and relations with the husband. Only six per cent of the items mentioned for women related to outside employment. Men, by contrast, were most often described as carrying out traditionally masculine activities requiring physical strength and stamina and frequently performed outside the household. Only six per cent of the items mentioned for men fell in the area traditionally regarded as "woman's work." Sons of working mothers assigned work roles to women and domestic tasks to men more often

³ Maternal employment seems to affect the husband's household task participation more than it affects his authority (L. W. Hoffman, 1960).

than did sons of nonworking mothers. Moreover, working-class boys were more likely to assign such tasks to men than were upper-middle-class boys, in keeping with the finding that working-class fathers do, indeed, carry out more domestic tasks than upper-middle-class fathers (Hartley, 1960).

By and large, American children share minimally in the tasks of the urban household, though girls are more likely to assist with dishwashing, cleaning, and similar chores than are boys. Indeed, a girl's identification with her mother is presumably facilitated by virtue of the fact that girls can see and copy what mothers do. For city-dwelling boys, on the other hand, there are few clearly masculine chores that can be shared with father, and the father's occupational performance is usually beyond the realm of direct observation by the son. For the younger child, in particular, tasks performed tend to be limited to putting away toys and straightening up his room, in contrast with the chores of the farm child of an earlier day and the patterns prevailing in simpler, largely agricultural societies (Minturn and Lambert, 1964).

A search of family monographs, texts, and journal literature revealed no studies relating to the influence of the child's involvement in household chores or in work outside the home on his personality development. At least one study in process does provide data, however. Longitudinal data from the Institute of Human Development, currently being analyzed by Glen Elder, reveal that adolescents who were significantly involved in household task performance while in junior or senior high school (during the 1930's) were more likely than their peers to be rated both responsible and compliant by research psychologists who regularly observed them. Boys who worked outside the home but did not perform significant household chores were more peer-oriented, assertive, and high in drives for recognition and control. Those boys who neither helped at home nor held outside jobs were lowest in peer-orientation, leadership status, and assertive autonomy. Roughly twenty years later, when they were nearing age forty, members of this last group were characterized (on the basis of personality tests) as less responsible and less self-controlled—but more sociable and self-confident—than males who had either performed significant household chores or had held outside jobs. The picture is more complicated for girls, partly because their involvement in household tasks and their general social participation were markedly influenced by the amount of deprivation their families experienced in the depression.

It is likely that involvement of a preadolescent or adolescent in household tasks reflects both parental expectations and the youngster's acceptance of responsibility. Acquiescent performance of chores might be

expected to enhance feelings of responsibility in a child whose contributions are appreciated, though if carried to an extreme such performance might reflect and perpetuate dependency or lack of autonomy. Securing work outside the home, on the other hand, reflects a substantial degree of autonomy and may further contribute to the child's independence.

Maternal employment. Maternal employment is itself perhaps the most significant departure from the traditional division of labor in the family. If earning a living is regarded as the primary responsibility of the father, and maintaining the home the primary responsibility of the mother, the latter's assumption of full-time employment clearly entails a considerable departure from this expectation. The proportion of working wives and mothers has steadily increased in the past two decades: two-fifths of all mothers of children aged six to seventeen and one-fifth of the mothers of preschool children were employed as of 1960 (Nye and Hoffman, 1963). As more mothers have entered employment, more social scientists have studied their family life, their children, and their personal satisfactions. The current consensus is that maternal employment does not necessarily have markedly detrimental effects on the children, though under certain circumstances it may be associated with problems; under other circumstances it may actually have favorable consequences.

The research literature on this topic has quite recently been reviewed in a collection of papers assembled by Nye and Hoffman (1963) entitled *The Employed Mother in America*. Hence, only a few general observations will be offered here. The ways in which mothers care for and interact with their children obviously depend in part on the amount of time and energy available for the children, but, also obviously, they depend in part upon the feeling of competence that a given woman has as mother, and her satisfaction in carrying out maternal tasks. Marian Yarrow and her associates (1962) have found that the adequacy of maternal behavior among working and nonworking middle-class mothers is significantly related to the mother's satisfaction with her current status. Those mothers adjudged most deficient in the performance of maternal duties and in relations with their children were not working mothers but rather nonworking mothers who aspired to employment outside the home.

As noted previously, husbands tend to take over a greater share of household tasks if their wives work. The relative power of a working wife appears to be enhanced in such areas as participation in major decisions but decreased in other areas such as those having to do with more routine household affairs (Blood, 1963; L. W. Hoffman, 1960). Preadolescent children of working mothers do not tend to take on greater respon-

sibility for household duties unless their mothers dislike working; indeed, it appears that mothers who enjoy their outside work go out of their way to avoid putting greater demands for help on their children (L. W. Hoffman, 1961a). Adolescents, on the other hand, are more likely to increase household chore performance if the mother is employed (Roy, 1961).

In summarizing the effects of maternal employment upon children, Hoffman has noted that differences emerge only as one examines subgroups of the population—subgroups delineated on such bases as social class, full-time versus part-time employment, age of child, sex of child, mother's attitude toward employment, adequacy of substitute supervision, and other characteristics of the family situation and the job situation (Nye and Hoffman, 1963). As in the case of broken homes, it must be stressed that consequences of maternal employment depend upon the meaning that a given arrangement has for the mother and for the rest of the family, and on the alternative arrangements and sentiments that would prevail if the mother did not work. Under some circumstances, maternal employment may increase the danger that a son will become delinquent, though most studies of delinquency have not found employment of the mother to be implicated. An adolescent daughter may look up to her working mother as a source of strength and enhanced self-confidence, especially if her mother works only part-time or if she is of the middle class (Douvan, 1963). On the other hand, both adolescent sons and daughters of full-time working mothers from working-class families showed some problematic behaviors or orientations in Douvan's study—dependency upon and ambivalence toward their mothers on the part of daughters, and devaluation of the father as a role model and a tendency to rebel against adult authority on the part of sons. In almost all the studies that have utilized adequate controls and measures, however, the effects of maternal employment upon the child's development and personality have been modest.

Interacting Influences

For the most part, we have examined a number of relatively simple aspects of family structure. These are but crude indices of the more significant patternings of relationship within the family, yet the great bulk of systematic research on the family has been confined to the use of such indices. This is partly because, as stated above, these are more easily assessed and statistically manipulated. But the heavy reliance on indices is also attributable to the fact that crude as they are, they do permit us to distinguish meaningfully different constellations. As we secure more detailed descriptions of family functioning we find that a structural fea-

ture such as maternal dominance may derive its influence from a number of personality tendencies and attitudes of husband and wife, from cultural norms which are violated by this particular pattern, and from the lack of articulation between goals sought and methods of trying to achieve those goals on the part of various members of the family. Goldberg (1958) found, for example, that the mothers of ulcer patients tended not merely to be dominant over their husbands but also disappointed in them; toward their children they were both too restrictive and too indulgent. These mothers anxiously sought to protect their children against all manner of imagined dangers. It will perhaps be recalled that ulcer patients tend to be youngest children in the family and also that for a youngest child the mother is more likely to be the dominant authority figure than for other orders of birth. Thus, any one of these indices tends to lead us into a complex network of interacting influences.

PARENTAL PERSONALITIES, VALUES, AND FAMILY PROCESSES

We come finally to aspects of family structure and functioning which are most difficult to characterize in terms of purely structural features, yet which comprise organized expectations that have a potent influence on the child's personality development. It is almost as difficult to *conceptualize* the family as a whole as it is to *study* the whole family. As Handel (1965) notes in a recent review of psychological studies of whole families, each family tends to evolve its own unique culture—its norms, values, and role definitions. Family interaction frequently comes to be centered around "themes." Hess and Handel (1959, p. 11) characterize a family theme as "a pattern of feelings, motives, fantasies and conventionalized understandings grouped about some locus of concern which has a particular form in the personalities of the individual members." Such themes may often be discerned through only casual acquaintance with a family. In other instances, however, themes may be covert and revealed only through more intimate glimpses.

Attempts to evolve a typology of family themes or of global orientations of families have in general not yielded viable conceptualizations. Each family must deal with certain issues such as the connectedness or separateness of members, but there are alternative forms of cohesiveness just as there are alternative expressions of autonomy and individuality. Global concepts such as family integration (Angell, 1936) have, by and large, inevitably incorporated the personal impressions and feelings of the individual investigator about particular aspects of organization.

Recent attempts to characterize important aspects of families as entities have instead tended to focus on values, on consensus, and on characteristic modes of communication and personal influence.

Florence Kluckhohn (1960) has sought to characterize the most basic value orientations of societies and their family systems—the assumptions and bases of evaluation which underlie the designs for living and the choices people make when faced with alternative possibilities. The middle-class American family most often values the individual over the family or lineage as a whole, is future-oriented, stresses achievement (“doing” rather than “being”). Competitive behavior is rewarded and success acclaimed. Kluckhohn suggests that:

... of all known types of families, this one is probably the best suited to our highly rationalized institutional system and other spheres of our national life. It does produce achievement-minded, independent and future-oriented individuals who are largely free of ties that bind them in time and place (p. 311).

But these emphases entail strains as well, especially within the family system. The dilemmas of the achievement-oriented girl who becomes a wife and mother constitute one case in point (Friedan, 1963).

Values regarding children likewise make a difference in the way parents respond to the child's behaviors. Middle-class parents place considerable emphasis on curiosity, happiness, consideration, and self-control. They wish the child to learn to govern himself; his motives and feelings are important (Kohn, 1959a, 1963). Working-class parents, on the other hand, more often stress obedience, neatness, and cleanliness (the “middle-class virtues” of an earlier era); the child should not transgress against externally imposed rules.

The congruence of value orientations of the parents and the images of the family held by each of the members is one indication of the degree of consensus that exists as to family processes and goals. Using a Family-Concept *Q* Sort—a set of statements descriptive of families which each of the members sorts into groups according to the degree of applicability of each statement to his family—Van der Veen and his co-workers (1964) assessed prevailing images and consensus in two groups of families. One consisted of families who had applied to a child guidance clinic for help with a problem; the other consisted of families with a child judged to be high in social and emotional adjustment. As would be expected, the members of the problem families had less favorable images of themselves and showed greater discrepancies between their ideal and actual family images. Further, among the problem families, the level of agreement between husband and wife was strongly related to the index

of marital adjustment, suggesting that lack of agreement was symptomatic of conflict and tension.

Our knowledge of the dynamics of family functioning is largely based on intensive studies of families with an emotionally disturbed member. Problem families have been more thoroughly studied than normal families, largely because they have been more accessible to study in the course of therapy. A voluminous literature describes the familial correlates of psychopathology and the processes of family therapy. It is not possible in the scope of the present chapter to do more than note a few of the impressions emerging from this literature and to refer the reader to more detailed reviews. But first it may be useful to consider more closely what a family is, how it comes into being and evolves its themes, values, and consensus.

Each partner brings to the marriage a set of expectations as to what it should be and what it will be—expectations based on perceptions of the parents' marriages and other models, on personal needs, on aspirations, on values held. Marital selection itself is, of course, guided by these expectations and needs, though romantic love may blind the individual to a realistic assessment of the chances of realizing them. Most often husband and wife come from similar backgrounds and share the same general religious and political orientations, roughly equivalent levels of education, common interests, and friends.

Even when husband and wife have similar backgrounds, however, there is still a matter of choice, and attitudinal and emotional dispositions markedly influence mate selection. To cite an example developed elsewhere (Clausen and Kohn, 1960), young women whose mothers have taught them (explicitly or implicitly) to fear and disparage men and to regard sex with disgust born of anxiety are not likely to marry aggressive, sexually expressive men. One would anticipate a general tendency for such women to marry conforming, unaggressive, "preoccupied" men who can provide a home but who will not be demanding. For the men in question, such women are likely to have strong initial attraction since they exclude impressions of competence and correctness. Such marriages appear to occur with considerable frequency among the parents of schizophrenics—see the families studied by Lidz and his co-workers (1957a, b), Wynne *et al.* (1958), and others—and the characterization also fits many women who marry men who subsequently develop schizophrenia (Murphy, 1963).

After marriage every couple is faced with working out a mode of family life which will meet mutual needs, including needs previously recognized and those that are revealed only in the intimacy of cohabitation. If

either spouse has strong needs which are unacceptable to the other, adaptation or reeducation will be required. Couples evolve their unique understandings, their ways of communicating and sharing experiences, and their ways of concealing or denying experiences. As children are added to make the marriage into a family, latent needs and vulnerabilities of the parents may be activated. New adaptations are required. Each spouse's idiosyncracies and vulnerabilities become to a degree incorporated in the expectations and dispositions of the other. They may be accepted with a measure of understanding or they may become a basis for an integration of pathologies, each family member getting certain satisfactions because of another's weaknesses. For example, the infant's helplessness and dependency may become precisely the mother's antidote for feelings of inadequacy as a wife, and when the infant seeks to become an independent child, the mother may strive desperately to prevent such independence.

Spiegel (1957) has described in some detail the ways in which children become involved in parental conflicts and pathologies and the various kinds of transactions by which members attempt to maintain the balance they are accustomed to in family affairs. At times a given child will be made a scapegoat for the parents' failings (Miller and Westman, 1964; Vogel and Bell, 1960). When such children are seen in therapy it becomes apparent that little can be done for the child unless the whole family is involved in the therapeutic process. Nathan Ackerman (1958), who has long and consistently pointed to the need for working with the family of the psychiatric patient, has described some of the typical problems of family diagnosis and therapy encountered by the psychiatrist.

Families that have produced a schizophrenic offspring have perhaps been studied more intensively than any other problem group. Some of these families tend to "double-bind" the child, communicating contradictory messages at the levels of speech and of behavior (Bateson *et al.*, 1956). In other families, parents attempt to maintain a fiction of harmony and consensus—termed "pseudomutuality" by Wynne and his associates (1958) when actually they are seething with conflicting tendencies. Lidz and his co-workers (1957a, b) have stressed the imperviousness of the parents of schizophrenics to the feelings of others, their scattered, distorted thought processes, the undercutting and derogation of one parent by the other. It is not difficult for even an unsophisticated person to recognize that stable, self-respecting persons are not likely to be engendered in such families. But it is still not clear which of the patterns of communication and influence in these families derive from parental pathology, which are responses to the illness of the offspring, and which,

if any, are of direct etiological significance for a particular disorder. An adequate discussion of this literature would take us far beyond the scope of the present chapter. Relatively recent overviews of the evidence on family relations and schizophrenia are afforded in Jackson (1960) and in Mishler and Waxler (1965). A more general review of the literature relating to the family of the psychiatric patient is afforded by Spicgel and Bell (1959). The literature of this field has grown so rapidly that in 1962 a new journal, *Family Process*, was established by a group of outstanding workers in the field of psychiatric services and family research.

Numerous other instances could be cited in which parental personalities and properties of the family communication system create problems for the child. For example, Manheimer and his associates (1963) have found that medically attended accidents occur more frequently among children whose mothers are dissatisfied with their lives and have poor impulse control than among children of more satisfied and controlled mothers. Chein and his co-workers (1964) found family pathology, including the instability of the father figure and ambivalent maternal tendencies toward overprotection and rejection, often characteristic of the families of adolescent heroin addicts. In our own research on families with an adult psychiatric patient we have been struck by the fact that many of the families have erected safeguards to preclude the communication of emotionally significant messages. Thus, there may be an agreement that neither spouse will "bother" the other with his personal problems. In the extremes of emotional distress, a suicide attempt not infrequently becomes the means of communicating with the spouse. In such families the child is frequently drawn into a collusive relationship with one spouse or the other.

CONCLUSION

A generation ago, the task of defining an effective family probably seemed a bit simpler than it does at present. As we have become more aware of the ways in which family structure and cultural contexts influence family dynamics, it is no longer possible to apply a few precepts derived from clinical experience with middle-class neurotics and their families. Efforts at formulating the desirable or optimal attributes of family structure and functioning (Otto, 1963; Pollak, 1957) may be helpful to students in their thinking about the family, but are unlikely to serve as guides for practitioners except in a very general sense.

Criteria of effective family functioning can be formulated only in very general terms, and will not be identical for different constellations of

personalities or different social milieus. If the family is a unity of interacting personalities, each with a history, each such unity is unique. We may assume that, in general, cohesiveness is a desirable attribute for a family group, but mutual respect may be a more positive element making for cohesiveness than mutual dependency. Again, a measure of openness and directness in communication within the family seems desirable but perhaps it is more important that family members feel affection for each other and perceive each other with a fair degree of accuracy than that they talk a great deal about their feelings. Cultural norms can markedly modify what is openly discussed, but in all cultures the child learns to interpret expressions and behaviors—to “read people”—either poorly or well in the family. One may assume, too, that a family and its members flourish most when all members have reasonably consonant goals and values.

Socialization in the family entails many kinds of learning—conscious and unwitting—from parents, siblings, and other relatives. There are role models, precepts, discussions, and interpretations in profusion, though their richness, coherence, and variety will vary greatly from one family to another and from one stratum of society to another. The family has here been viewed in terms of its structure and the implications of structural features for child development. Important as these are, the functioning of the family must also be viewed in relation to the larger social organization in which the child is to be a participant. The child's ultimate effectiveness as a member of the larger society may in the last analysis be the best test of the family's success as a socialization agent, regardless of the correlations of structural features with aspects of childhood personality development.

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Language Development¹

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THE STUDY OF LANGUAGE DEVELOPMENT reflects trends in child development, but it has also been subject to practical pressures from applied fields and to other research developments outside of psychology, especially in linguistics.

Both psychologists and linguists have contributed to an extensive series of longitudinal diary studies and briefer descriptions of individual cases. When investigators used phonetic transcriptions and were sensitive to linguistic and situational considerations, these studies remain rich sources for research ideas and hypotheses.

A radical innovation took place in the 1930's under the influence of behaviorism and the testing movement. The diary method appeared methodologically unsound, lacking systematic sampling of subjects (often the authors' children), control over elicitation situations, and measures of the reliability of observational categories. The newer methods, resulting in prolific publications largely from Minnesota and Iowa, emphasized aspects of verbal behavior most accessible to quantitative measurement, such as articulation errors, picture-naming, and sentence length in speech samples. Many normative studies were conducted, assessing the relation of these variables to sex, age, occupational status, and so on.

Linguists complained that the quantitative studies did not test any important hypotheses. "Everything depends on the formulation of the linguistic problems covered by the figures. . . . The linguistic scholar . . . cannot help feeling at times that the results achieved are not commensurate with the excellent method used" (Leopold, 1948, p. 6). A landmark in modern research was Velten's (1943) application of Jakobson's (1941) theory of phonemic development. This theory proposed that changes in each child's linguistic system followed an orderly sequence of increasing

¹ The author is indebted to Dan I. Slobin for finding and translating pertinent Soviet materials, and to Robin E. Smith for checking of sources. The survey of sources was completed in June, 1965.

differentiation of significant features; thus it related language development to perceptual development and provided a theoretical framework which made comparison of children in different linguistic environments possible.

Subsequent research, particularly on phonology and grammar,² is a product of the mating of psychology and linguistics. The differences from the preceding phase lie in sensitivity to linguistic theories, respect for the systematic nature of the child's linguistic knowledge, and emphasis on inferences about underlying structures or rules which lie behind the observed changes in verbal behavior.

In this survey, we shall use *language* to refer to any symbolic system which is learned, which consists of conventional basic units and rules for their arrangement, and which includes a conventional set of arbitrary signs for meanings and referents. Most human languages employ speech sounds to represent basic units, and written languages are derivative of oral languages. We shall use *speech* to refer to vocal language as distinct from comprehension and from reading, writing, lip-reading, and so on. *Dialect* refers to the variety of a language spoken by a particular community or social group.

Since the formal structure, the meanings, and the conventions of social usage are arbitrary, they are usually learned from the communicating social group or language community. In the extreme, however, as in deviant speech or speech in a child, it is possible to characterize the patterning of an individual language, or *idiolect*.

There are several perspectives from which language (and especially grammar) can be viewed, as we see it change in a child. There may be an increase in similarity to an authoritative standard or an elite dialect; there may be an increase in similarity to the language of the teacher or of the adult or peer reference group. These changes with reference to a model can be described in terms of substitution patterns and omissions. Finally, the idiolect of the child can be described. In this survey, we shall primarily view language change from the point of view of the child's system, and from the point of view of its relation to the system of his parents or major adult models. The attempt to change the child's language to match a model not present in his home environment presents special pedagogical problems we can touch on only briefly. Furthermore, since the most rapid and extreme changes occur in the preschool years, we shall give them the most emphasis.

² While an attempt has been made to define the more technical terms as they first appear in the text, the reader will also find a brief glossary preceding the list of references.

There have been numerous other surveys of children's language development, to which we shall refer for bibliographic brevity. The most complete bibliographies in their time were those of McCarthy (1946, 1954, 1959) and Leopold (1952). Since the present survey makes no claim to completeness, readers are also referred to other surveys (Brown and Berko, 1960a; Carroll, 1960; El'konin, 1962; Ervin and Miller, 1963; Kainz, 1960; McNeill, 1966; Slobin, 1966).

PRELINGUISTIC VOCALIZATIONS

We shall consider as prelinguistic the stages preceding the first word with a stable significance. Within this period of a year or so, three stages have been noted: first, a period of organically based sounds; next, extensive vocal play and babbling; and finally, evidence of imitative behavior and speech which seems intentional because of its situational distribution.

Earliest Sounds

In the first weeks, respiration and feeding activities are mixed with other vocalizations. During the first thirteen weeks, vocalization categories from most to least frequent are fussing, crying, and cooing. Cooing gradually increases in frequency and crying decreases, even during hunger (Lenneberg, Reblsky, and Nichols, 1965; Tischler, 1957).

Early studies, such as those of Hazlitt, Blanton, and Sherman (McCarthy, 1946), indicate that crying and cooing or babbling occur in distinctly different situations, and that there may be different vocal properties for hunger cries, for example, and reactions to instantaneous pain. It is possible that different babies have somewhat idiosyncratic patterns. New research using tapes and spectrographs, and eliminating the vagaries of judges, needs to be undertaken.

Babbling

As the frequency and quality of cooing changes, it begins to sound to adults more like human speech. As a result there have been efforts to analyze the phonetic properties of babbling. The lack of muscular and cortical control by the infant results in sounds which are acoustically unlike any adult sounds (Lenneberg, 1964b), but the fact that parents think babbling sounds like the beginning of speech, and imitate and reinforce it may be important.

There has been considerable analysis of infant sound types. In some studies, the reports have not distinguished babbling, imitations, and words, though these are known to differ. It is common to employ English

phonemic categories (see p. 66) in classifying infant sounds, though a neutral phonetic system would be more appropriate. Infants make clicks (tsk-tsk, lip-smacking), rounded front vowels (French *tu*, German *böse*) and other sounds not present in the English phonemic system.

Given these limitations, the following generalizations can be tentatively made from available research: (a) In the first few months, vocalizations are mainly vocalic, with infrequent consonants. (b) Consonants formed in the throat and back of the mouth occur early but decrease. (c) Voicing of consonants increases with age (McCarthy, 1954). (d) Reduplication is common in babbling—that is, repetition of CVCV sequences such as “dada” and “bebe.” Also repetitions may be common in which the two consonants have the same location, as in “kaga,” “tada,” and “mibi.” (e) Babbling includes sounds and sound sequences never heard from the child’s parents. These are often absent in the early words of children when the linguistic period begins. Indeed, sounds which later present articulatory difficulties may have been frequent during the child’s babbling (Cohen, 1962; Tischler, 1957). On the other hand, some sounds present in adult languages are rare in babbling, though unfortunately comparative cross-linguistic research on babbling is lacking. It is clear that from the formal standpoint babbling does not lead directly to linguistically organized speech. Indeed, both a linguist, Jakobson (1941), and a psychologist, Carroll (1960), say there is no relation at all.

Influences on Language Development

Organic factors. Babbling is clearly organically based, since it occurs in both deaf and hearing children, who cannot be distinguished by vocal output in the first six months (Lenneberg, 1964a, b). Evidently the auditory environment is relatively unimportant prior to that time.

Changes during the first year in vocal form may, in part, be due to changes in the cortical and peripheral organs. McCarthy (1954) has pointed out that infants have a flatter palate and larger tongue in relation to the oral cavity, as well as no teeth. She suggests that the increase in consonants with age and the tendency as children mature to use the tongue tip more and the throat less for articulation may arise from an increase in fine muscle control by the tongue and cortex. Some authors have attributed the frequency of throat sounds to supine position, but observers of cradleboard babies may be skeptical of this explanation.

Social influences. Observers may have the impression that infants react vocally to adult speech from a very early age. The smiling response to adult vocalizations appears also as a baby-test item. However, when a comparison of the frequency of cooing is made between infants of hearing

parents, infants of deaf parents (who provide significantly less vocal stimulation), and a deaf infant, there is no difference in the frequency of cooing (Lenneberg *et al.*, 1965). Thus, the overall impact of differences in stimulation and reward is not apparent in the first three months.

On the other hand, Rheingold, Gewirtz, and Ross (1959) succeeded in altering vocalization frequencies at three months by giving a smile, a touch on the babies' abdomens, and a vocal click ("tsk") when the baby made a sound that was neither fussing nor crying. It is difficult to reconcile the results of these two studies. Lenneberg *et al.* (1965) suggests that the extreme brevity and low frequency of vocal stimulation that was usual for the babies in the study by Rheingold and associates may be significant. The babies were in an orphanage and received feedings from propped bottles. Another factor may be that Lenneberg's study covers the period up to three months, and it might be that vocalizations come increasingly under the control of social reinforcement after that age.

Mowrer (1958) has suggested that secondary reinforcement makes the child's speech become increasingly similar to adult speech, since the latter normally occurs in a reinforcing situation. This important theory would predict that maternal warmth and maternal vocalization frequency should be jointly correlated with the rate of infant vocalization. The theory should also predict gross changes in the form of babbling, with age, if to babies babbling sounds like adult speech. In different adult language communities, babbling should take on different forms. Nakazima (1962), however, found no differences in a small longitudinal sample of Japanese and American children until after meaningful speech began.

Imitation. There are frequent reports of imitation during the babbling period, especially of intonational patterns. Few studies make quantitative comparisons of the speech occurring with and without an adult model, but the diary reports give enough negative instances to suggest that many of these "imitation" examples are illusory. Good criteria need to be developed before any data on development will be available; and it would be desirable to include a broad range of speech features—such as intensity, rate, voice quality—and to look for input-output correlations rather than identities.

Comprehension. From differential reactions to adult vocalizations through finer discriminations, it is clear that the child's comprehension of adult speech antedates his own systematic output so that, in the sense of comprehension, the prelinguistic period ends well before "the first word." Unfortunately, studies of comprehension have not systematically con-

trolled the cues in adult speech, so we know very little about the evolution of comprehension. Bühler and Hetzer (1928) found that by six months babies could distinguish friendly from unfriendly voices, but we do not know the features involved. In the same way, we do not know what in the utterance "no!" used in baby tests is a critical stimulus when the baby stops activity. Leopold (1939-49) found that the intonation was a critical stimulus, since a translated sentence might get the same response.

We may summarize the prelinguistic period by saying that the child's vocal output during this time has no known formal relation to his later phonological and grammatical patterns, though the comprehension system lays the groundwork for these patterns. However, there appears to be no discontinuity in the functions of language, or in the social factors influencing fluency which continue without a break from the prelinguistic into the linguistic period.

THE LINGUISTIC SYSTEM: SEMANTIC DEVELOPMENT

The development of perceptual and conceptual organization obviously antedates the development of speech, yet language gives society a chance to bring the individual's conceptual system into conformity. Deviance in connotations is more permissible than in denotations; a child who thought his mother "bad" would be tactless but one who called dogs "mother" after a certain point would be thought abnormal. Part of the socializing of word meanings occurs well before the child's first meaningful utterances but, because it is more obvious, the "first word" is commonly regarded as a significant milestone.

The First Words

The linguistic system consists of contrasts. There is a semantic contrast for a child whenever two different meanings are related to two different sound sequences. For instance, Cohen (1962) reports a child who at nine months had a contrast between /tata/ "clock, watch" and /baba/ "I want it," "do it" (requests). Commonly, an implicit criterion in parental reports is similarity to conventional adult words. The child's primitive phonology and his global meanings may lead to adult oversight; on the other hand, lenience in the criterion of consistency leads to underestimation of the age of first words by optimistic parents (Darley and Winitz, 1961; McCarthy, 1954).

Global meanings. The meaning of early utterances has little correspondence to adult categories and is quite fluid. The generalizations some-

times seem obvious. Guillaume (1927a) reported that at twelve months /*nénin*/ meant "breast, biscuit, a red button on a dress, a bare elbow, the eye in a portrait, photograph of mother"; and Pavlovitch (1920) gave as meanings for a single word at thirteen months "dress, coat, white hat, going for a walk, carriage." Guillaume gave 20 meanings for /*ato*/, on the other hand, which offer no obvious perceptual common ground since they range from "bowl" to "rifle."

Model words learned. Though early child speech is without syntax, some studies have examined the adult class of the words used by children. Typically nouns, verbs, and interjections are very common (Konishi, 1960; McCarthy, 1954). These frequencies may reflect frequency in adult speech to children, vocal emphasis, or semantic importance. It is obvious that the global meanings of a given word to the child may be unrelated to the adult grammatical class, since adult verbs, for instance, may in one situation mean commands, in another descriptions, exclamations, and so on; and children's utterances often derive from multiword models in adult speech such as "I want," "all gone" (Miller and Ervin, 1964), or "donne la main" (Guillaume, 1927a).

If the first utterances are based on adult words, they may sometimes be very inclusive in reference ("bird") and sometimes very narrow ("Bobby"). Adult beliefs about the semantic contrasts needed by children may influence the words they use in talking with children. They may decide that "dog" is more useful than "collie," and "candy" more useful than "caramel" (Brown, 1958a). Thus, it sometimes appears that more abstract words are learned first. Sometimes adults are surprised at how easily children later attain concepts like "adult"—when this might have been in fact the earlier meaning of "papa." When the child's range of reference of a term is actually tested, it appears to depend on the variety of verbal contexts in which a new word is heard (e.g., "look at the doll," "pick up the doll"), and, to a lesser degree, on the variety of exemplars presented (Razran, 1961).

While adults do name objects for children, it is probable that much semantic learning comes from overheard adult speech. As Bresson (1963) has observed, adult speech samples indicate that objects which are directly at hand usually are referred to by pronouns, not nouns. Thus, verbal contexts rather than association with visible referents must be a significant source of learning about the meanings of model words.

Often the referential range for the child is too wide. He may call all animals "dog." In such cases, instead of teaching a new word, "animal," appropriate to the child's conceptual range, the adult tailors the child's concept to the adult semantic range of the word. As the child's

vocabulary increases, he continues to decrease the semantic range for his earlier words. When he learns "cat," he no longer calls all animals "dog." Thus vocabulary increase is always accompanied by conceptual changes.

Vocabulary Increase

Obviously, increases in the number of items known, differentiation of categories, and greater complexity in hierarchical and relational structures of knowledge make for vocabulary increase, a process which continues throughout life for those who read, travel, or acquire new skills.

Vocabulary estimation includes methods for testing recognition vocabulary, vocabulary of use in speech samples, and the type-token ratio (relative variety of words). Because of the methodological difficulties in each of these techniques, one finds varying estimates of age change. If the tester selects the items, as in recognition tests, subculture differences between child and tester may result in underestimates. In usage samples the situation may prove extremely important in influencing the number, type, and variety of words. In addition, estimates of total vocabulary are sensitive to sample size since most words are rarely used; extrapolation must be based on appropriate mathematics which were not known in the early research. Furthermore, in all usage studies policy with regard to homonyms and inflections must be settled, and some estimates of the quality of meaning may be desirable (McCarthy, 1954; Russell and Saadeh, 1962; Templin, 1957). Many of these problems have been discussed by Lorge and Chall (1963). Pavlovitch (1920) and Miller and Ervin (1964) cite instances of the use of number-words by children who did not know their meanings. Yet in many usage samples or type-token ratio studies such words would be included.

Vocabulary lists are in common use for preparation of children's texts. In addition to the above problems, and the wide social and individual variations in vocabulary, it is not clear whether limitation of text vocabularies to actively used words is desirable, or whether it is too restrictive, since the recognition vocabulary is likely to be much larger.

Focus on sounds. The sound of words rather than their meaning is salient to the preschool child. Many studies suggest this fact. For young children and retardates, sound rather than meaning is the basis for the spread or generalization of conditioned responses (Razran, 1961; Reiss, 1946). If a young child learns, for instance, to blink his eye for the word "bee," he would be more likely to blink it for "bean" than an older child. On the other hand, by age eleven children respond to relations of meaning, such as antonymity; and by age fourteen synonyms elicit the

strongest generalizations. In another kind of evidence, studies of free associations to words show that rhymes and alliteration decrease markedly with age. It is often observed that little children engage in nonsense word play, making up words and rhymes, associating by sound relations (Ombredane, 1933). Weir's (1962) study of the bedtime monologues of a thirty-month-old child is rich with examples of such word play. The result of these associations may be contaminations of meaning; in learning experiments, words that sound alike may be difficult to discriminate, the effect decreasing with age (Vurpillot *et al.*, 1964).

On the other hand, the fact that words are more opaque to a child, while adults penetrate quickly from the word to various meaningful associations, may have certain advantages. For example, this attention to sounds may facilitate the learning of a spelling system or the sounds of a second language.

Concreteness. Children's nouns more often than adults' refer to items with characteristic sizes and visual contours, and verbs more often refer to animal and human movements (Brown, 1958a; Rinsland, 1945). Adults, on the other hand, tend to have hierarchies of superordinates which may have rather vague features (e.g., mammal, vertebrate) and they speak of nonvisible referents such as politics and energy. Thus the statement that vocabulary becomes more abstract with age may have two meanings.

Adults use more words superordinate to common children's words (Brown, 1958a). The development of conceptual hierarchies is reflected in the increase in superordinate responses to word association tests in the early years. These responses reach a peak around the sixth grade and decline thereafter (Palermo and Jenkins, 1963; Slama-Cazacu, 1957).

As we indicated earlier, the referential range of early words may be quite wide. A child might begin by calling all adults "papa," next use the word for her own father, and much later learn the word "adult" which has a referential range similar to that of the primitive "papa" (Leopold, 1939-49). Thus, one should not assume that children's concepts, because they are concrete, are necessarily narrower in range. The difference is rather one of organization. By the time the word "adult" is present, the child has a hierarchy of superordinates. The criteria for each class have increased in specificity and changed in character, becoming less visual.

Changes in the semantic system have, in fact, been only sketchily studied. They may include increases in the specificity of terms, increases in knowledge or in concept range, shifts from sensori-motor to relational bases for concepts, and shifts in the verbal structure so that an-

onyms, synonyms, and other structural relations in the vocabulary reflect the critical contrasts employed in the language.

Interverbal Associations

As children grow older, their use of language becomes more adept and rapid, since vocabulary is both larger and better learned. One can see these changes overtly in word-association studies, which show that a given word elicits more associations more quickly in older children (McCarthy, 1946). In addition, as inner speech becomes more skilled, these covert associations may be important in information retention, giving an advantage to older children.

The Structure of Meaning

Societies differ in the contrasts which are considered significant in communication, and hence in those marked by vocabulary selections (Lounsbury, 1963; Romney and D'Andrade, 1964). The typical examples are the very large number of Eskimo terms for snow and Arabic words for types of camels. Though children seem readily to learn alternatives for the same range of meanings, such as synonyms and translation-equivalents, the interference inherent in systems of hierarchical concepts makes superordinates rare for very young children. Obviously, certain structures are learned relatively early though in perhaps simplified terms, such as kin systems (Romney and D'Andrade, 1964), money (Strauss and Schuessler, 1951), pronouns (Carroll, 1939), quantitative relations (Kumac, 1960), and space and time (Carroll, 1964; McCarthy, 1954).

As adults we are used to differentiation of properties such as "big," "heavy," "strong"; since they are well-learned, their differences seem obvious. At first, such terms appear to children to be synonyms, especially in the case of highly correlated attributes and those less visible (e.g., "strong," "good") in a system of denotation (Ervin and Foster, 1960).

It is surprising that the best-known system for assessing connotative structures, the semantic differential, has seldom been used with children. The semantic differential method consists of a set of scales with poles such as "good-bad," "big-small," and a set of concepts which are to be rated on all the scales. Thus, the connotation of the concepts can be found quantitatively, and the judgments on the various scales can be correlated to discover the underlying dimensions involved by factor analysis. Recent research on connotative factor structures (Di Vesta, 1966; Small, 1957) indicates that at age seven the factors of Value, Strength or Magnitude, and Activity already dominate, as has been found with literate adolescents and adults in many parts of the world. In addi-

tion, Warmth, Tautness, sometimes Novelty or Salience appeared in the children's judgments. Unfortunately, though it is quite easy to give oral semantic differentials to preschoolers, these studies began with second-graders. In addition to revealing structure, the semantic differential is a useful instrument for assessing changes in the connotations of words with training or age (Maltz, 1963).

Grammatical Relations

As syntax becomes more complex, and perhaps as writing makes children more analytical about speech units, the relation of vocabulary items to each other changes. School children are more ready than preschoolers to give single-word associates in free-association studies. Also, by age eight the typical literate adult preference for associates which can substitute in sentences such as "eat-drink" has replaced sequential associates such as "eat-food" (Brown and Berko, 1960b; Entwisle, Forsyth, and Muuss, 1964; Ervin, 1961; Rosenzweig and Menahem, 1962).

Giving a synonym on a test of definitions is an age-related skill. Evidently young children do not have a structure of isolated mutually replaceable words but tend to perceive words in terms of their verbal contexts. When asked the meaning of a nonsense word in a sentence, they are unlikely to give a substitute word until age seven and may not even give grammatically suitable replacements (Braun-Lamesch, 1962; Werner and Kaplan, 1952). Part of the difficulty is that they cannot recall the whole sentence easily to test a replacement, whereas older children can even remember a series of sentences and find a replacement word fitting all, a complex task of synthesis (Braun-Lamesch, 1962).

Judged similarities between words in various classes alter with age, as a result of these grammatical changes; the adult structure is achieved at least by age seven (Flavell and Stedman, 1961), no younger children being tested.

THE LINGUISTIC SYSTEM: PHONOLOGY

What the child first hears must be a "big blooming buzzing confusion," just as an exotic language is to an adult. The child's rapid analysis of the fundamental units of his parents' language is one of the most astonishing facts in his career, and we are far from understanding how it occurs. Nor can we construct a machine to comprehend oral speech, as a child does.

The basic problem is to discern which of the infinite variations he hears are significant and change meanings. If his father says "Up!" at one

time keeping his lips closed afterwards, and at another time releasing air afterwards, is the meaning changed? Not in English.

What the child is learning is the phonemic system of English. Phonemes are constructs accounting for the significant formal contrasts between words. They are represented physically by ranges of sounds, so that acoustic cues enter into their perception. Sequences of phonemes combined according to the rules of the language may have meanings. We can contrast such sequences, which seem to be only slightly different, to discover correlated meaning contrasts; thus we can analyze the phonemic system of the language or dialect and discover its basic units. Some American dialects have more consonant contrasts than others, permitting separation of "which" and "witch"; some have more vowel contrasts, allowing "cot" versus "caught." Dialects differ in the positions in which contrasts disappear. In many American dialects /t/ and /d/ are not contrasted in "latter" versus "ladder" in everyday speech; many dialects do not contrast as many vowels before /r/ as New England speech, which contrasts "Mary," "merry," and "marry" (McDavid, 1958; Sledd, 1959). Indeed, each dialect has rules for variation in the sounds which represent each phoneme according to the phonemic environment. Typically in English, for instance, vowels have a longer duration before voiced than before unvoiced consonants, and /t/, /p/, and /k/ have no puff of air when they follow /s/, as they do at word beginnings.

The articulatory range of vowels and of many consonants is a continuum; dialects may differ in their preference for different positions. Acoustic discrimination is sharper when the listeners have learned a discrete consonant articulation (Lisker, Cooper, and Liberman, 1962) but this is not true of vowels. It is not known how early such perceptual changes can be found.

Acoustic cues are important in the perception of phonemes. However, there is a phonetic continuum, and individuals vary in their phonetic features. Therefore, listeners rely heavily on semantic and grammatical contexts for their perception of phonemes. Suppose someone says, "The man were at the meeting early and began the discussion." Probably the listeners would not even notice the deviant position of the vowel in "man" which should have been "men." That is, the vowel would be perceived as /e/ because of the context, and it is likely that in ordinary discourse such variability in vowel articulation is common. Children or foreigners who do not know the grammatical and semantic probabilities of the system are handicapped in perception, even if they have mastered the phonemic system perfectly in terms of its phonetic representation.

Phoneme Discrimination

The evolution of comprehension may antedate corresponding changes in speech and may occur in motor disorders when speech is impossible (Lennberg, 1964a). It was Jakobson (1941) who provided the most significant theoretical account of the development of phonemic discrimination and production; as summarized by Velten (1943, p. 282): "A child does not acquire a phoneme system by random selection or by taking it over ready-made from the language of the adults, but by proceeding step by step, from the greatest possible phonemic distinction to smaller and smaller differentiations." If this is true, the first distinctions made by a child should be very gross, proceeding by successive bifurcations. Thus, a child might first be able to hear the difference between vowels and consonants, and nothing else, so that all words might be described as CV or CVC or CVCV or some other combination of C and V. Next, he might perceive the difference between stop consonants such as /p/ and /t/ and continuants such as /m/ and /f/. Thus, we could describe a three-phoneme system, in which the child heard only two consonants /M/ and /P/ and a vowel and classified all he heard by this scheme. The successive splitting of the system makes perceptual sense and permits economy in learning. But is it true?

The only application of this theory to perceptual processes was by Shvachkin (Ervin and Miller, 1963) who taught Russian children, starting at eleven months, to react to words differing in only one distinctive feature at a time. He found an order of increasing discrimination much like that suggested by Jakobson. It would be valuable to compare his results with the order in languages that have different adult phonemic systems. Shvachkin found an order of difficulty which roughly matches the adult discrimination of English speakers (Miller and Nicely, 1955) for whom the *type* of articulation (/p/ versus /f/ versus /m/) was easier to distinguish than *place* (/p/ versus /t/ versus /k/). Unfortunately, there has been no study of the development of phonemic discrimination of features in English-speaking children to which Shvachkin's valuable results can be compared.

Active Phonological System

Because motor control presents special problems, hearing a phonemic contrast is not a sufficient condition for producing it (Prins, 1963; Winitz and Bellerose, 1963). Yet both hearing and vocalizing may reveal a pattern of splitting the phonemic system by acquiring new features. Thus, when the contrast of voiced versus voiceless consonants is acquired, the

consonant system is almost doubled, for the child can distinguish /p/ versus /b/, /t/ versus /d/, /k/ versus /g/, /f/ versus /v/, /s/ versus /z/, /ch/ versus /j/, /sh/ versus /zh/, and so on. Burling (1959) reported a sudden acquisition of the voiced-voiceless contrast in his child. Obviously, such a change is much more efficient than a phoneme-by-phoneme accretion.

As an illustration of a given child's system, we can describe the system of Velten's child (Joan) at the end of the second year. Joan had the following phonemes:

p	t	w
f	s	a
m	n	u

Her usual word structure was a monosyllabic CV or CVC. We can map these words into Joan's simplified system: "Black," "pat," "bark," "spot," "block," "pocket," "bought," "button," and "bite" were all represented in Joan's system by a single word, /pat/. "New," "knee," "near," "nail," and "no" were all represented by a single word, /nu/. Of course, her phonetic representation of these words showed a lot of unsystematic variation, so that /pat/ might randomly sound like "bat," "bite," "bet," and so on. In addition, she voiced initial and medial but not final stops, so /p/ was represented by [b] at the beginning and [p] at the end of words.

Are there any universals in phonemic development which will provide a test of Jakobson's theory? If so, we might be able to predict the general course of development of phonemic systems for children in all language communities. In addition, we would find the "articulation difficulties" which characterize each stage and account for them by a general scheme.

Using a variety of case studies showing contrastive systems—including some bilinguals before bifurcation of the systems—we can make some tentative generalizations (Ervin and Miller, 1963): (a) The vowel-consonant contrast is probably the earliest. (b) A stop-continuant (/p/ versus /m/ or /f/) contrast is quite early for all children, the continuant being a fricative or nasal. (c) Stops precede fricatives (Gvozdev, 1961; Liamina and Gagua, 1964). (d) If two consonants are alike in manner of articulation, one will be labial, the other dental or alveolar (e.g., /p/ versus /t/), resulting in the common lack of /k/. (e) Contrasts in place of articulation usually precede voicing contrasts. (f) Affricates (ch, j) and liquids (l, English r) usually appear later than stops and nasals. (g) In Russian and French /l/ precedes a vibrant /r/ (Gvozdev, 1961; Liamina and Gagua, 1964; Ombredane, 1933). (h) A contrast between low and high vowels (e.g., /a/ versus /i/ or /u/) precedes a front versus back con-

trast (e.g., /i/ versus /u/). (i) Oral vowels precede nasal vowels, the contrast being acquired late. (j) Consonant clusters or blends are usually late. (k) Consonant contrasts usually appear earlier in initial position than in medial or final position (McCarthy, 1954; Schiefelbusch and Lindsey, 1958; Templin, 1957; Zhurova, 1964).

Word structure. It is commonly reported that the most frequent pattern in early words is CV, CVC, and CVCV (Burling, 1959; Velten, 1943; Winitz and Irwin, 1958) and that there is some decrease in CVCV words within the second year (Lewis, 1951). We might expect that the syllabic structure of various adult languages might cause differences.

One can estimate the maximum number of different words possible for a given phonemic system and word formation pattern. Velten found that at twenty-two months Joan used 86 per cent of the monosyllables possible; at thirty months, 62 per cent of the monosyllables and 19 per cent of the CVCV words. Note that homonymy in the child's vocabulary can be reduced either by changing the phonological system or the word formation pattern—to allow more phonemes per syllable or more syllables per word.

Homonyms

Because of the simplicity of the phonological system, homonyms are common in young children's speech. This is especially the case when a child's phonology is retarded in relation to his conceptual development (Durand, 1949; Velten, 1943). Durand has given some excellent case material showing how homonyms are related to the evolution of the phonemic system. She found that homonyms were tolerated when they referred to opposites such as "open-close." The French-speaking child she studied said /mémé/ for both "open" (ouvrir) and "close" (fermer). Except for opposites, when there was possible situational ambiguity he developed differentiations. She gives a number of detailed examples of the course of such changes. Many homonyms persisted which were used in different situations, e.g., /apu/ for "standing" (debout) and "no more" (il n'y a plus). The list of homonyms given by Velten as meanings for /pat/ gives another example. These are extreme cases, but they illustrate a process which is probably present in some degree in the development of every child's phonology.

Substitution rules. When children imitate adult words, their perceptual systems and their phonological representation rules produce changes. In large measure these can be predicted from the phonology, if it is completely described. Let us go back to a child who has only two words, /baba/ and /tata/. This child has two consonants and a vowel, and a word formation pattern CVCV. We might predict that adult continuants such

as [f] and [m] would both be imitated by the stop in the same position, /p/. The word formation pattern of the child will require omission of whole syllables and members of clusters like [tr], which do not fit into a CVCV pattern. We would predict that both "dog" and "train" would be imitated as /tata/ and "father" would be imitated as /baba/, assuming that the adult's stressed syllable alone is imitated. Such simple replacements are familiar to parents.

A child's substitution rules are more valuable diagnostically than a mere list of errors, for they give insight into the structure of his system and in combination with discrimination tests for distinctive features may be good indicators of therapeutic needs. Evidently children making the same number of articulatory errors are not homogeneous (Prins, 1962).

Since the child's phonemic system is simpler, one would expect a many-to-one mapping of the adult system onto it; but the opposite also occurs. Some phonemic features may not correspond to any heard by the child (Burling, 1959). Assimilations are common, and phonetic rules are often quite different from those of adults. It is commonly noted that adult English /r/ may have multiple substitutes: /w/ in prevocalic position, as in /weyn/ for "rain" and /tweyn/ for "train," and a vowel or semivowel in postvocalic position, as in /tia/ for "tear" (Curtis and Hardy, 1959; Templin, 1957). Chao (1951) reported some complex and intriguing substitution rules and he thought differences in the vocal apparatus might influence them. Joan Velten, before she made a phonemic distinction between voiced and unvoiced consonants, as in /bad/ versus /bat/, distinguished long and short vowels in stressed syllables, as in /bat/ versus /baat/, splitting her two-vowel system into four vowels. In adult English, as mentioned earlier, vowel duration is not phonemic. This is a reinterpretation of the adult system, in which vowels are automatically longer before voiced consonants.

Assimilation is common in children's speech; for instance, in voicing of medial consonants, unvoicing of finals, and repetition of syllables. Consonant anticipations appear, as in /mamok/ for "zamok" (Gvozdev, 1961), or /papo/ for "chapeau" (Bloch, 1924). These rules may resist social pressure; Chao (1951) reports that his granddaughter could not be taught to hear or produce a consistent contrast between /'gamma/ and /gem'pa/, used for both grandparents, in spite of persistent adult ribbing.

Sometimes nasalization may be "anticipated" by being displaced in the substitution rule. For example, some children imitate a word containing a nasal (/m/, /n/, or /ng/) by making the first consonant of the word nasal, but preserving its place of articulation; i.e., a labial nasal is used if

that consonant is labial, a nonlabial nasal if the consonant is nonlabial. Thus, "blanket" preserves the labial but becomes /me/; "green" preserves the nonlabial position of the first consonant but makes it nasal, in /ni/; and "candy" in the same way becomes /ne/ (Ervin and Miller, 1963).

An even more interesting system was found by Applegate (1961) in three brothers who said (tuwt) "suit," (tuw?) "toot" (with a final glottal stop, like the middle, unwritten consonant in negative "hunh-unh"), (be? iy) "baby," (taki?) "talked," and (takt) "talks"! In an ingenious analysis, Applegate showed only two rules accounted for all these and similar substitutions.

The process of change through time in substitution rules may include some forerunner words, making a distinction not made elsewhere; and after a systematic change has become regularized, some archaisms often survive. These may be used stylistically as "babytalk" for special purposes or audiences. Others survive because of the high frequency, high affective load, or adult adoption of the form, as in the case of "Papa" for "Father," "Bob" for "Robert," and "Peggy" for "Margaret" (Chao, 1951; Hockett, 1950; Velten, 1943).

Stress and Intonation

Stress and intonation patterns vary in different languages. In English, there are both word stress, as shown in dictionaries, and sentence stress, which is highly correlated both with syllabic timing and with points of intonation change. Unstressed syllables tend to be altered in phonetic rendering, with centralizing of vowels, or vowel loss combined with consonant assimilations, especially in careful versus normal versus rapid speech. Comparison of the careful five-syllable "What are you 'doing?" with its two-syllable rapid speech version /wach 'down/ and intermediate variants illustrates this feature of English.

Stress may influence the child's phonemic structure (Velten, 1943). It is commonly reported that children select stressed syllables in making substitutions for adult words, and that they employ different substitution rules for stressed and unstressed syllables (Bloch, 1924; Cohen, 1952; Gvozdev, 1961; Velten, 1943). The phonemic structure of stressed syllables may be more consistent than for unstressed, just as in adult English (Weir, 1962). When children begin to develop syntax, they may employ idiosyncratic stress and pitch rules (Miller and Ervin, 1964).

Evidently intonation is imitated very early (Pike, 1949). Children exposed to adult English may employ the intonation contour which their parents typically use in speaking to them, which for some parents is a question intonation. In Chinese, as in many languages, pitch contrasts

distinguish words. Chao (1951) reported that his grandchild learned tone contrasts very early, and, in stressed syllables, her system was almost the same as Standard Mandarin by twenty-eight months.

Reading

We cannot consider here the controversial field of the acquisition of reading habits, but the child's phonemic system is critical both for ease of learning and for remedial policy. Gibson and associates (1962) have suggested that it is important in systems like English to look for "higher-order invariants" rather than one-to-one relations between phonemes and letter groups. Chomsky (1964, 1965) has added that English spelling is in many cases not related simply to the sound of a word, but to its deeper derivational structure. The difference in the spelling of the second syllables of "additive" and "relative" reflects not the identical actual pronunciation of the syllables but their relation to "addition" and "relation." Chomsky suggests that there may be difficulties for young children both because of their unfamiliarity with such relations in English vocabulary, and because of their greater attention to specific sounds, perhaps even to phonetic details, as we noted earlier. It is to be hoped that new linguistic discoveries about orthography will be translated into effective pedagogical methods (Carroll, 1964; Silberman, 1965).

In diagnosing reading problems, teachers may find that slum children have poor phonetic discrimination (Deutsch, 1964) or that their students have different phonemic systems because of dialectal or second-language features. Spanish-speaking children, for example, may confuse English /d/ and /th/ since these are not phonemically distinct in Spanish, the latter occurring in medial, the former in initial position in words. In many parts of the United States, /i/ and /e/ are not distinguished before /n/, so that "pin" and "pen" sound alike, and for many Negroes (Labov, 1965), "death" and "deaf" are not distinguished, and "they good" and "they're good" and "you'll find" and "you find" sound alike. Teachers who make this distinction may be puzzled by their students' spelling errors until they realize that the difference will have to be learned by these students not as a phonemic difference but as an arbitrary spelling contrast between homonyms as in the case of "sea" and "see." It is clear that if a child has fewer phonemic distinctions than those in the adult system, he will be plagued with even more instances of multiple spellings for a given phoneme. Unless the evolution of programmed teaching of spelling makes it unnecessary, the safest assumption is that a teacher should be aware of each child's phonemic system to select the most appropriate remedial aid.

THE LINGUISTIC SYSTEM: GRAMMAR

From the beginning of complex utterances, children produce novel sentences. As they grow older, their sentences become appropriate in terms of the implicit adult system, yet it is a rare adult who could formulate these rules; no complete grammatical description yet exists for any language.

The child development literature includes both studies of grammatical structure or knowledge and studies of behavior. When a child listens, imitates, or speaks, his behavior reflects his fundamental grammatical knowledge and also many other factors such as memory, personality, the person with whom he is speaking, and the setting and topic. Research which is concerned with inferring the set of rules used by the child employs behavioral evidence, but merely for testing inferences. Such research studies may be especially concerned with testing limits or maximum capacity. On the other hand, much research on children's language has been concerned instead with frequency counts of typical behavior. It is important to recognize the different purposes of these two types of research. We might call one rule- or code-oriented research, and the other frequency-oriented research. In the second type of research, frequency rather than internal patterning is of interest, statistical sampling is important, and counts are made of features and of such gross indices as sentence length. These depend both on the child's rules and on other variables. The same data may be employed for both types of analysis.

Structural Analysis

Linguists are concerned with codes or structure in the first sense used above. Traditionally, grammatical descriptions are divided into rules of morphology and of syntax. Morphemes are the basic units of a grammar. They are the smallest recombining, meaningful elements, like "big," "-er," "-est," "Tipperary" and "I" consist of one morpheme each; "Unit-ed State-s of America" consists of six. Morphology is concerned with the organization of morphemes into higher order units like "United States of America." In the other direction, a given morpheme may be realized phonemically in various ways, depending on the morphological or phonological context. The morpheme for "wife" is /waif/ in a singular context and /waiv/ in a plural context; the plural morpheme is phonologically different in "mat-s," "match-es," "ox-en," and so on.

The syntax is the set of rules for creating or understanding sentences and clauses. Usually some higher-order constructs are needed in syntactic

descriptions, such as "noun-phrase," "subject," and "noun clause." Chomsky (1957) has argued that there are two levels of complexity in syntax. One, called phrase structure, involves nests or subdivided units like those in traditional grammars, e.g., predicate, verb phrase, auxiliary. The other, which he calls transformations, involves more complex relations such as order inversions, and morpheme changes, so that compound and complex sentences, passives, and so on may be produced (Chomsky, 1965; Lounsbury, 1963).

All grammars are characterized by classes. Normally these are of two types, content classes (such as nouns, verbs, adjectives) and marker classes (such as prepositions, conjunctions, articles, suffixes). The former carry more information and there are many members in each class. All grammars seem to draw on the same stock of grammatical devices: relative order of classes, markers, and prosody (or stress and intonation). In English, markers and order both are used to identify classes, to specify relations between items, and to signal contrasts of meaning.

Linguists have written grammars in terms of the sentence as the largest unit; but it is clear from recorded speech that there are regularities in longer units, which account for "fragments," such as answers to questions, and completions by one's companion of a sentence started by someone else. Also, the relations of stress and intonation to other grammatical features are still unclear. For this reason, studies based on actual speech (Bernstein, 1962a; Strickland, 1962; Templin, 1957) disagree in defining the sentence (predicates, prosody, structure, meaning). The "structurally incomplete" sentence may be quite grammatical in terms of the larger verbal and situational context.

In grammars with relatively minimal use of markers but heavy reliance on order, such as English and French, it is usual for children to develop syntactical regularities before any morphological rules, such as rules of inflection, appear. For convenience we shall split the description of syntactic development into unmarked and marked phases.

Unmarked Grammars

Little is known about children's first comprehension of syntax. For example, we do not know if alterations of word order would affect comprehension. Frequently it has been shown that children who seem to understand grammatical features are, in fact, responding to the component words, to the prosody, or to the situation (Guillaume, 1927a,b).

A number of independent American studies (Braine, 1963b; Brown and Fraser, 1964; Miller and Ervin, 1964) have found that when the earliest multiword utterances appear, they are often of a "pivot" type.

High-frequency words appear in a restricted position, and a residual class with many members can occupy various complementary positions. Such a grammar is common for children with many two-word sentences. Data reported by others (Bloch, 1924; Guillaume, 1927a; Gvozdev, 1961; Pavlovitch, 1920) can be similarly interpreted. These classes may be quite idiosyncratic and are often very odd from an adult viewpoint. Sequences like "where dolly," "all-gone truck," "dolly up," and "truck up" are characteristic of these grammars.

Sentences which lack pivots sometimes give an impression of syntactic anarchy, but some observers have reported prosodic cues of subclasses such as verb versus noun, or of constructions such as locative versus possessive (Miller and Ervin, 1964). Thus, "Christy room," if the first vowel was stressed, was a possessive; if the second, a locative construction. Generally, order contrasts alone did not signal semantic differences as they do in adult English.

In longer sentences at this time, two phenomena appear. One is the nested construction, showing the beginnings of phrase structure. Thus, both "that rabbit" and "that Christy rabbit" may appear, with a nominal phrase replacing a single word. Another feature at this time is the appearance of "slot" grammars, in which no higher-order structures are obligatory, but a series of optional positions is present. Thus, a child might say, "there's a truck," "there truck," or "truck" with no distinction of meaning, yet the relative position of the words remains consistent (Ervin, 1964). A striking finding in Gvozdev's (1961) excellent work is that position is inflexible for a Russian child, though the adult Russian he hears has variable positions, like Latin (Slobin, 1966).

The systems described at this stage involve very few grammatical classes and constructions. Typically adult common nouns fall together in a class, along with many other words like "broken," "blue," and "up." The number of classes and their patterning into syntactical rules seems to be idiosyncratic, the determinants still being unknown. This phase of grammar has been discussed in detail in a valuable treatment of developmental psycholinguistics by McNeill (1966).

Markers

Comprehension. When markers have semantic correlates, they can be "understood" in terms of semantic choices. Brown (1958b) found that to preschool children the "-ing" suffix meant action, the "a" determiner meant a contoured object, and "some" meant material, though strictly speaking in adult grammar these are class markers and not semantically selected. He did not find how early this behavior appeared.

The Russian language employs many markers. Among the studies of their comprehension is Sokhin's investigation of locative prepositions in children of twenty-three to forty-one months (Ervin and Miller, 1963). He found that discrimination between prepositions developed before the distinction of a direct object from a prepositional object, a difference signaled by a case suffix (as in Latin). The importance of semantic factors in development is emphasized by Bogoyavlenskii (1957), who found that diminutive and augmentative suffixes were readily understood by children, even with unfamiliar words. On the other hand, agentive suffixes like "-nik" and "-shchik" (like English "-er" in "farmer") were much more difficult because, he says, of the more radical change in meaning involved.

Productive use. Markers differ from language to language so much that generalizations are difficult. In addition, observers have differed widely in their criteria of mastery. Berko's study of English morphology (1958) provides a methodological model. One factor influencing age of learning apparently is the importance of morphological features in the adult system. Burling (1959) found that in Garo verb suffixes were productive (generalized) as early as 1;11, and a complete system of verb inflections was present by 2;6. Gvozdev (1961) reported that tenses and all cases without prepositions were learned by 2;0 in Russian, and Pavlovitch (1920) reported productive use of the Serbian possessive suffix by 1;4, and gender agreement by 1;8. On the other hand, Ervin and Miller (Ervin, 1964) found that one of the earliest English markers, the plural, was not semantically consistent until the middle of the third year. In English, morphological features are less important than in Garo, Russian, and Serbian.

The first stage in the evolution of markers is usually random variation of the different forms, though often there are preferences. If one alternate is zero (as in the English noun singular), it is simpler to say. In Russian, the feminine gender suffix "-a" is preferred for the past tense of the verb (Popova, 1958), and Slobin (1966) cites several other Russian studies showing over-extension of suffixes which were "of high frequency, clearly marked acoustically in adult speech, and limited in the number of functions they perform."

Next, the child uses the contrast of the different forms meaningfully in a few familiar contexts. Some months later (Miller and Ervin, 1964) he generalizes it to nonsense forms and to "irregular" forms, showing that he has a productive pattern. Thus, we might find that a child first used the plural-singular contrast consistently with the appropriate referent

for common words like "boy" versus "boys." Later he might generalize to nonsense forms like "kie," which was the name of a new object. When he saw two of them, he would say "kies." At about the same time he will say "foots" for two feet. Generalizations are very persistent, in spite of adult models or adult reinforcement (Gvozdev, 1961; Popova, 1958); children will use "foots" instead of "feet" for many months (Ervin, 1964). Why do these "regular" patterns dominate? The question is more puzzling for verbs, since most early verbs have irregular tense conjugation, in both English and French. Guillaume (1927b) has pointed out that, although the irregular verbs had higher frequency, 76 per cent of the different types of verbs used by children were in the regular conjugation in French. It thus appears that diversity of the formal contexts in which the contrast appears aids in its acquisition. Also, it may be that hearing of these forms is more important than actually employing them, in making them generalized or productive. The "-ed" suffix is used in a generalized fashion very early, even when the verbs regularly endowed with this suffix in adult speech are very infrequent in children's speech (Ervin, 1964). This generalization is shown by the appearance of forms like "doed" and "comed," in the appropriate past-tense contexts. Note that though children use "did" and "came" very early, these forms do not at first indicate past tense. Thus, tense contrasts do not necessarily begin with the irregular forms, and considering mere occurrence of these forms as indication of a tense contrast is misleading (Kahane, Kahane, and Saporta, 1958).

Alternate forms. The different forms of a morpheme are not mastered simultaneously. Usually one appears first; and when another is used, there is random variation briefly before the appropriate selection factors are learned. For example, the single consonant plural /-z/ and past tense /-d/ are learned before the longer syllable version (Berko, 1958), so one might find mat-mats and match-match at the same age, or show-showed and load-load. When the syllable form appears, sometimes it randomly varies with the consonant form, producing words like "handses" or "handes" and "footses" before the correlation with the preceding phoneme is learned.

Semantic factors. As we noted earlier, meaning seems quite important in determining which markers are acquired first. Gvozdev (1961) found that the past tense was learned earlier than the conditional though formally they are equally easy; he points out that gender, which is minimally semantic, is learned very late. He says that vocabulary reflects semantic learning; "many" was learned when the plural was, and "now" and

"soon" when the future-present tense contrast appeared. In a thorough study of gender, Popova (1958) noted relatively arbitrary preferences first feminine, then masculine, then free variation. It was years before the arbitrary gender displaced semantic selection factors; she found the children amenable to instruction during the variation phase, but not before.

Frequency. We have indicated that the number of types in the adult language having a given contrast seems to influence children's acquisition of inflection. Also, preferences for compounding (birdhouse), and modification (little bird) over suffixing (birdlet) in American children (Berko, 1958; Livant, 1962) probably reflect adult frequencies. Suffixes do still appear in adult inventions (beeforama, superette) but are probably far from common in conversational use.

Marked Syntax

It is easy to see that the development of a regular marker system will increase sentence length. In addition, as slot grammars give way to phrase structure with certain obligatory constituents (such as verb phrases), the average sentence length increases. Evidently even with the same basic grammar, older children can include more of the forms which are optional or elaborated, such as adjectives. On the other hand, some transformations have the effect of shortening sentences (Cazden, 1963) so that sentence length measures may actually conceal some developmental changes.

With the appearance of markers, subclasses rapidly develop. For example, a suffix "-it" sometimes appears as a transitive verb marker as in "Mommy get-it my ladder" (Brown and Bellugi, 1964). The article, which was used freely with both common and proper names, now marks a separation into two classes. Many of these specific subsystems have been studied, e.g., Carroll (1939), but no developmental description of phrase structures has yet been published which shows each phase as a system.

In a series of studies Menyuk (1963a, b, 1964a, c) has used speech samples to study the evolution of transformations. Unfortunately, there is no agreement as yet for criteria to judge the productive use of transformations. The first negative rules used by children are not necessarily transformation based, but involve simple addition of negative words like "no," "not," or "don't." The same is true in French (Guillaume, 1927b). Later, the more complex rule by which the tense or person marker moves to the auxiliary is added. At first, the negative might be "he not eat," next "he don't eat," then "he doesn't eats," finally "he doesn't eat," with some alternation in between (Ervin, 1964; McNeill, 1966; Bellugi, in

press). Interrogatives do not result from transformational rules at first (Miller, 1964), and they show a complex development which is not the same for each type of interrogative but yields surprising parallels between different children. Bellugi (1965) suggests that one important factor at each stage is an apparent limitation in the number of transformations young children can perform on a given string, a quantitative performance restriction similar to adult limits in the number of self-imbedded constructions possible, e.g., "the man who the boy who we knew pointed out is here." Adjectives at first do not appear to be based on transformations. As in the use of markers, mere appearance of an adult-like form is not sufficient evidence for the underlying rule.

Menyuk's research is based on an assumption that children may "know" adult rules but make output errors in speech. She has obtained valuable evidence of the order of development by which deviations disappear in children of age two through seven. Significant decreases between nursery school and first grade were found in the idiosyncratic rules which had produced omissions of articles and prepositions, lack of pronoun subclasses or question inversion, and regularization of verb inflections. Even in first grade, she found certain patterns still not perfectly mastered: "if" and "so" clauses, perfects, nominalizations, and several others. She noted that older children's errors were less often omissions and more often substitutions and redundancies, according to her classifications. Of course, these errors made the sentences longer.

An interesting consequence of this work is that Menyuk could show (1964b) that the speech of children said by therapists to have "infantile speech" is not, in fact, like that used by younger children.

Recent usage-frequency studies include Harwood's (1959) catalogue of sequential probabilities in the phrase structure of six-year-olds and Strickland's (1962) study of phrase structure frequencies in subgroups of second- and sixth-graders. Although intended to provide some guidance to text writers, the latter study is so atheoretical that no indications about fundamental grammatical changes with age are given to provide such guidance (Cazden, 1966).

Developmental Dynamics

What makes children's language change so fast? *Organic* factors may play an important role, since there appears to be a critical period for language development (Lenneberg, in press), and since no other species can be taught language in the sense of the definition given earlier. Organic factors in another sense have been used to account for grammatical de-

velopment by McNeill (1966) and by several authors he cites. They have suggested that some knowledge, or predisposition to develop certain types of structures, is biologically given—in particular, basic grammatical relations and the hierarchical feature of linguistic structures. Otherwise it is hard to account for the worldwide efficiency of children in discovering features which are abstract and unmarked in overt speech.

Biological explanations are extremely difficult to prove. Presumably the necessary evidence rests on the proof of the universality, both in adult languages and in the grammars children develop at various stages, of the relations posited as part of innate capacity. In addition, far more stringent experimental control over learning circumstances will probably be necessary before pure "empiricist" explanations can be eliminated or supported.

Imitation is the traditional explanation, but recent research suggests that its role may be quite different in various phases of development. The term is often used indifferently for delayed, spontaneous, or instructed imitation, or for imitations of adult expansions of a child's utterances (Brown and Bellugi, 1964). During the unmarked phase, there is evidence that immediate spontaneous imitations are common but that they are grammatically similar to, or more primitive than, the child's ordinary speech (Ervin, 1964). They reflect a brief memory span, usually selecting the last few content words in the adult sentence. In the next phase, under instruction a child may imitate forms he neither understands nor uses (Fraser, Bellugi, and Brown, 1963). Errors in imitation at this point are unrelated to sentence length (within limits) but do reflect features of the child's grammatical knowledge. Finally, he is able to imitate not only sentences he himself can understand and generate, but also those containing errors (Menyuk, 1963a). Imitations seem to be affected by the comprehension grammar, the child's storage capacities, and his generative programming rules and complexity limitations. In the end, he can reconstruct a long sentence because he has recoded it efficiently; and he can recognize and store errors as well, clearly a more complicated ability. Children with "infantile speech" must lack this recoding ability (Menyuk, 1964b) since they evidently store by rote and are strongly affected by sentence length. Though it is quite possible, as yet there is no proof that imitation promotes ordinary language development, in the realm of grammar. As Slobin (1966) has pointed out, Russian children create pivot grammars with order regularities though adult Russian has highly variable word order, so imitation hardly seems to account for the children's behavior.

Brown and Bellugi (1964) and McNeill (1966) have argued that the special form of imitation which is based on adult expansions of a child's sentences has special properties. They claim that such imitations may aid the child's discovery of the adult system, and thereby promote grammatical progress. In addition, McNeill points out that if there are differences in the frequency of adult expansion of children's sentences according to social class, they might account for differences in children's rates of grammatical development.

Braine (1963a) has suggested that phrase structure may be acquired by "contextual generalization," pointing to experimental analogues. He emphasizes *positional features*, a point supported by Porter, who found that children attend more to position and less to markers than adults, even during the school years (Ervin and Miller, 1963). Braine argues that the learning of higher-order structures is a kind of perceptual learning, involving gradual differentiation. Karpova's finding that children first subdivide into subject and predicate with later finer differentiation supports such a view (Ervin and Miller, 1963). The emphasis on position has been attacked (Bever, Fodor, and Weksel, 1965). *Semantic features* may be important in the evolution of grammatical classes (Brown, 1958b). It is undoubtedly true, whatever the basis, that children make *inductive generalizations* which go beyond what they hear, accounting for their persistent idiosyncratic grammatical patterns (Brown and Bellugi, 1964; Ervin, 1964). No theory based purely on traditional learning mechanisms of imitation, input storage, and practice can account for these features of children's language. The basis for the child's most important and complex achievement still remains unknown.

LANGUAGE AND THOUGHT

The influence of language acquisition on cognition has aroused interest because it implies man differs from animals for reasons based on language, speakers in one language community differ from another, and children retarded or defective in language may have other mental handicaps.

On the other hand, the issue is hotly disputed, in part because of the difficulties in getting clear-cut evidence from experiments. Comparisons of people in two language communities, children of two ages, or subjects of two species do not control many other differences. Comparisons of children who verbalize after a cognitive task with those who do not may confuse the direction of the effect: it may be that those who perform bet-

ter are therefore able to verbalize afterwards; this does not prove verbalization helped them perform. Comparison of the deaf and hearing involves social differences, hidden organic differences, and rapport problems. Older deaf children are by no means nonverbal if they have gone to school.

The debate does not concern concepts such as "economic system" which may have to be verbal, but more basic cognitive processes such as discrimination, categorization, and memory (Sigel, 1964). More details are given in Furth (1964b), Ervin and Miller (1963), and Rosenstein (1961).

Perceptual Discrimination

The only study which has demonstrated that language learning changes the perceptual distinctiveness of stimuli is a study of speech sounds (Lisker *et al.*, 1962); the presence of different categories for colors in different languages does not alter color discrimination (Lenneberg, 1961). Evidently the many encounters with the physical world when language is not used make the effects of language training on perception of sensory continua relatively minor.

Dimensional Salience

Grouping or matching of objects involves selection of which features to consider most significant, in a varied array. Verbal and nonverbal experience both influence choices. Casagrande (Carroll and Casagrande, 1958) found that Navaho speaking and non-Navaho speaking children—all Navahos in the same community—differed in that the first group matched objects by shape at an age when the second preferred color-matching. He had chosen the shapes to fit categories regularly used in the dozen Navaho verb stems for verbs of handling, which vary according to the shape of the object handled. For example, a different verb suffix is used for "give me the pencil," "give me the ball," and "give me the paper," because of the different shape of the object referred to—long and rigid, round, or flat and flexible. On the other hand, he found that city children in Massachusetts also matched by shape early, and thought this might be due to shape toys, a nonverbal influence.

In a complicated twin-comparison study by Luria and Yudovich (1959) it was found that the twin given training in labeling and narration sorted objects by function or a superordinate name (such as fowl), whereas the untrained twin used perceptual categories like color. Vincent (Ervin and Miller, 1963) noted a two-year retardation in deaf children

in a similar task; Oléron (1957) says the deaf rely heavily on perceptual dimensions.

Verbal Mediation

Sorting studies and many others may involve verbal mediation, internal verbal responses which help to direct motor behavior. Delays or complexity of problems might help to increase reliance on such memory aids. Recall and recognition studies provide the clearest evidence, when long delays are used, and the increase or decrease in accuracy should be predictable from the labeling system (Ranken, 1963). An elegant, easily replicated, experiment of this type was devised by Brown and Lenneberg (1954). They found what the distribution of names was for a series of hues. A given hue might be called "green" or "yellow-green" by 30 per cent, "yellow" or "greenish yellow" by 40 per cent, "chartreuse" by 20 per cent, and miscellaneous other names. This is an ambiguous hue. When asked to select later from an array which hue they saw, subjects who called it "yellow" will tend to err toward yellows, and those who called it "green" will tend to err in selecting a greener hue. Presumably finer labeling categories produce more accurate recognition.

There have been many studies of learning in which chaining of responses through a verbal mediator has been manipulated (Bialer, 1961; Ruzskaya, 1958; Spiker, 1963; Spiker and Norcross, 1962). The more distinctive the labels learned for the stimuli, the more readily are the labels learned, and the more quickly are later motor responses to the stimuli acquired. Jeffrey (1953) suggested the important possibility that nonverbal mediators could also exist. He found that verbal mediators were more efficient than gestural mediators, but that the latter also helped. Unfortunately, his gestures used the same muscles as the final response, so one would expect verbal mediators to be less interfering. Verbal mediators do have a special amenability to social control (Lovaas, 1961, 1964), making language a very powerful socializing instrument.

There is considerable debate about the cognitive operations which can benefit from verbal mediation. Oléron (1957) found that temporal alternation experiments (left twice, right twice, and so on) benefited, since deaf children who could not count were inferior to hearing children of the same age, but on spatial alternation no differences appeared. Both Oléron and Herren (1961) and Furth (1964a) found retardation in the deaf in weight-conservation problems. In conservation problems, weight or volume is conserved when two dimensions are changed in a compensatory fashion. Younger children tend to be misled by attention to

only one dimension at a time. On the other hand, Inhelder and Sinclair (Inhelder, in press) found that training children to use the verbal descriptions characteristic of children with mastery of conservation operations (comparative adjectives, antonyms, and multidimensional descriptions) affected verbal skills but did not alter the performance on conservation tasks. (For discussion of conservation, see the chapter by Sigel in the first volume of this *Review*.)

It has been argued that complex planning and the retention of schemas during the long-protracted play may be facilitated by language (Luria and Yudovich, 1959) but there is too little systematic research yet to support this idea, and small deaf children have fairly complicated play.

Age Changes

Age changes in mediation effects are valuable to recognize for the teacher who wants to use verbal mediation in teaching. Russian research on this problem has shown that at age three or four reactions generalized readily between words and referents, with relatively little discrimination. Both training and age increased the differentiation between word and referent, and between different stimuli (Ervin and Miller, 1963). Also, verbally mediated generalizations increased with age, but could not be given by training at age five or six. Naroditskaya, in addition, found marked age differences in generalization between a superordinate name and groups of pictures, from almost none at age five to almost total generalization at twelve (Ervin and Miller, 1963). She established a conditioned response to pictures of animals and tested generalization to the word "animal," for example, and on other occasions did the reverse—training on the word and testing on the picture. Generalization was higher from picture to word, suggesting mediation by the superordinate term. Unfortunately, many Soviet experiments use no statistical tests of significance, or counterbalancing of materials, so they should be repeated with better designs.

It has been found (Jensen, 1963; Jensen and Rohwer, 1965; Kezheradze, 1960) that the spontaneous use of mediation increases with age, in memory tasks. This skill can be taught, however. Paired associate learning improves from kindergarten through twelfth grade, but instructions and training in verbal mediation between the pairs can markedly benefit children between age seven and eleven. It is important to recognize that the ability to use verbal mediation, and skill or fluency in doing so are not identical; Jensen (1963) has some evidence that social class differences influence the latter and make lower-class children more re-

sponsive to training than middle-class children with the same performance.

In sum, both verbal skills and other cognitive schema change with age. Verbalization can sometimes interfere by distraction or false emphasis. Language seems to be of greatest value in aiding the coding and storage of information but has less effect on sensory perception, new concept attainment, and basic cognitive operations.

FUNCTIONS OF LANGUAGE

The greater theoretical agreement and methodological precision in the study of linguistic form has led to a natural emphasis on this aspect of children's language, in contrast to studies of function where one must devise testing methods and even social theories. Definitions of function vary widely from sociological to psychological or stylistic categories (Ervin-Tripp, 1964; Fishman, 1964; Hymes, 1961).

Early Speech Functions

The data on speech functions unfortunately derive from many studies lacking in rigorous criteria, or control of past and current reinforcements. Most of the diary studies concern children highly rewarded for almost all types of verbal behavior, so we have little evidence regarding relatively autogenous functions.

Monologues. In both adults and children there exist varieties of speech in which a listener, if present at all, need make no response or a minimal response. His presence may be necessary but the effect may be merely to make the overt occurrence of speech possible; he is in no active way the mediator of the speaker's satisfactions. (a) Expressive behavior such as cooing and crying has been observed, of course, from birth. Later, crying behavior may become a form of demand. Talking in sleep has been observed by fifteen months (Pavlovitch, 1920). (b) Vocal play occurs during the babbling period and might be considered a progenitor of poetic uses of language. Weir (1962) noted at age two and one-half and Cohen (1952) found continuation into later ages of nonsense babbling, rhyming and alliterative sequences, and pattern practice. (c) Action accompaniments have been noted before six months (Malrieu, 1962), and evidently reach a peak in frequency in the preschool years, at age four and five (Tsimmerman, 1959).

Comments and research about "egocentric speech" (Piaget, 1926) preoccupied research on functions for many years. Most of the focus

was on definitions or age specifications, with little attention to basic issues or variable manipulation, except by Vygotsky (Vigotsky, 1939; Vygotsky, 1962) and his followers and colleagues. He found that action language decreased when there was background noise, social isolation, or lack of full availability of listeners because they were foreign or deaf, and that it increased when obstacles were encountered. He viewed egocentric speech as a precursor to verbal thought.

The Soviet studies of the directive functions of language are direct offshoots of this approach. Luria (1961) has argued that speech as a guide to activity is learned from adults, accompanies action, becomes a plan for future action, and finally becomes verbal thought or inner speech. Bühler (1935) had noted a similar sequence with creative activity such as modeling objects, with naming preceding activity by age three but influencing activity only by five. Traugott (1959) found children of seven could describe a learning task before learning was completed, children of three and four only after it was well established. To give an example, if asked to push a lever for the blue light but not for the red, older children can describe what is required even before the motor responses become well established. Gan'kova's (1960) comparison of solutions of manipulation, visualization, and verbally-described problems suggests a similar sequence, with the children of four and five planning somewhat. The six- and seven-year-olds, even in the manipulation procedure, used verbal planning before action.

Luria has described various experiments (Ervin and Miller, 1963; Luria, 1961) as indicating that language is first simply an aid to impulse, tending to trigger whatever response is prepotent at the moment. Once a child begins an activity, instructions to stop may merely increase his activity. A child trained to press a bulb whenever a light went on would press it continuously rather than timing his actions with the light. Or if children age three and one-half were taught to say "now" or "press" for a red light and "don't" for a blue light—to aid corresponding actions—they would press even more for the blue as though the actual words were meaningless. Later, after age four, the semantic features of the responses are taken into account, so two different responses can speed learning of a discrimination. This point is supported by the evidence mentioned earlier that attention to semantic rather than phonetic aspects of words increases with age.

The research studies described by Luria suggest that verbal control of behavior undergoes two changes: it comes to be semantically distinctive rather than merely a trigger, and it progresses from the directions given by another, to overt utterances by the subject, to covert responses or inner speech. In an ingenious study of imitation, Gleitman (1965) found

that "Saying 'no' and repeating seem to be mutually exclusive . . . repeating is a strong predictor of a relevant act and saying 'no' either predicts the absence of a relevant act or increases latency to performance of a relevant act" (p. 9). These studies provide a link between the functions of overt speech and the covert effects of language on cognition and other behavior.

Requests for services, objects, and information. Request behavior is often difficult to define at first, unless the listener withholds reinforcement. Malrieu (1962) claimed a narrower range of sounds occurred in request situations (evidently judged by the child's observable needs) even before six months of age. Lewis (1937, 1938) related the development of demands to the evolution of reference to absent objects. Indeed, it is difficult to distinguish naming from demand behavior, at times, and from interactive play. Lewis also observed that there is a slow evolution of informational requests. He did not find genuine seeking of new information until after the middle of the third year. Before that time, play (rhetorical questions) gave an illusion of information seeking.

Routines. Gestural games appear very early, such as "peek-a-boo," "bye-bye," "patty-cake," and so on, which have their analogues in other languages. Routines persist in greetings, thanks, and so on, where formal alternatives are highly restricted and situational factors are important.

Social demands. Social reinforcement of speech occurs from the start. Malrieu (1962) noted in the first six months instances of vocalizing to attract adult attention, or persistent vocal interchanges. Lewis (1937) claimed, though, that if one attends to the content, interchanges reciprocate actions with speech until age one year and one-half when true topical dialogues of reciprocal speech alone appear. Lewis gives many examples of the playful use of dialogues, which he claims are important in language development. These include rhetorical questions (sometimes to absurdity) and name-confirmation. Naming by the child is high in the second year (McCarthy, 1954) and decreases markedly. Functionally, it may be either a social demand or monologue.

Information-offering. Depending on one's definition, one might consider information-offering a relatively mature function since it presumes awareness of the listener's knowledge. Piaget (1926) and Flavell (in press) have studied age changes in narration and information-transmission. When learned material is recalled, it does not, of course, necessarily take the order of the original. The most recent, or in a narration the most striking, material might be recalled first. In retransmitting material to a second person, the first listener must reorganize what he recalls—either reconstructing order in a narration, or inserting logical links in instructions or explanations. In six- to seven-year-old children skill in such re-

organization of recalled material appears to be lacking. Flavell found that older children had more consideration for the listener, when he compared descriptions of a game to a blindfolded and a seeing listener.

Setting and Situation

As children mature, the variety of settings in which language is employed increases, along with linguistic form and function. School language is the most significant innovation. Hahn (McCarthy, 1954) noted that first-graders had longer sentences, more classes per sentence, and more mature speech in "show and tell" situations in school than they did even in conversations with adults. Speech with family and friends is likely to be repetitive, descriptive, predicative, and to involve brief, situationally imbedded utterances. In school, there is emphasis on information, enrichment of vocabulary to describe and explain absent objects, and differentiation of grammatical structures for logical distinctions. To some extent, these differences can be simulated experimentally (Lawton, in press). In the more abstract tasks, differences in family training show up the most (Bernstein, 1962b, 1964; Lawton, in press).

Written language is radically different in function from spoken language. Vygotsky (1962) has given some insightful suggestions, pointing out that though writing occurs in private and without an immediate listener, one cannot use the abbreviated forms appropriate for inner thought and speech to intimates but must be much more specific and explicit, for lack of situational support. Transcripts of oral discourse reveal how very different oral and written communication are, but until better studies of the structural differences are made, there is no hope for pedagogical applications.

Participants

Interlocutors make a difference in both form and function, the most extreme, of course, being language shift, which the multilingual child may learn by the third year. A common form of shift to which children are exposed is baby-talk, a linguistic style employed in many societies (Ferguson, 1964) to animals, infants, and lovers. The characteristics common to these styles are special phonological patterns, syllable repetition, reduction in consonant clusters, and special vocabulary, with probably a simplified selection of the syntax. Also, adults often employ a special voice quality in addressing children (Ervin, 1964). There are wide cultural variations in attitudes toward the use of baby-talk, with some indications of a correlation of intolerance with stuttering (Steward, 1960). There is no evidence known to this reviewer that the use of baby-talk, apart from abnormal family circumstances, retards language in any way.

The eventual fate of baby-talk is the entry of certain words into regular adult family speech (Hockett, 1950), and the use of certain features of the style by children for role-playing or for variation in address to different listeners.

There have been numerous studies (McCarthy, 1954) of variations in speech according to audience. Such speech is likely to vary topically and functionally, so concomitant changes in structure and sentence length are to be expected. Hahn found that in conversations children's sentences were longer with adults than with children (McCarthy, 1954), and Hori-kawa, Ohwaki, and Watanabe (1956) found an evolution with age in the use of Japanese patterns of honorifics in narration, when listeners varied in age. Children of eight to nine used more dialect forms and confined honorifics to nouns describing people in the story, whereas older children used other honorific forms and differentiated listeners more. Unfortunately, many studies do not control topic and function as carefully as this.

Many subtle changes in form probably depend on participant and situation but have not been studied. Fischer (1958) describes children's alternation of the suffix "ing" versus "in," which he found varied with topic, as in "chewin" and "punchin," "visiting" and "criticizing" heard from the same child. Boys used the "in" suffix more than girls, and it increased with informality of the situation, suggesting that the "ing" suffix tends to be learned from adults and the "in" suffix from boys.

Labov (1964), in a thorough and ingenious study of speech diversity according to social class and speech situation, identified six levels of mastery of New York speech. The first three levels are attained by all normal adults: control of the basic grammar of the parents by school age, mastery of the informal vernacular of peers by adolescence, and acquisition of the ability to recognize the locally-valued "good speech" by fourteen, even if one cannot speak it. In addition, a year or more of high school may add control of some style variations according to situation, and middle-class speakers will be able to maintain standard English consistently rather than sporadically. A sixth skill level, control of the full range of style flexibility, is attained by specialists.

SOURCES OF VARIATION

Sex

Formal differences in men's and women's languages in English are relatively small; topical and functional variations may be greater. Through studies of verbal behavior (McCarthy, 1954), though not of grammar

(Menyuk, 1963a, b, 1964c), run persistent findings that girls' development is slightly faster than boys'. But recent American studies suggest that in a well-designed sample the differences are very slight (Templin, 1957). The importance of considering social factors, such as home stimulation and types of play, is suggested by the discovery that among Puerto Ricans in New York City there are no sex differences (Anastasi and deJesús, 1953), that in a New York City Negro sample differences favored boys (Anastasi and D'Angelo, 1952), and in a Detroit Negro sample boys are extremely handicapped (Thomas, 1962). At this point the evidence regarding the causal factors is too scant to make it possible to interpret the reasons for these differences.

Multilingualism

Multilingualism is the rule in many communities in the world, often with division of the language according to occupation or class of speakers, or social functions for which they are used. It is common for school languages where literacy programs are new or immigration is frequent, to differ from the home vernacular, and values vary widely regarding maintenance or suppression of linguistic diversity (Fishman, 1966), and hence in pedagogical programs. The early studies (summarized by Arsenian, 1945; Darcy, 1953; Haugen, 1956) emphasized school handicaps of bilinguals, but these studies usually were of monolinguals thrust into a second language, and subjects were measured early without follow-ups or consideration of the social context of the bilingualism (Bossard, 1945; Soffietti, 1955).

An infant born into a bilingual family usually uses forms from both languages indistinguishably until about age three (Burling, 1959; Imedadze, 1960; Leopold, 1953-54; Tabouret-Keller, 1962) unless a strict separation of situation or speakers produces earlier discrimination. There may be some delays in the separation of phonemic systems (Carrow, 1957), so that children have accents in both languages for a while.

If a child uses one language at home and another in school, he is likely to have the separate development of functions and vocabulary and syntax we have described as common to the setting contrast of home and school. This gulf is less likely if the home has "information-exchanging habits" and a scholastic bent or if the school teaches the child to read in his home language, using the standardized literary form of the home language and making him familiar with its written traditions. Eventually, in such situations, the child may have discernible intellectual advantages from his mastery of two languages and his greater conceptual flexibility (Peal and Lambert, 1962; Spoerl, 1944).

Obviously, the school's policy depends on many factors, including the density of particular foreign-language groups which would make a bilingual school policy feasible, such as teaching standard Spanish to both English and Spanish speakers as well as standard English. In languages such as Spanish with much more predictable spelling systems than English, teaching reading would be an easy offshoot. Mixing speakers of the languages is a better way of teaching than isolation (Carroll, 1963). The adaptation of methods for teaching English as a foreign language for the age group involved seems desirable (Lado, 1964; Center for Applied Linguistics). As yet, complete evaluation is premature since such programs are new. The New York experience suggests that both English and Spanish may be enhanced if the school makes overtures to the Spanish-speaking pupils by teaching Spanish.

Multiple Dialects

Caste and class barriers, and class-correlated immigration, lead to the development of dialectal diversity in communities. Thus, Negro-white dialect diversity in northern cities has increased in the past thirty years because of the development of very large enclaves in cities like Detroit and New York City, reducing intergroup contacts (McDavid, 1951), and because of the development of anti-white values among younger Negroes (Labov, 1964).

Dialect diversity may affect all levels of linguistic structure. Labov (1966) has found phonological differences related to class in New York City whites. Thomas (1962) and Templin (1957) found some morphological differences by class, the former sample being of Detroit lower-class Negroes, so that recent migration and social isolation would be far greater than in Templin's Minneapolis white sample. Cazden (1966) has noted that the common "errors" they report in kindergarten children were typical of adult "vulgar English" differences from standard English (Fries, 1940), with the appearance of archaic patterns in both studies, such as double negatives and "ain't."

It is common to find poorer performance in vocabulary tests in lower-class samples (Jahoda, 1964; McCarthy, 1954; Templin, 1957), a difference which Jahoda (1964) found to increase in boys between ages ten and fourteen. It is possible that the tests are class-biased, but functional differences in language use suggest this is only part of the problem.

Children learn their usual dialect from their parents (Noel, 1953) and from their playmates (Hockett, 1950). Where there is a difference, which will dominate probably depends on culture patterns regarding children's identifications. Labov (1966) found that certain southern phonological

features were still present in third-generation New York City Negroes, and narrowed the critical factor to whether they had any Negro playmates.

Dialect differences between teacher and pupil present two problems: communication and dialect training. Peisach (1965) has found that ability to fill in words systematically omitted from tapes of teachers' and peers' speech is related to social class by the fifth grade, suggesting that communication barriers may exist for the lower-class child in a middle-class classroom.

The teacher's aim in American classrooms is usually to make children bidialectal—that is, able to use standard English in the situations where it is appropriate, without necessarily influencing the dialect used with family and friends. Thus, the problem is analogous to multilingual training and similar techniques are appropriate (Lin, 1963). Labov (1964) reported that values about speakers of a dialect may be the major obstacle to such learning, and that when such antipathetic feelings are absent, at least a year of high school is required for dialect-switching skill.

Cultural Factors in Language Functions

In addition to differences in form or structure, there appear to be many cultural and class variations in the functions and values attached to language. For example, cultures vary in their evaluations of talkativeness in general, and in their definition of situations when talk is appropriate (Hymes, 1961), yet fluency is a common variable in tests of verbal maturity.

Home conditions probably account for many of the group differences found in verbal behavior, but with few exceptions investigators have been content to state the differences rather than explore their causes. Cross-cultural studies where some extreme variations make natural experiments possible are virtually nonexistent. Family structure appears to be important. Anastasi and deJesús (1953) found better performance (in Spanish) for Puerto Rican children matched to New York City whites and Negroes, and attributed it to the number of adults present per child. Puerto Ricans have, of course, an extended family and godparent pattern; in addition women in the sample tended to be home more often than in the other groups. Fatherless families are extremely high in some cultures, reducing a child's interaction with adults. Child spacing has long been known to be related to rate of development (McCarthy, 1954), again suggesting the frequency of adult-child interaction as a significant factor. Milner, in a study of Negro households (1951), reported that reading readiness of children was higher with factors related to verbal

activities, such as table conversations, regular mealtimes, use of baby-sitters, and presence of books in the house. A number of her variables, however, are probably class-related, so it is hard to know which are the critical ones.

An important theory of social-class variations has recently been developed by an English sociologist (Bernstein, 1962a, b, 1964). He suggests that there is a contrast between "restricted" and "elaborated" codes. The former arise in closed communication networks where assumptions are familiar and communication is more likely to be solidarity-supporting, such as families (Bossard, 1943), closed friendship groups, and working-class communities in England. Elaborated codes appear when there is a need for specification of meaning, as in discussions of specific topics by strangers. The middle class uses both forms ("code-switching"), being less closed in its communication patterns and needing elaborated codes in its occupational roles (Lawton, 1964, *in press*). Restricted codes tend to be syntactically redundant, elliptical, narrative, concrete, with richer use of expressive vocal features. Elaborated codes tend to use more complex and varied forms of subordination, to be less redundant, and to have richer optional qualifications. The first type emphasizes social relations ("isn't it?"), the second information and opinion exchange ("I think"). The Bernstein group, in unpublished work, has found these class differences among children as young as five, with fewer and shorter dependent clauses, and fewer optional adverbial and nominal qualifiers and fewer negatives in working-class speech. Between ages twelve and fifteen English social-class differences in speech increase considerably in number and amount (Lawton, 1964, *in press*), in general the working class speech being more redundant and fluent (Bernstein, 1962a, b).

Hess and Shipman (1965) have reported a series of studies testing derivations from Bernstein's theory. They have compared behavior of Negro mothers and children of various social classes, and communication between them in experimental situations. Virtually all of the differences in verbal features predicted by Bernstein were confirmed; in addition communication was more successful for the middle-class families. Cognitive styles on tests given separately to the mothers and to the children showed less abstraction and more simple relational responses by lower-class subjects, a difference in the direction of impulsivity, according to earlier research. Since there are many bases on which one could predict class difference, a prudent caution in such studies would be to include some tasks in which one would predict better performance by lower-class subjects.

One can make numerous derivations from Bernstein's theory. For example, restricted language should have less variety, a difference found in a number of studies. It would predict less development of conceptual hierarchies, as John (1963, 1964) has found in slum children; and presumably one might extrapolate to less use of verbal mediation for cognitive control (Jensen, 1963). A mere statement that classes differ does not tell us why they differ. Unless we have a broader theory about the use of language in the homes of the children, we cannot draw implications for training.

Training Research

It has long been noted that many of the common measures of language development are correlated (Templin, 1957), which is to be expected in natural situations where many factors effective in development co-vary. For example, Lezine (1962) reports that verbal developmental measures were more advanced in an institution using more verbal stimulation and more rewards for verbalization than in another institution serving a similar class of children. Unfortunately, neither the critical causal factors nor differential effects are usually sorted out.

Recent research has placed increasing emphasis on the importance of early sensory stimulation to cognitive development, with effects found even in brain chemistry. Hunt (1944) has emphasized the negative consequences of understimulation; Deutsch (1964) has emphasized the effects of disorganized noise, which she thinks might account for lower speech discrimination of slum children, though this is merely a guess. The implication of these views is that the environment of the infant may be significant well before the ages hitherto thought important.

An isolated experiment by Irwin (1960) provided working-class mothers with books to read to infants of thirteen months, for short periods each day. By the seventeenth month, differences in vocalization fluency appeared between the experimental and control groups. Under normal conditions, fluency deficits in working-class homes appear by the eighteenth month. It is not clear whether starting training later would have been equally effective or whether a cumulative effect is necessary. Also, there was no follow-up after the program stopped at thirty months to see when or whether differences disappeared. An interesting feature of this experiment is that it suggests that merely hearing speech of a certain type is important, though it is not known whether there were other changes in parent-child interaction in the experimental families.

Cazden (1965) has tested a more specific hypothesis about exposure to adult speech. She compared two experimental groups and a control group, composed of Negro children aged twenty-eight to thirty-eight

months, given two and one-half hours of treatment per week for three months. The "modeling" group, which heard full grammatical sentences in reply to their own, did best. The expansion group, whose telegraphic utterances were "expanded" to full adult grammatical sentences but with no new vocabulary and only the grammatical structures that would "correct" their sentences, did next best. Both improved over the control group in a series of measures of grammatical development. The results suggest that "richness of verbal stimulation" may be more important than the contingency of the adult's response on the preceding utterance of the child.

Travel has been found to increase vocabulary (McCarthy, 1954) but it is not clear whether hearing new vocabulary, exposure to new concepts and objects, or variation in interlocutors is the critical feature. In general, it is not known whether the evolution of comprehension, imitation, or practice in reinforced speaking has the greatest effect on structural changes in children.

There has recently been considerable emphasis on operant training or reinforcement of behavior on systematic schedules (Rheingold *et al.*, 1959; Salzinger *et al.*, 1962) but so far there is no sign that operant training is important in altering the phonology or grammar. Its effects probably are strongest on fluency, vocabulary selection, topics discussed, and possibly it may be useful in mediation training (Jensen, 1963; Jensen and Rohwer, 1965). On the other hand, operant training (and family values about language) may have indirect effects by altering children's self-exposure to various types of linguistic stimulation.

Development of multidialectal skills, control of "elaborated" speech, and a fast enough rate of verbal development and of verbal mediation to prepare the child for the information-storage necessary for school success are the significant educational problems in our society. School desegregation has thrust before public attention the radical differences in these skills in various sectors of the population, and the failure of schools to fill the educational gaps. The critical period for action is debatable. If considerable early sensory stimulation is indeed necessary, lowering of the age of availability of skilled nursery school care radically, as in the Soviet Union, is implied. Hunt (1964) has suggested that three years might be early enough to begin extensive compensatory nursery school training. The point of these early programs is that divergences between classes increase with age, so that the longer the delay in taking action, the more difficult it becomes. In addition, equalization of reading facility, which appears to be dependent on prior language training, seems essential.

Critical ages for introducing specific skills have yet to be established.

Liamina and Gagua (1964) have discussed the point with respect to articulation training; Popova (1958) found children responded to training of suffixes only when some random variation of forms existed, suggesting that there may be not age but performance criteria for judging readiness. As Carroll has pointed out (1963), where a major new skill is to be learned, the time required for learning and its value at that age must be considered as well as the relative advantages of starting earlier.

GLOSSARY

Elaborated—(Bernstein) Unredundant, structurally complex syntax.

Grammar—A set of rules for creating or understanding sentences in a language, dialect, or idiolect.

Homonyms—Words with the same sound but different meanings, e.g., bare and bear, man (verb) and man (noun), or a child's "bat" (black) and "bat" (pat).

Infantile speech—Therapists' category for a type of speech.

Marker—Member of a morpheme class with a small, limited membership; in English, affixes and articles, conjunctions, prepositions, or other function words.

Morpheme—Smallest meaningful unit in a language, represented by a sequence of one or more phonemes, as in "Chautauqua," "take," "-ing," "-er."

Morphology—The organization of morphemes into the next level of the language, as in English root-suffix combinations; the study of such patterns.

Operant training—Altering the frequency of behavior by manipulation of contingent reward or punishment according to a regular schedule.

Phoneme—Fundamental unit of spoken language, represented or realized by sounds at the phonetic level.

Phonemic system—System accounting for all the significant formal contrasts between the morphemes of a language by a small number of units or distinctive features.

Phonetic—Concerning speech sounds and articulation; differs from phonemic in that the phonemic system is a code or set of constructs whereas the phonetic level represents phonemes in terms of sounds.

Phrase structure—Syntactical rules organized in terms of nested constituents and subdivisions; for example, the highest level of phrase structure in English is noun phrase and verb phrase, the main constituents of sentences.

Place of articulation—Location in the mouth of the point of maximal occlusion used in making a sound, e.g., labial for [p], [b], and [m]; gum ridge for [t], [d], [n], [l].

Productive—Extended to novel instances, as when a plural-forming rule is applied to new nouns.

Prosody—Stress and intonation.

Restricted—(Bernstein) Syntactically redundant, elliptical, stereotyped.

Semantic—Concerning meaning or referents.

Syntax—The most complex level of grammar, including phrase structure and a system of handling the more complicated features of clauses and sentences.

Transformations—Reordering and combining of phrase structure sequences by inversions, additions, deletions, or substitutions to produce, in English, such complex structures as included sentences, nominalizations, and passives.

Type-token ratio—The number of different kinds of items in a sample in proportion to the size of the sample.

Verbal mediation—Inner speech or central neural responses presumed to arise from verbal training.

Volume and weight conservation—Reporting that the amount of liquid or other material has not been changed, when reciprocal alterations of height and width, for example, are made. For example, juice poured from a fat to a thin glass.

Word formation pattern—Rules for combining phonemes into permissible words, e.g., CVCV where C means any consonant in the phonemic system and V means any vowel.

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Mental Retardation: Current Issues and Approaches¹

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MENTAL RETARDATION is a problem of serious social concern. In view of the large number of persons in our society considered mentally retarded, such concern is certainly justified. Using the conventional three per cent of the population criterion, the President's Panel on Mental Retardation (1962) estimated that almost five and one-half million children and adults in the United States are mentally retarded. The criterion for mental retardation established in the *Manual on Terminology and Classification in Mental Retardation* (Heber, 1959) and adopted by the American Association on Mental Deficiency as well as the Biometrics Branch, National Institute of Mental Health, is that all those at least one standard deviation below the population mean I.Q. are considered retarded. If one accepts this criterion (and many do not, e.g., Garfield and Wittson, 1960), there are almost 30 million mental retardates in the United States. If the more conservative estimate is employed, mental retardation is twice as prevalent as blindness, polio, cerebral palsy, and rheumatic heart conditions combined (noted in Doll, 1962).

The typical textbook pictures the distribution of intelligence as normal or Gaussian in nature, with approximately the lower three per cent of the distribution encompassing the mentally retarded. A common class of persons is thus constructed, a class defined by intelligence test performance which results in a score between zero and 70. This schema has

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misled many laymen and students and has subtly influenced the approach of experienced workers in the area. For if one fails to appreciate the arbitrary nature of the 70 I.Q. cutoff point, it is but a short step to the formulation that all those falling below this point compose a homogeneous class of "subnormals," qualitatively different from those persons possessing a higher I.Q. The view that mental retardates represent a homogeneous group is seen in numerous research studies where comparisons are made between retardates and normals, with the two groups defined solely on the basis of an I.Q. classification. The view that mental retardates, as a group, are "different" is emphasized by the tendency to call people deficient with respect to intelligence test performance not mental *deficients*, but mental *defectives*.

The defect orientation to mental retardation originally included the notion of moral defect and stemmed anywhere from the belief that retardates were possessed by a variety of devils to the empirical evidence of their higher incidence of socially unacceptable behaviors, such as crime and illegitimacy. More recently, the notion of defect has referred to defects in either physical or cognitive structures. This defect approach has a certain unquestionably valid component. There is a sizable group of retardates who suffer from a variety of known physical defects. Among factors producing such defects, mental retardation may be due to a dominant gene, e.g., epiloia; a single recessive gene, e.g., gargoylism, phenylketonuria, amaurotic idiocy; infections, e.g., congenital syphilis, encephalitis, rubella in the mother; chromosomal defects, e.g., mongolism; toxic agents, e.g., radiation while in utero, lead poisoning, Rh incompatibility; and, cerebral trauma. [For a complete listing of the many types of mental retardation, the reader is referred to Heber (1959).]

The diverse etiologies noted above have one factor in common: in every instance examination reveals an abnormal physiological process, i.e., there are specific or interrelated defects in physiological functioning. Such persons *are* abnormal in the orthodox sense since they suffer from a known physiological defect. However, in addition to this group, which forms a minority of all retardates, there is the group labeled "familial," or more recently "undifferentiated," which comprises approximately 75 per cent of all retardates. This group presents the greatest mystery and has been the object of the most heated disputes in the area of mental retardation. The diagnosis of familial retardation is made when an examination does not reveal the physiological manifestations noted above and when retardation exists among parents, siblings, or other relatives. As will be seen in a later section, several writers have extended the defect notion to this type of retardate. On the basis of differences in performance be-

tween retardates and normals on some experimental task, rather than on physiological evidence, they have advanced the view that all retardates suffer from some specifiable defect over and above their general intellectual retardation. However, these writers differ as to what they propose as the specific nature of the defect.

Some order can be brought to the area of mental retardation if a distinction is maintained between physiologically defective retardates with known etiologies and familial retardates whose etiologies are unknown. For the most part, work with physically defective retardates involves investigation into the exact nature of the underlying physiological processes with prevention or amelioration of the physical and intellectual symptoms as the goals. Jervis (1959) has suggested that such "pathological" mental deficiency is primarily in the domain of the medical sciences, whereas familial retardation represents a problem to be solved by behavioral scientists including educators and behavioral geneticists. Diagnostic and incidence studies of these two types of retardates have disclosed certain striking differences. The retardate having an extremely low I.Q. (below 40) is almost invariably of the defective type. (This does not mean that one cannot find defective retardates at every level of retardation. In fact, brain-damaged individuals may be found at every point along the I.Q. continuum.) Familial retardates, on the other hand, are almost invariably mildly retarded, usually with I.Q.'s above 50.

The belief that the familial retardate must suffer from some defect analogous to that found in other retardates is not an isolated instance in the field of abnormal psychology. We see an almost exact parallel in the early history of psychiatry. When one mental disorder, i.e., paresis, was found to be a result of a specific disease entity, Kraepelin (1912) and the organically oriented psychiatrists who followed him insisted that every mental disorder must be the result of some disease or biochemical defect. Whatever the ontogenesis, the defect position emphasizes the innate, if not immutable, difference between retardates and normals.

The Problem of Definition

The decision as to whether a person is considered retarded is often based not upon his intellectual characteristics but upon legal and occupational factors as well as his general level of social adjustment. The matter has been put most succinctly by Maher (1963) who stated:

What constitutes mentally retarded behavior depends to a large extent upon the society which happens to be making the judgment. An individual who does not create a problem for others in his social environment and who manages to become self-supporting is usually not defined as mentally re-

tarded no matter what his test IQ may be. Mental retardation is primarily a socially defined phenomenon, and it is in large part meaningless to speak of mental retardation without this criterion in mind (p. 238).

This emphasis on social factors in defining mental retardation may lead to more confusion than clarity as indicated by the discrepancies found among various prevalence and survey studies. The data of the accompanying table would indicate that the prevalence fluctuates not only across age categories but also according to the locality and even the date at which the data were collected. If mental retardation is defined strictly in terms of I.Q. and a certain constancy of I.Q. score is assumed, we would expect no difference in the prevalence of mental retardation at different ages. The standardization data of the Wechsler-Bellevue confirm this expectation.

PERCENTAGE OF PERSONS CLASSIFIED AS MENTALLY RETARDED

Age	Locality		
	England (Report of the Mental Deficiency Committee, 1929)	Baltimore, Maryland (Lemkau, Tietze, and Cooper, 1941)	Syracuse, New York (New York State Technical Report, 1955)
Under 5	0.12	0.07	0.45
5 to 9	1.55	1.18	3.94
10 to 14	2.65	4.36	7.76
15 to 19	1.08	3.02	4.49

The prevalence figures reported in the table are understandable if one realizes that they reflect diagnoses based on some combination of I.Q. and the success of the individual in meeting social demands. For example, the extremely low prevalence under five years of age may reflect the minimal social demands made on young children. The highest prevalence obtained at the ten to fourteen age level occurs when the child is faced with school and more demanding intellectual tasks. It is probably in this age range that the relationship between I.Q. scores and meeting societal expectancies, i.e., successful school performance, is greatest. Stated somewhat differently, it is probably in this age range where employing either the I.Q. or the child's success in meeting social demands would result in his being classified as mentally retarded.

A test-score orientation to mental retardation results in the view that approximately three per cent of the population are mentally retarded. The social competence viewpoint, however, usually results in a much smaller prevalence. Data obtained through surveying representative samples of large populations, or the entire population of certain limited re-

gions in England and Scandinavia, indicate that about one per cent or less of adults are classified as mentally retarded (Dahlberg, 1937; Fremming, 1951; Lewis, 1929; Sjögren, 1948; Strömberg, 1938).

Armed with the information that a person's social adequacy has much to do with whether or not he is considered retarded, we begin to get some inkling of the arbitrariness involved in such a classification. As A. M. Clarke (1958) stated, "To the extent that mental deficiency is a social concept, with fluctuating thresholds of community tolerance, classification is bound to be somewhat arbitrary, and no system is likely to be either comprehensive or permanent" (p. 64).

THE NATURE OF INTELLIGENCE

Whether mental retardation is defined by an intelligence test score or by a person's social competence, which many claim reflects his intelligence, the essential aspect of mental retardation is lower intelligence than that displayed by the modal member of an appropriate reference group. There is little agreement, however, when the question precipitated by this statement is raised; namely, what is the nature of intelligence? We cannot avoid this question by invoking the very unsatisfying cliché that "intelligence is what an intelligence test measures" since it is perfectly apparent that the test constructor must have some definition of intelligence in mind, either explicitly or implicitly, before he can select test items. However, some consensus can probably be found for the view that intelligence is a hypothetical construct which has as its ultimate referent the cognitive processes of the individual. Given this, we are still faced with the unresolved issue of whether intelligence represents some single cognitive process which permeates every intelligence test or nontest behavior, or whether it represents a great variety of relatively discrete cognitive processes which can be sampled and then summated to yield some indication of the degree of intelligence a person possesses.

In either case, the more important questions involve an understanding of exactly how such cognitive processes develop over the life span, and exactly how innate and environmental factors interact to influence such development. Approached in this way, the problem of defining intelligence becomes one with the problem of the nature of cognition and its development.

The Cognitive vs. the Psychometric Approach

The implication in the discussion above is that if we are to understand the nature of intelligence, we must consult those workers intent on in-

vestigating the nature and development of cognitive processes, e.g., thought, memory, concept formation, and reasoning, rather than focus on the work of test constructors and psychometricians. There has been little cross-fertilization between these two groups, which have approached the investigation of intellectual functioning quite differently.

The former group of investigators utilize a variety of techniques and, through extremely detailed analyses, attempt to tease out the intricacies of man's cognitive functioning. These theorists have tried to evolve a theory of human cognition and its development. If intelligence tests had been developed by this group, psychology may have avoided the perplexing state of affairs encountered in trying to define intelligence. Tests devised by such a group would, by necessity, be indicators of the formal features of the cognitive structure at various times in the life cycle. Recently, workers within this framework (Laurendeau and Pinard, 1962; Woodward, 1963) have taken an interest in the problem of assessment. Although the task of providing an acceptable theory of the development of cognition is far from finished, Laurendeau and Pinard have been able to take the first step toward the construction of an intelligence test based on the formal features of cognition isolated by Piaget. [See Flavell (1963) for a review of Piaget's work.]

From an historical point of view, the practical demands of society for a test which would measure intellectual functioning meant that intelligence became the province of the second group, namely, the testers and psychometricians. Furthermore, for a variety of reasons, American thinking was not receptive to the approach taken by the cognitive theorists. The practical and empirical nature of the work of the testers can be seen in the efforts of Binet, whose intent was not to investigate the nature of intelligence but rather to discover those test items which would discriminate between successful and unsuccessful school performance. As Tud-denham (1962) has pointed out, Binet viewed his empirically selected tests as a social screening device, rather than as a theoretical onslaught into the nature of intelligence. The success of Binet's test in predicting school achievement led workers to the belief that such tests were inextricably bound to man's intelligence or cognitive functioning.

For the psychometricians, it then became clear that the nature of intelligence could be understood by examining the nature of the tests that were employed to measure it. By discovering the correlations obtained between subtests within a given battery or across different tests, it was felt that the structure of intellect would be revealed. Despite the statistical rigor involved, no very satisfactory theory of intelligence has come out of the correlational or factor-analytic methods. There is, in fact, little

agreement among workers even with regard to the one constant theoretical issue throughout this body of work, namely, the global versus the specific nature of intelligent behaviors.

It should be emphasized that the weakness of current theories of intelligence has led to a conceptual impasse in the area of mental retardation. If there is no satisfactory theory of intelligence, then the essential aspect of mental retardation must escape us, and we must be content with superficial statistical and social approaches to this complex problem. The many problems encountered in current approaches to intelligence have been discussed in recent papers by Tuddenham (1962) and McNemar (1964). We do not necessarily have to await a completed theory of intelligence, however, to cut through much of the complexity, disputation, and confusion encountered in the area of mental retardation. Some clarification appears possible through the simple process of reorienting or restructuring our approach to intellectual retardation. A rather sizable step forward is taken if our commitment to a simple test approach is abandoned in favor of a concern with cognitive processes.

The Process-Content Distinction

The plea is not that we abandon tests, for every cognitive theorist must eventually employ tests defined in the broadest sense. The plea is that workers in the field turn their attention from the superficial content of tests, i.e., the right or wrong answer, and come to grips with the problem of the cognitive structures and processes that give rise to content. It is this distinction between structure and content that has too long escaped most workers in the area of mental retardation. [See Werner (1937) for further arguments that such a distinction is essential.]

How our conventional tests are viewed by process-oriented cognitive theorists can be seen in the following statement by Laurendeau and Pinard (1962):

Their analytic and artificial character has been emphasized too often to require further reiteration. As Piaget and Inhelder, for instance, pointed out on several occasions, these tests measure only the end product of intellectual activity, but they completely disregard the internal dynamics of mental operation. One would be ill-advised to draw definite conclusions, on the basis of test results, about the quality of the reasoning process or about the fundamental nature of intellectual maturity (p. 48).

In general, however, Piaget's approach, with its developmental and normative emphasis, has had very little appeal to workers in the area of mental retardation since such workers are committed to the study of individual differences. In this context, the text-constructing efforts of Lau-

rendeau and Pinard appear very promising since these followers of Piaget have formulated the stages of cognitive development in terms of the nature of the cognitive operations achieved, thus emphasizing the nature of the cognitive structure and its accompanying processes. In their work we thus see a bridge between a truly cognitive approach to intelligence and the need in the area of mental retardation for an instrument with which to make individual comparisons.

The focus on the *content* of test behaviors has been carried over to many nontest behaviors and often an insufficient distinction is made between intelligence and intelligent behavior. It is the author's view that intelligence must refer to the formal characteristics of the cognitive structure and the processes that accompany it, whereas intelligent behavior should refer to the content of behavior with respect to the appropriateness (often defined in a relatively arbitrary manner) with which an organism carries out an act. [See Maher (1963) for another discussion of this distinction between intelligence and intelligent behavior.] For example, some years ago we all marveled at Skinner's Ping-Pong-playing pigeons. These pigeons certainly emitted much more intelligent behavior than one would expect to be within the capacity of a pigeon. However, would we want to assert that the cognitive structures of these pigeons had changed, or that these structures were analogous to those of the human adult who emits similar Ping-Pong-playing responses? They are still pigeons, and what has been demonstrated is that, given their cognitive structure, one can gradually shape pigeons' behavior in such a manner as to produce what we might call very intelligent behavior for a pigeon.

This shaping phenomenon can also be found among the mentally retarded. In a sheltered workshop the author recently encountered a retardate working with a surprisingly complex piece of machinery. His ability to use this machinery defied current knowledge concerning the capabilities of the retarded. The director of the workshop explained that the retardate had been taught to operate the machine through a shaping process not unlike that employed by Skinner in training his pigeons. It was also learned that the retardate could handle the machine quite adequately provided its position was not changed. To emphasize this, the machine was rotated on its axis approximately 90° at which point the retardate became somewhat agitated and was no longer able to operate the equipment. (Piaget has also commented that remarkable intellectual feats performed by children on some task or other cannot be repeated following relatively minor alterations in the task stimuli.) In terms of the finished product, the retardate was behaving just as intelligently as an

operator with a normal I.Q. However, this accomplishment does not indicate that the retardate has become normal in intelligence. It is obvious that he is using a much more primitive cognitive process to achieve his intelligent behavior than is the normal person. These examples should also make it clear that process analyses demand that the investigator make a more careful analysis of the content than that provided by a superficial "product" or criterion of correctness.

Social Competence and Mental Retardation

An emphasis on the contents of behavior, rather than on the underlying cognitive processes which mediate the behavior, may also be seen in that definition of mental retardation which emphasizes the individual's social competence. What are the intellectual demands of social competence? We do not know, and very little effort is made to discover what they might be. In the area of mental retardation social competence usually means the ability to maintain oneself without too frequent contact with state schools, state hospitals, welfare agencies, and police officers. Though social competence defined in this way reflects certain cognitive abilities, it may also reflect a variety of factors reminiscent of nonintellectual aspects of intelligence test performance. We refer here to factors that are relatively independent of intellectual level, such as social values, attitudes toward other people, emotional needs, and luck. Thus, present intelligence tests may predict social competence better than an ideal intelligence test because of the overlap of nonintellectual variables which influence both intelligence test scores and social competence.

Social competence does not inevitably reflect normal intellectual functioning any more than its absence in the emotionally unstable, the criminal, or the social misfit reflects intellectual subnormality. Social competence is much too heterogeneous a phenomenon and reflects too many nonintellectual factors to be of great value in understanding mental retardation. The basic problem is that the concept of social competence is so value laden and its definition so vague that it has little heuristic utility. Windle (1962) has pointed out that the social competence definition of mental retardation is applicable only to institutionalized populations, whereas quite different definitional criteria must be employed with non-institutionalized retardates. The only clear and acceptable operational definition of social competence would appear to be the ability to function outside an institutional setting.

A. M. Clarke (1958) has emphasized the inadequacy of the social competence approach in pointing out "that social criteria (particularly those which are not operationally defined) are just as arbitrary as the

I.Q., if not more so, and have not even the advantage of being based on norms for an entire population." Even Heber (1962), who has made the strongest case for employing social competence, has admitted that objective measures of adaptive behavior are presently unavailable. He has also stated that the present ambiguity of the social competence construct is such that in practice intelligence test performance must remain "the most important and heavily weighted of the criteria used."

There is a further problem with the social competence construct related to a fallacy which has permeated much of our thinking concerning the retarded. We have somehow come to believe that it is impossible for anyone who is "truly" retarded to meet the complex demands of our society. The bulk of retardates who have mental ages in the nine to twelve range (remembering that an M.A. of sixteen is the *upper* limit for an individual of average I.Q.) have the intellectual wherewithal to meet the minimal demands of our society. This becomes immediately apparent if one raises the question of how much intellectual ability is required to arise in the morning, dress oneself, catch a bus or walk to a single location, perform some undemanding sort of labor, and return home. Indeed, in the 1920's and 1930's it was discovered that there were no fewer than 118 occupations in our society suitable for individuals having mental ages from five to twelve (Beckham, 1930; Burr, 1925). As late as 1956, DeProspero (Whitney, 1956) noted that 54 per cent of jobs require no schooling beyond the elementary level.

Another major aspect of social competence is the ability of the individual to abide by the values of the society, as, for example, to obey laws. While the incidence of crime among the retarded is higher than among the nonretarded, this elevation in incidence is not great, especially if one controls for the social-class factor. Here again it is an error to view obedience to the law as somehow beyond the ability of the retarded. One simply has to apply the concept of the stages of moral development as investigated by Piaget (1948) and Kohlberg (1966) that fairly young children are capable of a morality based on absolutism; i.e., the rules inhere in the very fabric of existence and are not to be broken under any circumstances. Individuals who never achieve a higher stage of moral development are certainly not developmentally adequate, but neither are they likely to break many laws.

In order to make social competence a useful indicator of cognitive functioning, we must thus abandon some simplistic notion of social competence in favor of a variety of continua theoretically based upon the cognitive demands of the social requirements involved. Such indices could then be considered independent indicators of intellectual function-

ing. Empirical efforts of this sort may be seen in the Vineland Social Maturity Scale and the Worcester Scale of Social Attainment. A more theoretical effort may be found in the work of Phillips and Zigler (1961, 1964) in which both intelligence test scores and conventional social competence indices are combined into an index of developmental or maturational level.

MENTAL RETARDATION AND THE NATURE-NURTURE ISSUE

Given the foregoing discussion, it is now possible to turn our attention to the role of cognitive capacity in mental retardation. Maher (1963) believes that the concept of capacity has considerable heuristic value for workers in the area of mental retardation. By intellectual capacity, the author has in mind something akin to Hebb's (1949) intelligence A, i.e., an innate potential for the development of intellectual functions. Those who have argued that the intellectual capacity notion is a relatively useless one, e.g., Chein (1945), Ferguson (1954, 1956), Liverant (1960), Spiker and McCandless (1954), appear to be invariably committed to an environmentalistic or learning orientation.

Maher's position is that the capacity concept has value as related to "the differences between individuals in rate of acquisition of responses under similar learning conditions. Such a concept necessarily implies the existence of structural differences between individuals and is incompatible with a psychology of the empty organism. . ." (p. 250). It is in this last sentence that we see the theoretical value of the capacity concept since it forces us to conceptualize individuals as biological organisms innately differing with respect to the potential manifestation of a multitude of traits. Thus the concept of capacity is intimately related to the biological concept of the genotype.

The environmentalist, while acknowledging the importance of biological capacity, treats human behavior as the outgrowth of an infinite number of experiences. It is of interest to note that one environmentally oriented theorist (McCandless, 1964) has argued that although heredity and environment interact in the production of intelligent behaviors, we need only concern ourselves with environment since "we can do something about environment." This approach implies that the manipulations of environments are expected to have constant results and, furthermore, ignores the obvious possibility that children with particular capacities will need specific environmental events in order to maximize their cognitive development. The one group that has seriously considered the na-

ture of the interaction between genotype and experiences in producing certain behaviors (phenotypes) has been the behavior-geneticists. Employing infrahuman subjects, these investigators have presented evidence that the effects of particular experiences and the behaviors to which they give rise depend upon the biological nature of the organism (Fuller and Thompson, 1960; Gottesman, 1963; Hirsch, 1963).

The attempt to determine the proportion of variance attributable to heredity or to environment is full of difficulties. Jones (1954) has enumerated some of the difficulties:

(1) The proportional contribution of heredity and environment does not refer to the make-up of individual I.Q.s or to the general level of intelligence, but either to average effects upon individual differences or to differences between groups. (2) Existing studies are based on fallible and incomplete measures both of intelligence and of the environment; this fact should be remembered when the data are being manipulated to yield an apparently highly exact result. (3) Even if it is ever logically feasible to seek a single value for the effect of environment, the particular value reported in a given study may not apply in samples involving (a) a different environmental level, (b) a different hereditary selection, (c) a change in variability of either of the above factors, or (d) a change in any special conditions which may affect the interaction of these factors (p. 633).

Despite the shortcomings of the nature-nurture work on intelligence, it is still possible to derive certain conclusions. Studies of parent-child resemblances in intelligence, sibling resemblances, a variety of twin studies, and studies of children in foster homes have made it clear that inherited intellectual endowment is a much more important factor in intelligence than those who are environmentally oriented would have us believe. Since a complete report of these findings is beyond the scope of this chapter, the reader is referred to such reviews as those by Anastasi (1958), Fuller (1954), Jones (1954), McCandless (1964), McClearn (1964), Tyler (1956), and Woodworth (1941).

At the same time one must not forget the importance of environmental factors on manifest intelligence. The role of environment is evident even in extreme cases where a known gene defect is the cause of mental retardation. In the case of genetically determined phenylketonuria, subnormal intelligence occurs only in an environment which provides phenylalanine in the diet of the affected individual. A specific change in the environment, i.e., withholding phenylalanine from the diet, will prevent the occurrence of subnormal intelligence. Some thirty years ago Hogben (1933) stated the matter well when he asserted, "No statement about a genetic difference has any scientific meaning unless it includes

or implies a specification of the environment in which it manifests itself in a particular manner" (p. 14). Erlenmeyer-Kimling and Jarvik (1963), who stressed the importance of genetic factors in intelligence, concluded that "individual differences in behavioral potential reflect genotypic differences; individual differences in behavioral performance result from the nonuniform recording of environmental stimuli by intrinsically non-uniform organisms" (p. 1478).

Environmental Factors and Changes in I.Q.

A matter of considerable import is the magnitude of change that could be effected as a result of changes in the environment. Many investigators have been relatively pessimistic in their conclusions. Woodworth (1941, p. 26f.) has noted that certain investigators have concluded that relatively large differences in environment are required to produce any substantial change in the I.Q. McClearn (1962) has also pointed out that the magnitude of the difference in I.Q.'s attributable to environmental factors, though statistically significant, has been so minute as to be practically negligible. Burks (1928) in a classic study bearing on the nature-nurture controversy, which reports findings later confirmed by Leahy (1935), concluded that:

Home environment in the most favorable circumstances may suffice to bring a child just under the borderline of dullness up over the threshold of normality, and to make a slightly superior child out of a normal one; but it cannot account for the enormous mental differences to be found among human beings (p. 308).

In support of the environmentalistic point of view, however, instances can be found where rather marked improvements in I.Q. have been reported following some type of environmental manipulation. The reader is referred to the review by McCandless (1964) for perhaps the strongest statement in favor of the environmentalistic position. One also thinks here of the Iowa studies (Coffey and Wellman, 1936-37; Skeels *et al.*, 1938; Wellman, 1932-33, 1934-35, 1937-38, 1938a) in which rather sizable changes in I.Q. have been reported. Gavrin and Sacks (1963) also found significant increases in I.Q. in a population of institutionalized children.

Other studies (Smith, 1942; Wheeler, 1942) have indicated that when a geographic area is subjected to social improvement, such as better schools and improved communication, there is a tendency for the I.Q.'s of all the inhabitants to improve. Wheeler's study of Tennessee mountain children is of considerable interest. Testing over 3,000 subjects in

1930, he found that I.Q.'s progressively declined from a mean of 95 at age six to a mean of 74 at age sixteen. Testing a new sample ten years later, he found a mean increase in I.Q. of approximately 10 points at every age level. However, the steady decline with age, from a mean of 103 at age six to a mean of 80 at age sixteen was again discovered, despite the general increase. Jones (1954) has remarked in relation to these findings, "It is a little surprising, however, that the rate of decline in I.Q. is not affected by the changes which have produced a generally higher level" (p. 658).

There has been a certain inconsistency in studies that have attempted to relate I.Q. changes to environmental factors. In some instances, significant correlations have been found between various subjective ratings of "goodness" of the environment and increase in I.Q. (Newman, Freeman, and Holzinger, 1937; Thorpe, 1946). But in other instances no environmental correlates could be found to account for changes in the I.Q. (Bradway, 1945; Jones, 1954). Jones has given some especially striking case histories of children who have manifested marked changes in I.Q. without the apparent involvement of environmental factors.

A continuing problem has been the inability to designate just what constitutes a good environment for optimal intellectual development. Little has been added to the implicit view that the American middle-class home represents some sort of standard. A related matter, of course, is the problem of defining cultural or social deprivation. Clarke and Clarke (1960) have suggested that the major dimensions of childhood deprivations are: social isolation, cruelty and neglect, institutional upbringing, adverse child-rearing practices, and separation experiences across a wide range of severity. Even factors such as these need much further definition and clarification.

The view that, given a fairly standard environment, it is extremely difficult to improve the quality of cognitive functioning, is consistent with the bulk of findings resulting from efforts to improve children's performance on Piaget-type tasks (Smedslund, 1961; Wohlwill and Lowe, 1962). Of course, familial retardates do not come from what we consider standard environments. Even with these children there is considerable evidence that no great intellectual improvement is produced through environmental manipulation, and this holds true for a variety of techniques. The reader is referred to Doll's (1962) excellent history of mental retardation for evidence on this point. Binet, with his concept of "mental orthopedics," and Itard, with his great faith in the possibility of improving the quality of intellect, were responsible for the philosophy underlying the early work with retardates in this country. After several years of employ-

ing a variety of techniques, many of which are today being rediscovered, it became apparent that this optimism was unwarranted. In the early days, training schools in this country were just what the name implies. They became custodial institutions only when it became apparent that many retardates could not be trained to a level that would make them self-sustaining in the society at large. A reaction appears to have set in at this time; the view that we could do nothing for retardates except provide them with a comfortable domicile became dominant. There is much for contemporary workers to learn from this marked swing in attitude toward the retarded. It suggests that undue optimism is dangerous since it breeds undue pessimism. This is not to assert that improving either the cognitive functioning or behavioral adequacy of retardates is a hopeless task. The last decade has witnessed renewed concern and investigation in the area of cognitive development. Theoreticians of the stature of Hunt (1961) and Bruner (1964) have turned their attention to this field and have provided provocative frameworks within which research on improving cognitive functioning is now being conducted. Although these efforts are relatively recent, they cannot help but have major implications for the training of the retarded. At a more applied level we can find some encouraging efforts in the work of such educators as Kephart (1960) and Kirk (1961).

The conclusion that may be reached concerning the relevance of the heredity and environment controversy for mental retardation has been well stated by Penrose (1963) who, after a lifetime of work with the retarded, wrote:

The most important work carried out in the field of training defectives is unspectacular. It is not highly technical but requires unlimited patience, good will and common sense. The reward is to be expected not so much in scholastic improvement of the patient as in his personal adjustment to social life. Occupations are found for patients of all grades so that they can take part as fully and usefully as possible in human affairs. This process, which has been termed socialization, contributes greatly to the happiness not only of the patients themselves but also of those who are responsible for their care (p. 282).

It is perhaps within this area of socialization that we can do a great deal to enhance the everyday effectiveness of the retarded. Both Burks (1939) and Leahy (1935) discovered that personality and character traits were more influenced by environment than was intellectual level. Such findings bolster the argument that there are many modifiable factors which are important in the determination of social adjustment. It is not rare to encounter individuals with the same intellectual make-up demon-

strating quite disparate social adjustment. Perhaps the question is not how to improve the cognitive functioning of familial retardates, but rather how to maximize the adjustment of such individuals whatever their intellectual capacity may be. That considerable change in performance can result from the manipulation of nonintellective, i.e., motivational, factors will be made clear in the final section of this chapter.

A Two-Group Approach to Mental Retardation

Hirsch (1963) has asserted that we will make little headway in understanding individual differences in intelligence and many other traits unless we incorporate into our thinking the fact that to a large degree such differences reflect the inherent biological properties of man. We can all agree that no genotype spells itself out in a vacuum and that the phenotypic expression is finally the result of environment interacting with the genotype. However, as Hirsch has noted, we can no longer make the "gratuitous uniformity assumption that all genetic combinations are equally plastic and respond in like fashion to environmental influences. . . . Without an appreciation of the genotypic structure or populations, the behavioral sciences have no basis for distinguishing individual differences that are attributable to differences in previous history from those that are not, and no basis for understanding any differences whatsoever where there is a common history" (p. 1442).

Work in the area of population genetics appears capable of bringing considerable order to the area of mental retardation. We need simply to accept the generally recognized fact that the gene pool of any population is such that there will always be variations in the behavioral or phenotypic expression of virtually every measurable trait or characteristic of man. From the polygenic model advanced by geneticists, we would deduce that the distribution of intelligence would be characterized by a bi-symmetrical bell-shaped curve, which is characteristic of such a large number of distributions that we have come to refer to it as the normal curve. This theoretical distribution is a fairly good approximation of what is actually encountered in the observed distribution of intelligence. In the polygenic model of intelligence (see Gottesman, 1963; Hirsch, 1963; Penrose, 1963), the genetic foundation of intelligence is not viewed as dependent upon a single gene. Rather, intelligence is viewed as the result of a number of discrete genetic units. (This is not to assert, however, that single gene effects are never to be encountered in mental retardation. As noted earlier, certain relatively rare types of mental retardation are the product of such simple genetic effects.)

A variety of specific polygenic models have been advanced that gener-

ate theoretical distributions of intelligence that are congruent with observed distributions (Burt and Howard, 1956, 1957; Gottesman, 1963; Hurst, 1932; Pickford, 1949). Again caution is in order. An environmentalistic model positing five environmental factors acting additively would also generate an approximation to a normal curve. However, such a model appears much less capable of encompassing the raw data encountered in investigations of intelligence. An aspect of polygenic models of special interest for the area of mental retardation is that they generate I.Q. distributions of approximately 50 to 150. Since an I.Q. of approximately 50 appears to be the lower limit for familial retardates, it has been concluded (Allen, 1958; Burt, 1958; Burt and Howard, 1956; Penrose, 1963) that the etiology of this form of retardation reflects the same factors that determine "normal" intelligence. Approached in this way, the familial retardate can be seen as normal, where normal is defined as representing an integral part of the distribution of intelligence that we would expect from the normal manifestations of the genetic pool in our population. Within such a framework, it is possible to refer to the familial retardate as less intelligent, but he is just as integral a part of the normal distribution as are the three per cent of the population whom we view as superior or that more numerous group of individuals whom we consider to be average (McClearn, 1962).

The two-group approach to mental retardation calls attention to the fact that the second group of retardates, those who have known physiological defects, represents a distribution of intelligence with a mean which is considerably lower than that of the familial retardates. Such children, for the most part, fall outside the range of normal intelligence, i.e., below 50, although there are certain exceptions. Thus, the empirical distribution of intelligence may best be represented by two curves. Considerable clarity could be brought to the area of mental retardation if we were to do away with the practice of conceptualizing the intelligence distribution as a single continuous normal curve. Perhaps a more appropriate representation is to depict the intelligence of the bulk of the population, including the familial retarded, as a normal distribution having a mean of 100 with lower and upper limits of approximately 50 and 150, respectively. Superimposed on this curve would be a second somewhat normal distribution having a mean of approximately 35 and a range from zero to 70. The first curve would represent the polygenic distribution of intelligence; the second would represent all those individuals whose intellectual functioning reflected factors other than the normal polygenic expression, i.e., those retardates for whom there is an identifiable physiological defect.

This two-group approach to the problem of mental retardation has been supported by Lewis (1933), Penrose (1963), and Roberts (1952). The very nature of the empirical distribution of I.Q.'s below the mean, especially in the zero to 50 range (see Penrose, 1963), seems to demand such an approach. This distribution is exactly what we would expect if we combined the two distributions discussed above, as is the general practice. This two-group approach is of particular significance to the issue of mental retardation since it calls for a reappraisal of the entire concept of normality. Hirsch (1963) has pointed out that such a concept, as presently employed, is of little value. If we consider the whole person with his many variable physiological and psychological systems, it would be extremely rare to find an individual we would consider normal. Indeed, if we were to find him, his very normality would be considered abnormal in the sense that he represented a rare event.

Once we adopt the position that the familial mental retardate is not defective or pathological but is essentially a normal individual of low intelligence, then the problem of familial retardation becomes part of the general problem of developmental psychology. In terms of cognitive development, the familial retardate would then be viewed as progressing from one intellectual stage to the next in the same sequence as is encountered in other children. He would, of course, progress from stage to stage at a slower rate than other children, and the final stage that he achieves would be lower than that achieved by the more intelligent members of the population. In terms of cognitive functioning alone, the familial retardate with a chronological age (C.A.) of ten and a mental age (M.A.) of seven would be conceptualized as being cognitively similar, i.e., at the same developmental level intellectually, as a child with a C.A. of seven and an I.Q. of 100. (The reader must remember that the mental age, which is invariably based on the I.Q., can be considered only a very rough indicator of the cognitive or developmental level; however, to date it represents the most adequate measure available.)

It is no great mystery that groups of 70-I.Q. and 100-I.Q. children matched on chronological age differ on a variety of tasks. These children are at different developmental levels, and such differences are exactly what a developmentalist would expect. The mystery is the repeated demonstration that even when groups are matched on mental age, the retardate does less well, or at least behaves differently, than the M.A.-matched "normal" child. Two distinctly different explanations for this phenomenon have been advanced. One view is that these differences reflect a variety of experiential or motivational differences. The second position is that the familial retardate is really not a normal individual de-

veloping at a slower rate but rather is an inherently different type of organism who, at every level of development, is suffering from some defect in his physiological or cognitive structure. These hypothesized defects are then viewed as producing differences in behavior even in those instances where the mental age is equated. In the next section we shall consider the defect orientation, and the motivational position will be discussed further in the final section.

THE DIFFERENCE ORIENTATION

In this section we shall deal with those theoretical and empirical efforts that have advanced the view that all retardates, including those conventionally diagnosed as familial, suffer from some specifiable defect. These efforts are in opposition to the view that the familial retardate suffers from nothing more than a slower and more limited rate of cognitive development. The evidence typically offered by the difference or defect theorist is that even when groups of normals and retardates are matched on M.A., which grossly controls for differences in the stage of intellectual development, the two groups behave differently. This difference in behavior is advanced as proof of the existence of some physiological or cognitive defect which itself is responsible for the slower rate of development. Where the hypothesized defect is an explicitly physiological one, it would appear to be a simple matter to obtain direct validation for the defect's existence. Such evidence would come from biochemical and physiological analyses as well as from pathological studies of familial retardates. A number of such studies have, of course, been carried out. Although there is an occasional report of some physical anomaly, the bulk of the evidence has indicated that the familial retardate does not suffer from any gross physiological defects. Indeed, if such evidence were readily available, the defect theorist would give up his reliance on the more ambiguous data provided by studies examining molar behavior. The failure to find direct evidence for the existence of a physiological defect in the familial retarded has not deterred, and really should not deter, theorists from postulating such defects.

In spite of the negative physiological evidence, such workers as Spitz (1963) maintain that all retardates, including familials, are physically defective and that our failure to discover defects in the familial retarded is due to the relatively primitive nature of our contemporary diagnostic techniques. This view is bolstered by Masland (1959) who has also noted the inadequacies of such techniques. It is perfectly legitimate for these workers to assert that, although presently not observable, the physical

defect that causes familial retardates to behave differently from normals of the same M.A. will someday be seen. These theorists operate very much like the physicists of a not-too-distant era who asserted that the electron existed, even though it was not directly observable. Analogously, defect theorists in the area of mental retardation validate the existence of a defect by first asserting that its existence should manifest itself in particular phenomena, that is, in particular behaviors of the retarded. They then devise experiments in which, if the predicted behavior is observed, the existence of the hypothesized defect is confirmed. This approach is legitimate and has become increasingly popular as well.

The majority of theories to be found in the area of mental retardation are basically defect theories. It should be noted that these theories differ among themselves. One difference involves the theoretician's effort to relate the postulated defect to some specific physiological structure. The theoretical language of some defect positions is explicitly physiological, that of others is nonphysiological, while that of still others has remained vague. Such differences are related to the specific nature of the defect postulated. Particular defects that have been attributed to the retarded include: the relative impermeability of the boundaries between regions in the cognitive structure (Kounin, 1941a, b; Lewin, 1936); primary and secondary rigidity caused by subcortical and cortical malformations, respectively (Goldstein, 1942-43); inadequate neural satiation related to brain modifiability or cortical conductivity (Spitz, 1963); malfunctioning disinhibitory mechanisms (Siegel and Foshee, 1960); improper development of the verbal system resulting in a dissociation between verbal and motor systems (Luria, 1963; O'Connor and Hermelin, 1959); the relative brevity in the persistence of the stimulus trace (Ellis, 1963); and impaired attention-directing mechanisms (Zeaman and House, 1963).

Luria and Verbal Mediation Theory

Some of the more influential of the defect positions will be examined here, turning first to the position of the Russian investigator, A. R. Luria, whose work has now influenced investigators in England and the United States. As in the United States, the Soviets divide the retarded into three groups, although they use the older terms: idiot, imbecile, and debile. The generic term for mental retardation is "oligophrenia." No distinction is made between retardates having known organic impairments and that larger group having unknown etiologies.

In the United States there is considerable consensus that the larger group, which we conventionally classify as familial, is the product of complex genetic determinants and cultural deprivation. In contrast, as

Pevsner (1961) and the subcommittee of the President's Panel which recently visited the U.S.S.R. have noted (see "Mental Retardation in the Soviet Union," 1964), the Soviet view does not consider mental retardation to be determined by genetic or cultural factors. Workers in this area attribute all grades of mental retardation to central nervous system damage, suggesting that it occurs initially during the intrauterine period or during early childhood and then results in a disturbance of the child's subsequent mental development.

It is clear, then, that in the Soviet Union the diagnosis of mental retardation necessarily involves the specification of a defect in some neurophysiological system; in fact, professionals, including researchers and teachers, working with retarded are called "defectologists." Knowledgeable visitors such as Kety (see "Mental Retardation in the Soviet Union," 1964) have pointed out that given such an approach diagnosticians may be predisposed to discover some slight indication of possible organicity. He also noted, in observing the Soviet schools for the debile, that the pupils were primarily retardates who would be diagnosed as familial in the United States. With rare exceptions, these were the children of unskilled workers and in some instances were actually the children of the graduates of such schools.

General intelligence tests are not employed in Russia. Diagnosis is made by neurologists and psychophysiologicalists who rely heavily on gross pathological signs in the case of the severely retarded; and minor physical defects, minute examinations of EEG (electroencephalogram) patterns, and certain qualitative (nonstandardized) tests of perception, conditioning, and concept formation (with special emphasis on the identification of specific types of language disorders) in the case of the more mildly retarded.

Luria is probably the best known Russian defectologist, but his interests extend beyond those merely concerning mental retardation. His interest in defective functioning appears to be an outgrowth of his more basic concern with the development of the higher cognitive processes in man. Therefore, he is most appropriately viewed as a Russian developmentalist in the tradition of Vygotsky, although his work is also heavily laced with a Pavlovian terminology. His studies have been primarily concerned with the highly intricate development of the role of speech and language in regulating the child's behavior. For Luria, higher mental functions are developed in the course of social interaction of a verbal nature. To provide empirical support for his position, he has examined the role of both the adult's and the child's speech in regulating, i.e., initiating and/or inhibiting, certain motor reactions of the child.

In his effort to unravel the complex processes involved in this develop-

ment, Luria has conceptualized a number of stages. During the initial stage, the child's own speech is insufficient to control his motor reactions, although adult verbal instructions can serve to initiate or impel such behavior and later to inhibit it. In the second stage, the child's own speech begins to play a regulatory role in that he can initiate, though not inhibit, an action in response to his own verbal command. In the third stage, the "impellant" action of speech recedes into the background, and a regulatory function which now includes a system of "significant connections" or meanings becomes predominant. The final stage is characterized by a reduction in the role of the externally developed forms of speech, and the regulatory influence is exerted by a higher form of internal speech which constitutes an essential component of thought and volitional action.

It is a tribute to Luria's ingenuity that he has been able to investigate effectively these complex developmental processes employing a relatively simple technique. His basic apparatus consists of a display panel for presentation of stimuli, a rubber bulb which the subject squeezes to signify his responses, and an event recorder on which the data are recorded. A simple experiment would involve a situation in which the subject is instructed to press the bulb each time a light appears. In the more complex discrimination-type experiments, the subject may be presented with two different colors, or two auditory signals of different duration, and instructed to respond to just one of them. Procedural variations which alter the complexity of the task involve such factors as the content of the verbal instructions, e.g., whether the child must initiate, delay, or inhibit the motor response; the degree to which the child's own verbal responses play a role in regulating behavior; and the rate at which the stimuli are presented. Employing such methods, Luria has been able to study the development of stable response patterns, the child's ability to switch response sets, and the general role of speech and language in regulating voluntary behavior.

In addition to his developmental studies with normal children, Luria has observed the behavior of retarded children, although his retarded subjects never number more than two or three per experiment. In making comparisons, Luria has demonstrated that the behavior of retardates resembles that of chronologically younger normal children in that the verbal instructions do not result in the smooth regulation of motor behavior. His findings clearly indicate that on all of his tasks requiring verbal mediation, the retarded subjects have considerable difficulty. In light of these behavioral data, Luria has inferred that the major defect in

the retarded child involves both an underdevelopment or a general "inertness" of the verbal system, and a dissociation of this system from the motor or action system. The general effect of this dissociation, vaguely conceptualized as a disturbance in normal cortical activity, is that a verbal response cannot serve as an adequate regulator of voluntary behavior.

Because Luria does not specify the mental age of his retarded subjects, it is not clear that the cognitive processes of retardates differ from normal children of the same mental age. Furthermore, it appears probable that his retarded subjects are physiologically impaired. Luria's data, then, do not adequately test the theory that we would find most interesting, namely, the proposition that all retardates, including the familial, differ from normals in the degree to which they employ verbal cues in regulating voluntary behavior.

Verbal mediation theory and the work of English and American investigators. One test of the Luria position that retardates are deficient in their use of verbal mediators was performed in two frequently noted experiments conducted by O'Connor and Hermelin (1959). These investigators compared the performance of groups of normals and retardates, matched for M.A., on learning and discrimination reversal tasks involving size discrimination. In Experiment I, O'Connor and Hermelin found no significant difference between normals and retardates in the number of trials required to learn the original size discrimination. However, the finding that retardates required significantly *fewer* trials to learn the reversal was interpreted as supporting Luria's position. O'Connor and Hermelin reasoned that on the original learning task the normal child employs both motor and verbal mediational responses in his learning, while the retarded child relies primarily on the motor response. When the reversal is introduced, the normal child must unlearn both the original motor and the verbal responses. The retardate, having to unlearn only the motor response, would thus be expected to learn the reversal problem more easily.

The interpretation by the investigators that these findings support Luria's position seems questionable. The view that retardates tend not to employ verbal mediators, taken with the vast literature concerning the role of verbal mediators in normal discrimination learning, would generate the prediction that normals would require fewer trials to learn the original discrimination than would retardates. Furthermore, the superior utilization of verbal cues by the normals should also aid in learning the reversal problem. It is a distinct possibility that the facilitating effects of

the new verbal cues utilized by normals during the reversal problem would offset the effects of having to unlearn the old verbal cue. Thus, the most logical prediction derivable from Luria's position is that normals would be superior to retardates on the original learning task and that the two types of subjects would perform comparably on the reversal.

O'Connor and Hermelin obtained clearer support for Luria's position in Experiment II in which retardates were forced to make verbal responses before each response on the original size discrimination learning task. As predicted, the retardates in Experiment II took significantly more trials to learn the reversal problem than did the retardates in Experiment I. However, since no normal control group was employed in Experiment II, it is difficult to determine how much of this change in performance should be attributed to an increased use of verbal cues and how much to other changes in the experimental procedure.

The O'Connor and Hermelin findings have not been replicated by other investigators; Plenderleith (1956) and Stevenson and Zigler (1957) found the performance of normals and retardates quite similar on both an initial discrimination learning and a later switching task. In an effort to assess the discrepancy between the empirical findings of O'Connor and Hermelin and those of Stevenson and Zigler, Balla and Zigler (1964) conducted a study in which they controlled for differences in the two sets of experiments which might have been responsible for the discrepant results.

They found a general comparability among their three groups of subjects—normals, familiars, and organics—on both the original learning and switching problems. Thus the support to Luria's position offered by the O'Connor and Hermelin studies is extremely limited.

Another attempt to test Luria's position is contained in a study by Milgram and Furth (1963). These investigators examined the performance of groups of normals and retardates, matched at four different M.A. levels, on a series of concept attainment tasks varying in the degree to which language might facilitate performance. Two of the tasks, the Sameness and the Symmetry tasks, were assumed to require perceptual, rather than verbal, mediation. In the Sameness task, subjects were serially presented with pairs of cards; on one card of each pair two identical geometric figures were drawn, while on the other card the two geometric figures were different. The card with the two identical figures was the correct choice. This general procedure was also employed for the Symmetry task—on one card of each pair a single symmetrical figure was drawn, whereas on the other card the figure was nonsymmetrical. The tasks assumed to demand more verbal mediation were an Opposition task and an

Opposition Transfer task. On the former task the child was presented with four wooden discs varying in size. On each trial the experimenter pointed to either the largest or smallest disc, and the child's task was to point to the opposite one.

As predicted, the performance of the normals was superior to that of the retardates for the two tasks assumed to demand more verbal mediation—the Opposition task and the Opposition Transfer task. Normals and retardates did not differ on the Sameness task, and there was a significant difference in favor of the retarded on the Symmetry task. The study is by no means conclusive, of course, but it does lend support to Luria's proposition that retardates suffer particularly from an inability to utilize verbal mediation. One other feature of this study which is noteworthy is that these authors were sensitive to the etiology issue; their findings indicate no difference between the performance of familiars, comprising approximately 80 per cent of their sample, and that of organics.

A further test of Luria's view was conducted by Rieber (1964), who employed an interesting technique. He first trained subjects on three verbal associations: the child was taught to respond with the words "blue," "green," or "red," respectively, when shown a picture of a book, a car, or a dog. After learning these, the child was given the second task in which he was to press a blue, red, green, or yellow button, respectively, in response to the words "book," "car," "dog," or "fish." Thus, for both tasks, book-blue represented a correct association, whereas in the second, the motor paired-associates task, the associations were reversed for the remaining two pairs, car-red and dog-green. Pushing the yellow button to the word "fish" was conceptualized as a control condition, since the child had not encountered a fish-yellow combination during the verbal paired-associates training. The verbal association acquired during the first task should help the subject on the book-blue button associate. It should hinder him on the car-red and dog-green motor-paired associates. Luria's position would generate some clear predictions here. Normal subjects should do better than retarded subjects on the book-blue combination, while retardates, less burdened by the attenuating effects of verbal mediation, should do better than normals on the car-red and dog-green combinations. Rieber added another experimental manipulation in that half of the subjects in each group were required to name the picture as well as the word during the pretraining phase of the experiment. None of the major predictions was confirmed although some minor results were seen as supportive of Luria's theory.

Thus, the significance of verbal mediation in retardation cannot be

adequately evaluated by the existing empirical evidence. While the studies of O'Connor and Hermelin, Milgram and Furth, and Luria's own work tend to support Luria's views, the works of others provide no support or even give contrary data. None of these studies is definitive, however, and this remains a fertile topic for future research.

Spitz and Cortical Satiation Theory

Another major defect position is that of Herman Spitz (1963), who has extended the Köhler-Wallach (1944) cortical satiation theory to the area of mental retardation. Spitz has advanced the following four postulates:

1. In retardates, it takes longer to induce temporary, as well as permanent, electrical, chemical, and physical changes in stimulated cortical cells.
2. Once stimuli induce temporary chemical and electrical modification of cortical cells, it takes longer for these cells to return to their previous state.
3. In retardates, once stimuli induce permanent chemical, electrical and/or physical changes in cortical cells, it will be more difficult and take a longer period of time to switch consequent like—or relatively similar—stimuli away from these particular cell traces or current patterns so as to form new, or different, traces or patterns.
4. In retardates, there is less spread of electrochemical activity from stimulated cells into the surrounding cortical field (pp. 29–30).

Again it should be noted that no direct physiological evidence has been presented indicating that the familial retardates suffer from inadequate neural or cortical functioning. Furthermore, there is direct physiological evidence which calls into question the validity of the entire Köhler-Wallach position (Lashley, Chow, and Semmes, 1951).

As in the case of the earlier Gestalt workers, Spitz has primarily employed perceptual tasks to test his position. His extensive program of

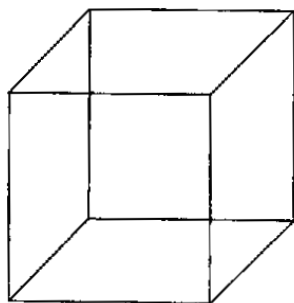


FIGURE 1. The Necker Cube

research has now been summarized (Spitz, 1963), and any complete review would be beyond the scope of this chapter. Spitz's most convincing evidence has been obtained on those perceptual tasks, e.g., figural after-effects, and Necker cube reversals, that are thought to be sensitive to hypothesized cortical satiation effects.

To give one example, the Köhler-Wallach theory explains the Necker cube reversal following fixation as a result of cortical satiation. Ignoring the rather complicated physiological phenomena that have been hypothesized, this theory asserts that fixating on the Necker cube results in the satiation of the cortical field where that stimulus is represented. Those particular brain cells become relatively impermeable with respect to an electrical current, and there is then a displacement of this current activity to an adjacent, but more permeable, cortical field. It is this displacement that causes the individual to perceive a reversal. When the adjacent field is satiated, there is a shift back to the original field which results in the perceiver experiencing another reversal.

In order to test this theory, Spitz compared normals and retardates of the same chronological age and found that the rate of Necker cube reversals reported by retardates increased more slowly over four massed 30-second trials and never reached the same level as the normals. Furthermore, following a rest, the Necker cube reversals reported by retardates decreased at a slower rate than did that of normals. Spitz concluded, "If the buildup in reversal rate is caused by the buildup of cortical satiation, while the drop in number of reversals with a 2-minute rest is caused by recovery of the brain medium from the effects of the satiation process, then it may be inferred that retardates as a group build up and dissipate cortical satiation at slower rates than do equal-CA normals." Spitz and his co-workers have also found that retarded boys do not report perceiving visual figural aftereffects as readily as do equal-CA normals. Furthermore, once the aftereffect was perceived, it persisted in retardates for a relatively longer period of time than it did in normals. Somewhat analogous findings were discovered in a subsequent experiment employing kinesthetic rather than visual figural aftereffects.

The heuristic value of Spitz's position can be seen in his recent efforts to extend his postulates beyond the visual perception area and employ them to generate specific predictions concerning the phenomena of learning, transposition, generalization, and problem-solving. Spitz has noted a number of studies in these various areas which lend credence to his basic position. He has also been quite explicit in noting the limitations of his view. He has pointed out that, contrary to his theory, cortical satiation as measured by his perceptual indices does not "in general correlate with

I.Q., but rather only differentiates the average performance of two distinct groups." The extensive overlap between normals and retardates on his tests of satiation led him to conclude "that the satiation variable must be only a very small one in the total complex of intelligent behavior."

Spitz has also been appropriately concerned with the fact that the test-retest reliability of the scores of his retardates is not impressive. Furthermore, he has noted that the lack of any intercorrelation of individual scores across certain of his satiation tasks is troublesome for his position. Across modalities, and even in the same modality, correlations have been moderate or nonexistent. In addition to these concerns, Spitz has been sensitive to the issue of how accurately the subject's response, often a verbal report, reflects the perceptual response being investigated. [See Garner, Hake, and Eriksen (1956) and Goldiamond (1958) for a general discussion of this complex problem, and Spivack (1963) for a discussion of the same problem with respect to research with the retarded.]

Adding to these difficulties is the fact that several investigators have now discovered that responses to cognitive and perceptual tasks are influenced by a variety of motivational factors (e.g., Cohen, 1956; Coons, 1956; Mayer and Coons, 1960; Zigler and de Labry, 1962; Zigler and Unell, 1962). The relevance of these findings to Spitz's work will be made clear in the next section. In addition, certain aspects of Spitz's work have come in for criticism on the grounds that his findings are inconsistent with those of other investigators. Spivack (1963) has voiced this concern in a review of research on perceptual processes in the retarded, noting that certain of Spitz's findings "are in marked contrast to the findings of others."

Of more importance to the central question of this section, namely, whether familial retardates are inherently different from normals of the same M.A., we must conclude that Spitz's data throw little light on this issue. Reminiscent of the Russian position, Spitz has argued that the distinction between familial and organic retardates is misleading. In Spitz's view, all retardates suffer from brain damage in the broader sense; he has argued (Garrison, 1966) that all retardates be conceptualized as belonging to a common class. Therefore, Spitz's work has been characterized by a relative lack of concern with the problem of etiology, and we have little way of assessing whether the differences he reports are a product of gross organic pathology or actually reflect the cortical phenomena that he postulates.

That one gets differences between normals and retardates matched on C.A. is not very surprising since we are dealing with groups who are at different developmental levels (as defined by M.A.). One would be

tempted to say that Spitz's work has little relevance to the central question posed in this section except for the fact that he has been quite explicit in his view that the differences he obtains are not developmental phenomena, but reflect a physical deficit that should manifest itself even in comparisons with M.A.-matched normals.

The Lewin-Kounin Formulation

Another defect position that we shall discuss is that of Lewin (1936) and Kounin (1941a, b). This position differs from the defect views discussed above in that the defect postulated is one in the cognitive rather than the physical structure of the retardate. The Lewin-Kounin formulation has had considerable impact not only on our conceptualization of the retarded, but also on the treatment and training practices that have been employed over the years. [For a more complete historical review and critique of the Lewin-Kounin formulation, the reader is referred to Zigler (1962).]

In Lewin's (1936) general theory, the individual is treated as a dynamic system with differences among individuals derivable from differences in: (a) structure of the total system; (b) material and state of the system; or (c) its meaningful content. The first two of these factors play the most important role in Lewin's theory of retardation. With respect to cognitive structure, Lewin viewed the retarded child as being less differentiated, i.e., having fewer cognitive regions or cells, than a normal child of the same C.A. Thus, in terms of structure, the retarded child resembles a normal younger child. In relation to the material and state of the system, Lewin stated that even though a retarded child corresponded in degree of differentiation to a normal younger child, these children were not to be regarded as entirely similar. He considered "the major dynamic difference between a feeble-minded and normal child of the same degree of differentiation to consist in a greater stiffness, a smaller capacity for dynamic rearrangement in the psychical systems of the former" (p. 210). (The degree of differentiation was later operationally defined as M.A.)

Although Lewin felt that lack of differentiation could lead to rigid behaviors—e.g., pedantry, fixation, stereotypy, inelasticity, perseveration—this lack of differentiation was not what he meant by stiffness or rigidity. To Lewin, lack of differentiation referred to the number of regions within the total system, while rigidity was defined in terms of the fluidity between regions. (See Figure 2.) By rigidity, Lewin was referring to the nature of the boundary between these areas of the cognitive structure. It follows from Lewin's theory that an individual whose system is character-

ized by either lack of differentiation or rigidity, or both, is more likely to emit behaviors commonly referred to as rigid. The failure to draw a clear distinction between the meaning of rigidity as Lewin, and later Kounin, employed it, and rigid behaviors as such, appears to be a major factor leading to the subsequent controversy in the area (Zigler, 1962). This difference between rigidity as defined by Lewin and Kounin and the concept of rigidity as employed to characterize a particular class of behaviors must be kept firmly in mind. As will be seen in Kounin's experimental work, the hypothesized "rigidity" of the retarded often results in rigid behaviors, but in certain circumstances results in behaviors that would be ordinarily characterized as "flexible."

Lewin presented a considerable amount of observational and anecdotal material, as well as the findings of one experiment, in support of his formulation. Unfortunately, Lewin's experimental findings on a time-spent-drawing task were ambiguous in that he compared normals and retardates of the same C.A. and thus differing M.A.'s. He was therefore unable to attribute the differences he found to the greater rigidity of the retarded since these differences could also be ascribed to his retardates' lower degree of differentiation.

The clearest experimental support for the position that retarded individuals are more rigid than normal individuals having the same degree of differentiation is contained in the work of Kounin (1941a, b, 1948). Kounin, building upon Lewin's work, advanced the view that rigidity is a positive, monotonic function of C.A. Again, it is imperative to note that by "rigidity" Kounin, like Lewin, referred to "that property of a functional boundary which prevents communication between neighboring regions" and not to rigid behaviors as such. Thus, to Lewin and Kounin, rigidity referred to the relative independence of different regions or cells of a person. Kounin illustrated his position by presenting a pictorial model in which the person is represented by an enclosed figure. This figure is then divided into cells or regions, the number of cells representing the degree of differentiation. The thickness of the boundaries between cells represented the degree of rigidity. Within any I.Q. level the attenuating effects on performance of "stiffer" boundaries with increasing C.A. would be offset by the factor of increasing differentiation with C.A. Thus, normal children of C.A. 10, though having "thicker" boundaries than children of C.A. 5, would nevertheless emit fewer rigid behaviors because of their much greater degree of differentiation.

Kounin (1941a) offered the findings of several experiments in support of his theory. In these experiments he employed three groups—older retarded individuals, younger retarded individuals, and normals.

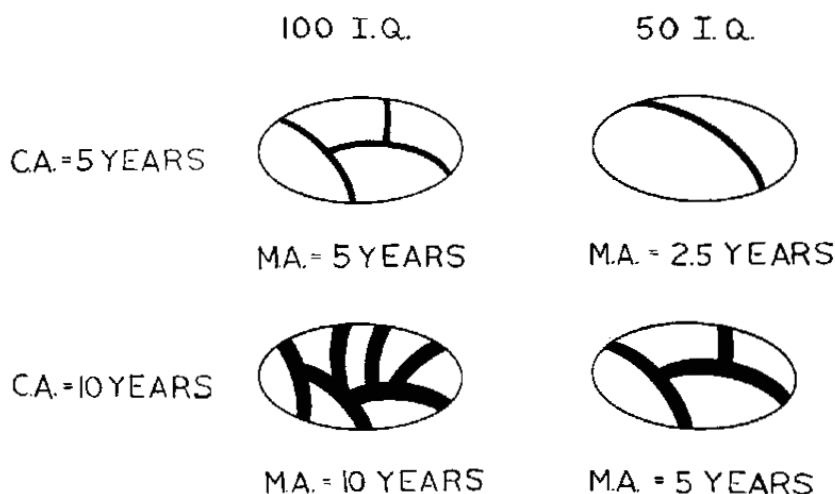


FIGURE 2. Pictorial Representation of the Lewin-Kounin Model

Kounin employed only familial retardates, making it clear that his formulation was only to be applied to this type of retardate. Noting the inadequacies of Lewin's experimental efforts, Kounin instituted certain experimental controls. He defined the degree of differentiation as the M.A. of an individual and controlled for this factor by equating the three groups on M.A. He also attempted to reduce what he later referred to as "motivational factors (such as low success expectation, hesitance to enter unfamiliar regions, etc.) that might produce those varied types of behavior that are sometimes lumped together in the pseudo-descriptive category of behavioral rigidity" (1948, p. 163). To control for these factors, Kounin attempted to make each subject feel confident and secure in the experimental tasks by having him engage in each of the activities prior to the experiment proper.

As Kounin predicted, the three groups differed in certain instruction-initiated tasks, e.g., the experimenter asked the subject to draw cats until satiated and then to draw bugs until satiated; and to lower a lever in order to release marbles and then to raise the lever to release marbles. As predicted from the Lewin-Kounin formulation, the normals (youngest of the three groups) showed the greatest amount of transfer effects from task to task, the younger retarded showed a lesser amount of transfer, and the older retarded showed the least amount of transfer. That is, on the drawing task the retarded individuals drew longer on the second task following satiation of the first task than did normals, and the older retardates longer than the younger. On the lever-pressing task, the greatest number

of errors (i.e., lowering rather than raising the lever on part two) was made by the normals, the least number by the older retarded, with the younger retarded falling between these two groups.

One should note that on this last task the lesser "rigidity," as defined by Lewin and Kounin, of the normals results in a higher incidence of a behavioral response often characterized as rigid, i.e., perseverative responses. Furthermore, this lack of influence of one region upon another in the performance of the retarded would only be predicted in those cases where the retarded individual is "psychologically" placed into a new region by employing an instructional procedure. In those instances where the individual must, on his own, move from one region to another, the Lewin-Kounin formulation would predict that such movement would be more difficult for the retarded than for the normal individual. This prediction was also confirmed by Kounin in a concept-switching experiment in which the child was asked to sort a deck of cards which could be sorted either on the basis of color or form, and then asked to put the cards together some other way. Here the normals evidenced the least difficulty in shifting, the older retarded the most difficulty, and the younger retarded group again fell between the other two groups. Thus, when a movement to a new region is self-initiated, it is the retarded who evidence the higher incidence of perseverative responses.

The Lewin-Kounin theory of rigidity is a conceptually demanding one in that it sometimes predicts a higher and sometimes a lower incidence of "rigid" behaviors in retarded as compared with normal individuals. However, the fact that it generates specific predictions as to when one or the other state of affairs will obtain is a tribute to the theory. Kounin thus offered impressive experimental support for the view that, with M.A. held constant, the older and/or more retarded an individual is, the more will his behaviors be characterized by dynamic rigidity, i.e., greater rigidity in the boundaries between regions.

Although the Lewin-Kounin formulation is one of the older theories in the field of mental retardation, it has remained an influential one and continues to stimulate research in the area. Budoff and Pagell (1965) have recently reported that retardates who were unable to improve their performance on an I.Q. test following coaching exhibited the type of rigidity on a concept-switching task originally reported by Kounin. On the other hand, a recent study (Zigler and Butterfield, 1966) employing certain of Kounin's tasks resulted in findings unlike those reported by Kounin. Adding to the difficulty of assessing the validity of this important formulation is the fact that several explicit tests of the model (Balla and Zigler, 1964; Plenderleith, 1956; Stevenson and Zigler, 1957; Zigler

and Unell, 1962) and tangential studies as well (Capobianco, 1962; Osborn, 1960) have failed to provide support for it. Several of these studies have indicated that certain of the differences reported by Kounin were not a product of the inherent rigidity of retardates but rather reflected a number of motivational differences between normal children and institutionalized retardates of the same M.A. These studies and the hypotheses to which they gave rise will be discussed in the final section.

Ellis' Stimulus Trace Theory²

Speculative givens in Ellis' theory (1963) are that the retardate is basically different from the normal and that this difference is a result of central nervous system pathology from which all retardates suffer. Ellis views this CNS pathology as producing a short-term memory deficit which, in turn, underlies the inadequacy of much of the retardate's behavior. The theoretical model presented by Ellis includes two major constructs, stimulus trace and neural integrity. (The similarity here to Spitz's position is evident.)

The stimulus trace—the mechanism underlying short-term memory functions—is conceptualized as a hypothetical neural event or response which varies with the intensity, duration, and meaning of the stimulus situation confronting the subject. The stimulus trace construct is thus anchored to stimulus characteristics on the one hand and to the subject's responses to these characteristics on the other. The neural integrity construct is conceptualized as the determinant of the nature of stimulus trace activity and is defined by "measures of behavioral adequacy." The specific measure of neural integrity employed by Ellis is the I.Q. Thus, a person of low I.Q. is said to suffer from a lack of neural integrity. This, in turn, delimits or restricts stimulus trace activity, resulting in a variety of inadequate behaviors.

In support of his theory, Ellis has noted findings from a plethora of experiments involving short-term retention phenomena. These include studies on serial learning, delayed reaction tasks, fixed interval operant behavior, EEG investigations, reaction time, and factor analyses of the WISC (Wechsler Intelligence Scale for Children), as well as several studies examining discrimination learning in brain-damaged animals (reviewed in Ellis, 1963). With respect to his own experimental tests, Ellis' reliance on the I.Q. as the measure of neural integrity has produced two types of comparisons: retardates and normals of the same C.A., and retardates and normals of the same M.A. In either comparison, Ellis'

² The discussion in this section owes much to an unpublished review of stimulus trace theory by Earl Butterfield.

model would predict that the retardates would be inferior on tasks involving short-term retention because of their lower I.Q. Although both types of comparisons have been made, the bulk of Ellis' findings have found differences between normals and retardates of the same C.A. However, little evidence has come out of the Ellis work indicating that retardates and normals of the same M.A. differ on tasks involving short-term memory. Furthermore, even those studies employing matched C.A. groups which have attempted to demonstrate the pervasiveness of the short-term memory defect in retardates have been somewhat equivocal.

Some support for Ellis' model has come from factor-analytic studies of the WISC. Baumeister and Bartlett (1962) intercorrelated and factor-analyzed the scores of thirteen- and fourteen-year-old retardates enrolled in public school classes and thirteen- and fourteen-year-old normals. Both groups showed three highly similar factors which were labeled general, verbal, and performance intelligence, but in addition, the analysis performed upon the retardates' subtest intercorrelations yielded a factor which did not appear in the analysis for normals. Baumeister and Bartlett labeled this as a Trace factor and interpreted the fact that it appeared only in the retardate analysis as support for the stimulus trace hypothesis. A more direct test of the hypothesis, however, would require comparing normals and retardates on this Trace factor.³ This has been done by Butterfield (personal communication), who used the Baumeister-Bartlett weights and found that normals had significantly greater trace scores than retardates with the same C.A. (He did not find significant differences between retardates who differed on I.Q. but were matched on M.A.)

In general, the experimental findings which bear upon the stimulus trace hypothesis neither clearly support nor clearly invalidate it.⁴ Be-

³ When a factor emerges from an analysis with one group of subjects but not with another, it reflects a difference in *variability* between the groups on that factor rather than a difference in *level*.

⁴ Studies which test the Ellis theory by comparing retardates and normals of the same M.A. are exemplified by the serial learning studies of Girardeau and Ellis (1964), McManis (1965), and Barnett, Ellis, and Pryer (1960). According to Ellis (1963), retardates are characterized by an inability to maintain a neural trace in response to external stimulation. According to Lepley (1932) and Hull (1935), the serial position learning curve acquires its characteristic bowed shape from interfering traces produced by remote stimulus items of the serial list. If both of these arguments are correct, then normal subjects should make relatively more errors in the middle of serially learned lists than retardates. The findings to date do not support this prediction. (The report by Barnett *et al.* that their findings supported the predicted I.Q. x serial position interaction was subsequently reported by Girardeau and Ellis to have been based upon a statistical error.) This predictive failure may reflect the inadequacy of the Hull and Lepley views concerning the role of interfering traces on serial learning curves rather than the lack of validity of Ellis' trace theory.

cause of the differences in experimental tasks and matching procedures employed by different investigators, it is difficult to compare their findings. Still, the bulk of the evidence seems to indicate that normals do perform better on a variety of tasks which involve short-term memory than do retardates of the same C.A., although normals do not appear to differ from retardates of the same M.A.

The primary value of the same C.A. comparisons would appear to lie in the highlighting of a specific process, i.e., short-term memory, as an important factor in the behavioral inadequacy of retardates. However, it should be noted that the demonstration that retardates are poorer on tasks requiring short-term memory than are normals of the same C.A. is a somewhat circular undertaking. It is circular to the extent that a short-term memory deficit would influence the I.Q. score itself through its effect on certain of the intelligence subtests, e.g., digit-span. Furthermore, it should be pointed out that the discovery of a difference between normals and retardates of the same C.A. is just as amenable to a general developmental interpretation as to the view that all retardates suffer from CNS pathology since the M.A. of such retardates is necessarily lower than the M.A. of the normals.

Several related problems are raised by Ellis' use of I.Q. as his major measure of neural integrity. One problem is that the I.Q. is extremely inadequate as an indicator of general adequacy or maturity. In addition, I.Q. is continuous in nature and thus Ellis' model generates the derivation that neural integrity varies in a continuous fashion with I.Q. Although Ellis has stated that his theory does not preclude such a possibility, his own preference is to view the function of neural integrity as a discontinuous one, implying that the neural integrity of subnormals is inherently different from that of normals.

Although in Ellis' work there is a clear representation of the defect orientation to the problem of mental retardation, there is certainly little support for the position that retardates, regardless of etiology, suffer from some CNS pathology which results in their behaving differently from normals of the same M.A.

The Zeaman and House Attention Theory of Discrimination Learning

The programmatic research efforts of Zeaman and House are directed toward the construction of a general theory of discrimination learning. It is only by implication that one may include these investigators among those theorists who believe that the familial retarded suffer from some inherent defect which reduces their performance below that which would

be predicted on the basis of their M.A. alone. Building upon the attention model of Wyckoff (1952), Zeaman and House have convincingly argued that the correct instrumental response in a discrimination learning task involves a chain of two responses: (a) attending to the relevant stimulus dimension, e.g., color or form; and (b) approaching the correct cue, e.g., red or triangle, of the relevant dimension.

Zeaman and House have now presented considerable evidence that it is in the initial ability to attend to relevant dimensions and cues rather than in the final stage of learning visual discriminations that children of different M.A.'s differ. This can be seen in "backward" learning curves in which children of varying M.A.'s exhibit the same rate of learning *once learning starts*, but differ in the number of trials required for the child to produce better than chance performance. This longer "lead-in" to learning proper in certain subjects is interpreted as reflecting an inability to attend. [A complete review of the research on which the Zeaman and House theory was constructed, as well as the sophisticated mathematical model to which the theory has given rise, can be found in two recent papers (House and Zeaman, 1963; Zeaman and House, 1963).]

Although institutionalized retarded subjects have been employed in the bulk of the Zeaman and House research, there is a certain ambiguity concerning the relevance which this research has for understanding those characteristics of discrimination learning which are unique to the retarded. It is difficult to separate that part of the Zeaman and House work which is concerned with the development of a general quantitative model of discrimination learning from that part in which they have attempted to identify certain factors, particularly an attention deficit, which account for poorer learning performance in retardates. Given the goals of this chapter, such a distinction is an important one. In the first case, institutionalized retardates merely represent a convenient group of subjects, whereas in the second, they are the direct object of study.

This difficulty in determining which of the Zeaman and House efforts are relevant for the understanding of retardates per se may be seen in those studies which have compared retardates at two M.A. levels (Zeaman and House, 1963). These studies have indicated that retardates at the lower level have greater difficulty in attending to the relevant dimensions, and hence learn more slowly, than retardates at the higher M.A. level. However, the discovery of such M.A. differences does not in itself demonstrate any particular deficit in retardates, but rather points up M.A. differences of interest to the general developmentalist who is concerned with the relationship between attention-directing ability, the predominance of certain stimulus dimensions or response strategies, and such developmental parameters as M.A.

This same question of unique relevance to the behavior of the retarded may be raised with respect to those studies of Zeaman and House that have demonstrated that the low M.A. level child's attending to relevant cues and thus his learning are influenced by the manipulation of a number of variables; e.g., the particular dimensions designated as correct, the number of dimensions involved in making the discrimination, novelty, easy-to-hard versus hard-to-easy learning sequence, degree of spatial contiguity between correct response and reward. These studies, although very informative about how one might aid the child in attending to relevant cues and thus enhance his learning, provide little evidence for any deficit associated with low I.Q. independent of M.A.

Approached from the viewpoint of training the retarded child, all of the work of Zeaman and House becomes relevant. Although the question of whether retardates are inherently different from normals of the same M.A. is a theoretically important one, of equal importance to the practitioner is the discovery of the particular processes which result in the unquestionable differences in performance between normals and retardates of the same C.A. One can do little in the way of remedial teaching and treatment as long as such differences are attributed simply to the lower "intelligence" of the retarded. The value of the work of Zeaman and House is in its highlighting a particular process, namely, attention, which is certainly less adequate in retardates than normals of the same C.A. It may be encouraging to practitioners to discover that the training implications of even Zeaman and House's distinguished research program are approximately the same as those advanced by educators employing a common sense approach to the training of the retarded. These implications include reducing distractions to a minimum when teaching the retarded, increasing the attention value of the relevant cues, and employing an easy-to-hard sequence of training.

The aspects of the Zeaman and House work that lead to their inclusion among difference theorists involve their theoretical statement that M.A. and I.Q. independently contribute to learning performance (House and Zeaman, 1960) as well as those studies (House and Zeaman, 1958, 1963) which have found differences between retardates and normals of the same M.A. on discrimination learning tasks.

While there are other studies that have found differences between normals and retardates of the same M.A. (e.g., Stevenson and Iscoe, 1955), a number of studies which have compared the performance of normals and retardates at a number of M.A. levels and on a variety of discrimination and transposition tasks have found no such differences (Balla and Zigler, 1964; Kass and Stevenson, 1961; O'Connor and Hermelin, 1959; Plenderleith, 1956; Stevenson and Zigler, 1957). Furthermore, evidence

has now been presented indicating that institutionalized retardates such as Zeaman and House studied do more poorly on discrimination learning tasks than even noninstitutionalized retardates of the same M.A. and I.Q. (Denny, 1964; Harter, unpublished manuscript; Kaufman, 1963; Wischner, 1962).

Support for the Zeaman and House position that I.Q., independent of M.A., affects learning performance is contained in a correlational study of institutionalized retardates (House and Zeaman, 1960), a study which also includes an excellent theoretical discussion of the relationships between M.A., C.A., I.Q., and learning ability. They found that with M.A. held constant, I.Q. and learning performance were significantly related. The generality of this finding was enhanced by the data of Harter (1965), who found an independent I.Q. effect in a study which compared the learning set performance of intellectually superior children, average normals, and noninstitutionalized retardates at three M.A. levels. It was in the 1960 House and Zeaman paper that these investigators first suggested that the low I.Q. learning disability was caused by an I.Q.-related attention deficit. However, in neither of the House and Zeaman studies (1958, 1960) was any direct evidence presented that the inferior learning of low I.Q. subjects was the product of an attention deficit.

Another difficulty should be noted. On the basis of the Zeaman and House findings one cannot conclude that the attention-directing mechanism of *familial* retardates is inferior to that of normals of the same M.A., since these investigators have shown a relative lack of interest in the etiology of their retarded subjects. The very low I.Q. of many of their subjects strongly suggests that they were of the organic rather than the familial type.

One final issue should be considered. At most, the Zeaman and House work indicates that retardates have difficulty in attending to the relevant dimensions in an experimental discrimination learning task. This, plus these researchers' emphasis that attention is a central process, has given rise to the interpretation (cf. Robinson and Robinson, 1965) that the retarded suffer from some inherent central defect in their attention-directing mechanism. However, one could also advance the hypothesis that retardates have no such inherent defect, but rather that they are simply not attending to those particular aspects which the experimenter has designated as "relevant." Such inattention could be attributed to a variety of factors having little to do with any central defect. One thinks here of the warnings of Lewin and Kounin that normals and retardates must be in psychologically comparable situations before any differences in performance may be interpreted as indicating an inherent defect in

the retarded. The suggestion that the differences found by Zeaman and House between normals and retardates of the same M.A. may be due to some combination of general motivational or situational variables rather than to some central deficit in the retarded is contained in the recent findings of Denny (1964). This investigator, employing a face-to-face experimental situation rather than the Wisconsin General Test Apparatus (used by Zeaman and House) in which the experimenter is hidden from view, found smaller differences between institutionalized retardates and normals than those reported by House and Zeaman (1958). Furthermore, when noninstitutionalized retardates were compared with normal children in the face-to-face situation, no significant differences in learning were found.

Harter (unpublished manuscript), who manipulated motivational (social reinforcement versus no social reinforcement), situational (face-to-face versus Wisconsin General Test Apparatus), and subject (institutionalized versus noninstitutionalized) variables, also found these variables to be important determinants of the magnitude of the difference between normals and retardates of the same M.A. on a learning set discrimination task. However, these findings also suggested that, independent of these motivational-situational factors, there is an I.Q. effect of the sort that would be predicted from the Zeaman and House position. It is apparent that Zeaman and House have provided workers in the area with a provocative hypothesis which merits further explication.

MOTIVATIONAL AND EMOTIONAL FACTORS IN THE BEHAVIOR OF THE RETARDED

A recurring theme in this chapter has been the importance of a variety of nonintellective factors as determinants of the level at which the retarded function. Obviously, the behavior of the retarded is not the immutable product of low intelligence alone and, in fact, a striking feature encountered when groups of retardates are observed is the variety of behavior patterns displayed. Clearly, we are not dealing with a homogeneous group of simple organisms. Once we concern ourselves with the total behavior of the retarded child, we find him an extremely complex psychological system. It is unfortunate that so little work emanating from a personality point of view has been done with the retarded. Some progress has been made, however, and much of the recent work supports the view that it is not necessary to employ constructs other than those used to account for the behavior of normal individuals in explaining the behavior of the familial retarded. It appears that many of the reported

differences between retardates and normals of the same M.A. are a result of motivational and emotional differences which reflect differences in environmental histories, and are not a function of innate deficiencies.

That personality factors are as important in the retardate's adjustment as are intellectual factors has been noted by several workers, e.g., Penrose (1963), Sarason (1953), and Tizard (1953). [See Windle (1962) for an especially comprehensive review of the importance of nonintellectual factors in the prognosis of mental retardation.] Many of the early workers in this country, such as Fernald and Potter, felt that the difference between social adequacy and inadequacy in that large group of borderline retardates was a matter of personality rather than intelligence. A number of studies have confirmed this view. (See Windle, 1962.) Perhaps the best of these is the comprehensive study by Weaver (1946) of the adjustment of 8,000 retardates inducted into the United States Army, most of whom had I.Q.'s below 75. Of the total group, 56 per cent of the males and 62 per cent of the females made a satisfactory adjustment to military life. The median I.Q.'s of the successful and unsuccessful groups were 72 and 68, respectively. Weaver concluded that "personality factors far overshadowed the factor of intelligence in the adjustment of the retarded to military service."

The tendency to overemphasize the importance of intellect in adjustment has been made clear by Windle (1962). On the basis of a survey, he found that most institutions presume that intelligence is the critical factor in adjustment after release. Windle goes on to point out that the vast majority of studies (over 20) have reported no relation between intellectual level and adjustment after release from institutions. In examining this literature we find that the factors associated with poor social adjustment include anxiety, jealousy, overdependency, poor self-evaluation, hostility, hyperactivity, and failure to follow orders even when requests were well within the range of intellectual competence.

It is hardly surprising that retardates evidence such difficulties in light of their atypical social histories. The specific atypical features of their socialization histories, and the extent to which they are atypical, may vary from child to child. Two sets of parents who are themselves familially retarded may provide quite different socialization histories for their children. At one extreme we may find a familially retarded child who is ultimately institutionalized, not because of lack of intelligence, but because his own home represents an especially poor environment. That many borderline retardates are institutionalized for just such reasons has been confirmed by Kaplun (1935) in a study of 642 high-grade retardates. Zigler's more recent finding (1961) that a positive relationship

exists between the institutionalized familial retardate's I.Q. and the amount of preinstitutional deprivation he experienced provides further support for this claim.

At the other extreme, a familially retarded set of parents may provide their children with a relatively normal home even though it might differ in certain important respects—values, goals, and attitudes—from the typical home in which the families are of average or superior intelligence. In the first example, the child not only experiences a quite different socialization history while still living with his parents, but also differs from the child in the second situation to the extent that institutionalization affects his personality structure. (See Yarrow, 1964.) Given the penchant of many investigators for comparing institutionalized retardates with children of average intellect who live at home, the factor of institutionalization becomes an extremely important one. One cannot help wondering how many differences discovered in such comparisons reflect some cognitive aspect of mental retardation as opposed to the effects of institutionalization, the factors that led to the child's institutionalization, or some complex interaction between these factors and institutionalization.

To add even more complexity, the socialization histories of both institutionalized and noninstitutionalized familial retardates differ markedly from the history of the brain-damaged retardates. The brain-damaged do not show the same gross differences from normals in the frequency of good versus poor environments. In the face of such complexity, we need not consider the problem unassailable nor need we assert that each retarded child is so unique that it is impossible for us to isolate the ontogenesis of those factors which we feel are important in influencing the retardate's level of functioning. Once we conceptualize the retardate as occupying a position on a continuum of normalcy, we can allow our knowledge of normal development to give direction to our efforts.

This does not mean that we ignore the importance of the lowered intelligence per se, since personality traits and behavior patterns do not develop in a vacuum. However, in some instances the personality characteristics of the retarded will reflect environmental factors that have little or nothing to do with intellectual endowment. For example, many of the effects of institutionalization may be constant regardless of the person's intelligence level. In other instances we must think in terms of an interaction; that is, given his lowered intellectual ability, a person will have certain experiences and develop certain behavior patterns differing from those of a person with greater intellectual endowment. An obvious example is the greater amount of failure which the retardate typically experi-

ences. But again what must be emphasized is that the behavior pattern developed by the retardate as a result of such a history of failure may not differ in kind or ontogenesis from that developed by an individual of normal intellect who, by some environmental circumstance, also experiences an inordinate amount of failure. By the same token, if the retardate can somehow be guaranteed a more typical history of success, we would expect his behavior to be more normal, independent of his intellectual level. Within this framework, the author will discuss the personality factors which have been known to influence the performance of the retarded.

Caution is necessary in evaluating the role of motivational and emotional factors in the performance of the retarded. Performance on a task is most appropriately conceptualized as a function of two types of factors: intellectual, i.e., cognitive; and nonintellectual, i.e., motivational. The contribution of each factor will vary with the nature of the task. Motivational factors will more readily influence a perseveration task, e.g., how long a retardate will continue to put marbles into a box, than they will a discrimination learning or concept-formation task, although it has been demonstrated that the performance of retardates on tasks of the latter type is also influenced by motivational factors (Butterfield and Zigler, 1965; Zigler and de Labry, 1962). Furthermore, improved performance following a manipulation of the child's motivation should not be interpreted as evidence that basic intellectual capacity has been changed. Rather, these demonstrations suggest ways in which one may help the mentally retarded to utilize their intellectual capacity optimally.

Anxiety

Considerable evidence has now been collected indicating the importance of anxiety on performance for a wide variety of tasks (Sarason *et al.*, 1960; Spence, 1958; Taylor, 1963). The attenuating effects of anxiety on performance appear to be a function of both the task-irrelevant defensive responses employed by the person to alleviate his anxiety (Mandler and Sarason, 1952; Sarason *et al.*, 1960) and the drive features of the anxiety itself. The drive approach to anxiety (Spence, 1958; Taylor, 1963), which has received considerable confirmation, conceptualizes high anxiety as beneficial on extremely nondemanding tasks, e.g., classical eyelid conditioning, but detrimental on complex tasks where a variety of responses are available to the person. The higher anxiety level of retardates, as compared with normals, has been noted by several investigators (see Berkson, 1963; Cantor, 1963; Garfield, 1963; Spradlin, 1963; Stevenson, 1963), who have either demonstrated or suggested that

their heightened anxiety level could well have produced certain of the reported differences between retardates and M.A.-control normals. Work with retardates that has either focused on anxiety or raised the anxiety issue in a post hoc manner, is of considerable value "in that it applies concepts and techniques to the study of retarded individuals, which for the most part had not been applied or seen as relevant for this group" (Garfield, 1963, p. 594).

The evidence that anxiety level affects the performance of retardates as much as that of normals, and that retardates might have higher levels of anxiety than normals, tells us little about the ontogenesis of anxiety in retardates. To understand their atypical anxiety levels, we must examine the relatively atypical experiences of the retarded, as well as a variety of other motivational states which influence their performance.

Social Deprivation

It has become increasingly clear that our understanding of the performance of the institutionalized familial retardate will be enhanced if we consider the inordinate amount of preinstitutional social deprivation he has experienced (Clarke and Clarke, 1954; Kaplun, 1935; Zigler, 1961). A series of recent studies (Green and Zigler, 1962; Shepps and Zigler, 1962; Zigler, 1961, 1963a; Zigler, Hodgden, and Stevenson, 1958; Zigler and Williams, 1963) has indicated that one result of such early deprivation is a heightened motivation to interact with a supportive adult. These studies suggest that, given this heightened motivation, retardates exhibit considerable compliance with instructions when the effect of such compliance is to increase or maintain the social interaction with the adult. Compliance is apparently reduced in those instances where it leads to terminating the interaction.

Recent data suggest that the perseveration so frequently noted in the behavior of the retarded is primarily a function of this motivational factor rather than the inherent cognitive rigidity suggested by Lewin (1936) and Kounin (1941a, b). Evidence on this latter point comes from findings indicating that: (a) the degree of perseveration is directly related to the degree of preinstitutional deprivation experienced (Zigler, 1961); and (b) institutionalized children of normal intellect are just as perseverative as institutionalized retardates, while noninstitutionalized retardates are no more perseverative than noninstitutionalized children of normal intellect (Green and Zigler, 1962; Zigler, 1963a). The finding that institutionalization (or the social history factors leading to institutionalization) is the crucial factor in determining the child's response to social reinforcement on a simple task has also been reported by Stevenson and Fahel

(1961). The heightened motivation to interact with an adult, stemming from a history of social deprivation, would appear to be consistent with the often-made observation of certain behaviors in the retarded, i.e., they seek attention, desire affection, etc. (Cruickshank, 1947; Doll, 1962; Hirsh, 1959; Wellman, 1938b).

It is almost impossible to place too much emphasis on the role of overdependency in the institutional familial retarded and on the socialization histories that give rise to such overdependency. Given some minimal intellectual level, the shift from dependency to independence is perhaps the single most important factor necessary for the retardate to become a self-sustaining member of our society. It appears that the institutionalized retardate must satisfy certain affectional needs before he can cope with problems in the manner of those whose affectional needs have been relatively satiated. Some evidence that this attenuating aspect of retarded behavior can be overcome has been presented by McKinney and Keele (1963), who found improvement in a variety of behaviors in the mentally retarded following an experience of increased mothering.

Zigler and Williams (1963) have provided some evidence that the child's motivation for social interaction and support is influenced by an interaction between preinstitutional social deprivation and institutionalization. It was found that, although institutionalization generally increased this motivation, it was increased much more for children coming from relatively nondeprived homes as compared to those coming from more socially deprived backgrounds.

An unexpected finding of the Zigler and Williams study was that a general decrease in the I.Q.'s of retardates was discovered between the administration of two I.Q. tests, the first of which occurred at the time of admission five years prior to this follow-up study. This change in I.Q. is reminiscent of a finding by Clarke and Clarke (1954). These investigators found that changes in the I.Q.'s of retardates following institutionalization were related to their preinstitutional histories. They discovered that children coming from extremely poor homes showed an increase in I.Q. which was not observed in children coming from relatively good homes. Zigler and Williams did not find I.Q. change significantly related to preinstitutional deprivation, but, consistent with Clarke and Clarke, they found that the only subjects who evidenced an increase in I.Q. were in the highly deprived group. The failure of Zigler and Williams to replicate the findings of Clarke and Clarke may be due to two factors: the subjects used by Clarke and Clarke were older and had been institutionalized at a later age; and, the I.Q. changes reported by Clarke and Clarke took place during two years of institutionalization, while the I.Q. changes

reported in the Zigler and Williams study were based on five years of institutionalization. This latter factor becomes increasingly important in view of the Jones and Carr-Saunders finding (1927) that normal institutionalized children show an increase in I.Q. early in institutionalization and then a decrease in I.Q. with longer institutionalization.

The work of Clarke and Clarke, Jones and Carr-Saunders, and others (e.g., Guertin, 1949), dealing with changes in I.Q. following institutionalization, has given central importance to the degree of *intellectual stimulation* provided by the institution in contrast to that provided by the original home. The Zigler and Williams study, however, suggests that the change in I.Q. reflects a change in the child's *motivation*, and, in fact, they found a relationship between I.Q. decrement and the child's motivation for social interaction.

Positive- and Negative-Reaction Tendencies

Although there is considerable observational and experimental evidence that social deprivation results in a heightened motivation to interact with a supportive adult, it appears to have other effects as well. The nature of these effects is suggested in those observations of the retarded that have noted their fearfulness, wariness or avoidance of strangers, or their suspicion and mistrust (Hirsh, 1959; Wellman, 1938b; Woodward, 1960). The experimental work done by Zigler and his associates on the behavior of the institutionalized retarded has indicated that social deprivation results both in a heightened motivation to interact with supportive adults (positive-reaction tendency) and in a reluctance and wariness to do so (negative-reaction tendency).

The construct of a negative-reaction tendency has been employed to explain certain differences between retardates and normals reported by Kounin, differences that have heretofore been attributed to the greater cognitive rigidity of retarded individuals. As one measure of rigidity, Kounin employed a task in which the subject is instructed to perform a response which he may continue until he wishes to stop; he is then instructed to perform a highly similar response until again satiated. A recurring finding in studies employing such a two-part task (Kounin, 1941a; Zigler, 1958; Zigler *et al.*, 1958) has been that retardates have a much greater tendency than normals to spend more time on task two than on task one. Zigler (1958) suggested that this was due to the greater negative-reaction tendency of retarded subjects which was an outgrowth of the more negative encounters that institutionalized retardates experienced at the hands of adults. His reasoning was that the high negative-reaction tendency of retardates was reduced as a result of the pleasant

experiences encountered on task one which, in turn, resulted in a longer playing time on task two. Normals tend not to show such a pattern since there is relatively little negative-reaction tendency that can be reduced during task one.

This view was tested in a study (Shallenberger and Zigler, 1961) in which normal and retarded subjects, matched on M.A., were compared on a two-part experimental task similar to those used in the earlier studies. In addition to the basic procedure employed in these studies, three experimental games, given under two conditions of reinforcement, preceded the two-part criterion task. In a positive reinforcement condition all of the subject's responses met with success, and he was further rewarded with verbal and nonverbal support from the experimenter. It was assumed that this reinforcement condition reduced the subject's negative-reaction tendency. In a negative reinforcement condition, all of the subject's responses met with failure, and the experimenter further punished the subject by commenting on his lack of success. It was assumed that this condition increased the negative-reaction tendency. Half of the normals and half of the retardates were given the games in the positive experimental condition, while the other half of each group received the negative condition. All subjects were given the identical two-part criterion task in which they were consistently praised for all responses.

The most striking finding of this study was that, as predicted, both negatively reinforced groups spent more time on Part II than on Part I of the criterion task, while the two groups receiving the positive condition played Part I longer than Part II. The findings of this study offer further validation for the general motivational hypothesis, while also indicating a need for its extension. Future research should be concerned with the isolation of those specific events which give rise to each of these opposing motivational factors, i.e., the desire to interact and the wariness to do so.

Further investigation of such positive- and negative-reaction tendencies, their interactions, and the specific events which give rise to them may clarify issues much more global in nature than the troublesome finding that under certain conditions retarded individuals will play a second part of a two-part cosatiation task longer than the first part. Specifically the author has in mind the current controversy over whether social deprivation leads to an increase in the desire for interaction or to apathy and withdrawal (Cox, 1953; Freud and Burlingham, 1944; Goldfarb, 1953; Irvine, 1952; Spitz and Wolf, 1946; Wittenborn and Myers, 1957).

This issue has been followed up in a series of studies with children of normal intellect (Berkowitz, Butterfield, and Zigler, 1965; Berkowitz and Zigler, 1965; McCoy and Zigler, 1965) directed at further validation of the "valence position." Stated simply, this position asserts that the effectiveness of an adult as a reinforcing agent depends upon the valence he has for the particular child whom he is reinforcing. This valence is determined by the child's history of positive and negative experiences with adults. The studies noted above have produced considerable evidence that prior positive contacts between the child and the adult increase the adult's effectiveness as a reinforcer, while negative contacts decrease it. If the experimentally manipulated negative encounters in these experiments are conceptualized as the experimental analogue of what institutionalized retardates actually have experienced, then the often-reported reluctance and wariness with which such children interact with adults becomes understandable. A logical conclusion here is that wariness of adults, and of the tasks that adults present, leads to a general attenuation in the retarded child's social effectiveness. Failure of institutionalized retardates on tasks presented by adults is therefore not to be attributed entirely to intellectual factors. The high negative-reaction tendency motivates him toward behaviors, e.g., withdrawal, that reduce the quality of his performance to a level lower than that which one would expect on the basis of his intellectual capacity alone.

Failure and the Performance of the Retarded

Another factor frequently mentioned as a determinant in the performance of the retarded is their high expectancy of failure (Cromwell, 1963). This failure expectancy has been viewed as an outgrowth of a lifetime characterized by frequent confrontations with tasks for which the retarded are intellectually ill-equipped to deal. That failure experiences and the failure expectancies to which they give rise affect a wide variety of behaviors in the intellectually normal has now been amply documented (Atkinson, 1958a, b; Katz, 1964; Rotter, 1954; Sarason *et al.*, 1960). Of special interest to workers in the area of mental retardation is Lantz's (1945) finding that a relatively simple failure experience prevented children from profiting by practice which ordinarily leads to improvement on intelligence test scores.

The results of experimental work employing the success-failure dimensions with retardates is still somewhat inconsistent. The work of Cromwell and his colleagues (Cromwell, 1963) has lent support to the general proposition that retardates have a higher expectancy of failure than do normals. This results in a style of problem-solving for the retardate which

causes him to be much more motivated to avoid failure than to achieve success. However, the inconsistent research findings suggest that this fairly simple proposition is in need of further refinement. One investigator (Gardner, 1957) found that retardates performed better following success and poorer following failure as compared to a control group. Another investigator (Heber, 1957) found that the performance of normals and retardates was enhanced following both a failure and a success condition, although in the success condition the performance of retardates was enhanced more than that of normals.

Conversely, Kass and Stevenson (1961) found that success enhanced the performance of normals more than that of retardates. Another study also found that failure had a general enhancing effect for both normals and retardates, but that failure enhanced the performance of normals more than that of retardates (Gardner, 1958). In a recent study by Butterfield and Zigler (1965), one factor which may have produced this type of inconsistency was isolated. These investigators found that both normal and retarded children reacted differentially to success and failure experiences as a function of their responsivity to adults, i.e., their desire to gain an adult's support and approval. The nature of the difference between normals and retardates in their reaction to success or failure experiences appeared to be determined by this latter variable. Among high responsive subjects, failure, as compared with success, attenuated the performance of the retarded while improving the performance of normal subjects. Among low responsive subjects, failure, as compared with success, attenuated the performance of normals while improving the performance of retardates.

The debilitating effects of prolonged failure on the performance of the retarded have been found by Zeaman and House (1960). These investigators discovered that following such failure retardates were unable to solve a simple problem although they had previously been able to do so. Assuming a failure set in retardates, Stevenson and Zigler (1958) confirmed the prediction that retardates would be willing to "settle for" a lower degree of success than would normal children of the same mental age. The fear of failure in the mentally retarded also appears to be an important factor in differences that have been found between normals' and retardates' achievement motivation (Jordon and DeCharms, 1959).

Recent studies (Green and Zigler, 1962; Turnure and Zigler, 1964; Zigler *et al.*, 1958) have indicated that the high incidence of failure experienced by retardates generates a cognitive style of problem-solving characterized by outer-directedness. That is, the retarded child comes to

distrust his own solutions to problems and therefore seeks guides to action in the immediate environment. This outer-directedness may explain the great suggestibility so frequently attributed to the retarded child. Evidence has now been presented indicating that, compared with normals of the same M.A., the retarded child is more sensitive to verbal cues emitted by an adult, is more imitative of the behaviors of both adults and peers, and engages in more visual scanning. Furthermore, certain findings (Green and Zigler, 1962) suggest that the noninstitutionalized retardate is more outer-directed in his problem-solving than the institutionalized retardate. This makes considerable sense if one remembers that the noninstitutionalized retardate does not reside in an environment adjusted to his intellectual shortcomings and should therefore experience more failure than the institutionalized retardate.

Turnure and Zigler (1964) have suggested that the distractability so frequently encountered in the retarded reflects, in part, this outer-directed style of problem-solving. This interpretation is of particular interest, since distractability has often been viewed as a neurophysiologically determined characteristic of the retarded rather than the reflection of a style of problem-solving emanating from the particular experiential histories of such children. Work on the outer-directedness of the retarded also appears related to the locus of control work done by Cromwell and his associates (reviewed in Cromwell, 1963). These investigators found that retardates, as compared with normals, manifest an external locus of control, i.e., they attribute certain events, caused by their own behavior, to outside forces over which they have little control. (This internal- versus external-control dimension has been employed by Cromwell to bring some further order to the inconsistent findings in the success-failure literature.)

The Reinforcer Hierarchy

Another nonintellective factor important in understanding the behavior of the retarded is the retardate's motivation for various types of incentives. That performance by normals and retardates on a variety of tasks is influenced by the nature of the incentive is certainly well documented (Cantor, 1963). The social deprivation work discussed earlier in this section indicates that retardates have an extremely high motivation for attention, praise, and encouragement. Several investigators (Beller, 1955; Cromwell, 1963; Gewirtz, 1954; Heathers, 1955; Zigler, 1963b) have suggested that, in normal development, the effectiveness of attention and praise as reinforcers diminishes with maturity, and is replaced

by the reinforcement inherent in the information that one is correct. This latter type of reinforcer appears to serve primarily as a cue for the administration of self-reinforcement.

Zigler and his associates (Zigler, 1962; Zigler and de Labry, 1962; Zigler and Unell, 1962) have argued that a variety of experiential factors in the history of the retarded cause them to be less motivated to be correct, simply for the sake of correctness, than normals of the same M.A. Stated somewhat differently, these investigators have argued that the position of various reinforcers in the reinforcer hierarchies of normal and retarded children of the same M.A. differ. To date, the experimental work of this group has centered around the reinforcement which inheres in being correct. It is this reinforcer that is the most frequently dispensed, immediate incentive in most real-life tasks. Furthermore, it is a frequently used incentive in many experimental cognitive and perceptual tasks on which retardates and normals are compared, and it also seems to be the most important incentive in the typical test situation. When such an incentive is employed in experimental studies, one wonders how many of the differences found are attributable to differences in capacity between retardates and normals, rather than to differences in performance which result from the different values that such incentives might have for the two types of subjects.

Clear support for the view that the retardate is much less motivated to be correct than is the middle-class child, so typically used in comparisons with the retarded, is contained in a study by Zigler and de Labry (1962). These investigators tested middle-class, lower-class, and retarded children *equated on M.A.* on a concept-switching task (Kounin, 1941a) under two conditions of reinforcement. In the first condition, similar to that employed by Kounin, the only reinforcement dispensed was the information that the child was correct. In the second condition, the child was rewarded with a toy of his choice if he switched from one concept to another. In the "correct" condition these investigators found, as Kounin did, that retardates were poorer in their concept switching than were middle-class children. That this was not a simple matter of cognitive rigidity was indicated by the finding that lower-class children equated on M.A. with the middle-class children were also inferior to the middle-class children. In the toy condition this inferiority disappeared, and retarded and lower-class children performed as well as the middle-class children. This study highlights an assumption that has been noted as erroneous by many educators; namely, that the lower-class child and the retarded child are motivated by the same incentives that motivate the typical middle-class child. An intriguing avenue of further research is

the degree to which the position of various reinforcers in the hierarchy can be changed.

General Effects of Institutionalization

No discussion of motivational factors in the performance of the retarded would be complete without some mention of the effects of institutionalization. The institutionalization variable has probably contaminated more research in the area of mental retardation than any other single variable. Given our general lack of knowledge concerning the effects of institutionalization on human behavior, the extent of this contamination cannot be determined. That the effects of institutionalization on the behavior of retardates are considerable has been suggested by several investigators (Guskin, 1963; Lipman, 1963; McCandless, 1964; Nye, 1958; Sarason and Gladwin, 1958; Spradlin, 1963; Windle, 1962). In view of the general consensus concerning its importance, it is amazing that more work has not been done to investigate the effects of institutionalization on retarded children.

Some fairly clear findings with retardates have demonstrated that institutionalization causes a decrement in the quality of language behavior (Lyle, 1959; Schlanger, 1954), reduces the level of abstraction on vocabulary tests (Badt, 1958), interferes with the ability to conceptualize an emotional continuum (Iscoe and McCann, 1965), and increases the child's orientation toward punishment (Abel, 1941). These studies, though suggestive, have shed little light on the specific aspects of institutionalization which affect such behaviors or on the exact nature of the process through which behaviors are affected. Whether the deficiencies in the behavior of the institutionalized retardate are motivational in nature or reflect an actual change in intellectual capacity is still an open question.

Evidence that institutions for the retarded differ in their effects on behavior has recently been reported by Butterfield and Zigler (1965). It was found that children residing in a cold, restrictive institution showed a higher motivation for adult support and approval than children residing in an institution having a warm, accepting social climate. These investigators are presently conducting a cross-institutional longitudinal study of six state schools for the retarded in an effort to isolate the institutional factors and psychological processes underlying such effects.

Much of this work on motivational and emotional factors in the performance of the retarded is very recent. The research conducted on several of the factors discussed in this section is more suggestive than

definitive. It is clear, however, that these factors are extremely important in determining the retardate's level of functioning. Furthermore, these factors seem much more open to environmental manipulation than do the cognitive processes discussed earlier. An increase in knowledge concerning motivational and emotional factors and their ontogenesis holds considerable promise for alleviating much of the social ineffectiveness displayed by that rather sizable group of persons who must function at a relatively low intellectual level.

SUMMARY

This chapter has attempted an overview of the current status of our thinking concerning the mentally retarded. The past decade has witnessed renewed interest in the problem of mental retardation. This interest has resulted in vigorous research activity and the construction of a number of theories which attempt an explanation of attenuated intellectual functioning. However, much of the research and many of the theoretical efforts in the area appear to be hampered by a variety of conceptual ambiguities. Workers in the area are not solely responsible for this state of affairs. What must be emphasized is that mental retardation is not a discrete, easily demarcated, area of knowledge but rather is intimately related to the general field of developmental psychology. Advances in this larger area cannot help but bring further order to the area of mental retardation. This is particularly true with respect to the refinement of our views concerning the nature of intelligence.

A major section of this chapter was devoted to a discussion of our critical need for a comprehensive theory of intelligence, including an adequate definition of this construct. The limitations of the psychometric approach, with its emphasis on the contents of behavior, rather than on the cognitive processes which mediate behavior, was noted. An effort was made to demonstrate that an inadequate definition of intelligence must inevitably result in an inadequate definition of mental retardation. Given the discontent with intelligence test scores as measures of retardation, many workers have championed the social competence criterion; other workers have pointed out the inadequacy of such a criterion. Thus, the area continues to suffer from the lack of some universally acceptable definition of mental retardation. This problem can be seen clearly in the inconsistent findings concerning the prevalence of mental retardation.

Other ambiguities in the area do appear to be the result of the practices of certain workers, rather than a function of any general knowledge lag in psychology. Conceptualizing the retarded as a homogeneous group,

defined by some arbitrary I.Q. score, would appear to be a case in point. The value of clearly distinguishing between that group of retardates known to suffer from some organic defect, and that larger group of retardates referred to as the familial or cultural-familial, was discussed. The point was also made that it is the familial retardate that currently presents the greatest mystery to workers in the area. It is no surprise to discover that where there is mystery there are conflicting views. One approach to the familial retardate has emphasized the cultural and social deprivation experienced, stressing environmental causality. This view remains a popular one and was discussed within the framework of both the older and more recent literature on the nature-nurture controversy. Although this controversy appears to have abated within the general field of psychology, it remains a lively issue in the area of mental retardation. However, our review would appear to indicate that any simplistic view of the role of environment is inadequate to the task of explaining the etiology of familial retardation.

A number of authorities were cited who have emphasized the need for employing recent polygenic models of inheritance in understanding the familial retarded. While appreciating the importance of environment in affecting the distribution determined by genetic inheritance, these workers have argued that the familial retarded are not essentially different from individuals of greater intellect but rather represent the lower portion of the intellectual curve which reflects normal intellectual variability. Within such a framework, the familial retardate would be viewed as a perfectly normal expression of the population gene pool whose intellectual development is slower and more limited than the individual of average intellect, whose intellectual development, in turn, is slower and more limited than the individual of superior intellect. This viewpoint generates the proposition that retardates and normals who are at the same general cognitive level, e.g., M.A., are similar in respect to their cognitive functioning. Such a proposition runs headlong into the findings that retardates and normals, even though equated on M.A., often differ in performance. Such findings have bolstered what is currently the most popular theoretical approach to retarded functioning, namely, the view that all retardates suffer from some specific defect which inheres in mental retardation and thus makes the retardate immutably "different" from normals, even in those cases where the general level of intellectual development is controlled. These difference or defect approaches and an evaluation of research emanating from them were discussed in a section dealing with the work of Luria, Spitz, Lewin and Kounin, Ellis, and Zeaman and House.

The final section dealt with that most recent approach to the behavior of the retarded—the systematic evaluation of the role of experiential and motivational factors. This approach, which emphasizes the personality structure of the retardate, takes as its central thesis the view that performance on experimental and real-life tasks is never the single inexorable product of the retardate's cognitive structure, but rather reflects a wide variety of relatively nonintellective factors which greatly influence the general adequacy of performance. This section dealt with work concerning the influence on the behavior of the retardate of anxiety, social deprivation, positive- and negative-reaction tendencies, high incidence of failure experiences, atypical reinforcer hierarchies, and institutionalization.

There is little question that we are presently witnessing a productive, exciting, and perhaps inevitably chaotic period in the history of man's concern with the very human problem of mental retardation. Even the disagreements that presently exist must be considered rather healthy phenomena. These disagreements will unquestionably generate new knowledge which, in the hands of practitioners, may become the vehicle through which the performance of children, regardless of intellectual level, may be improved.

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Psychophysilogic Disorders in Children¹

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MAN'S BELIEF that his internal functions can be modified by events affecting his psyche dates back into antiquity. Scholars in the arts, philosophy, and science have frequently employed the concept of mind-body interrelationships to explain a wide variety of observable phenomena. The mechanisms of these interrelationships were largely unexplored in any systematic way until Cannon, Pavlov, and others suggested the possible pathways through which the brain could influence the organs of the body.

Much of the investigative work over the past few decades has been performed by psychiatrists, psychologists, and psychologically oriented internists. A vast body of literature rapidly accumulated which consisted largely of anecdotal material, attempting to confirm certain favored hypotheses. More recently there has been a progression from careful and often skillful descriptions of patients and their life experiences to the exploration of biologic mechanisms presumed to underlie these disorders. Concurrently, the study of biological associates of psychological processes (psychophysiology) in man and animals unaffected by disease has provided a further impetus for understanding these problems.

Psychosomatic or psychophysilogic disorders represent one end of the continuum of physiological reactions which occur in response to a variety of life experiences or in association with affective states. These

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reactions range from rather minor physiological changes to those resulting in severe tissue damage. Few, if any, human beings can claim to have been free of symptoms arising in the gastrointestinal tract (i.e., abdominal cramps, "heartburn," diarrhea), cardiovascular system (i.e., palpitations, flushing, cold hands), and/or secretory glands (i.e., sweating, dry mouth). Unless persistent and severe, these phenomena are generally accepted as nonpathologic concomitants of emotional experience.

An understanding of psychosomatic disorders requires not only a knowledge of the precipitating psychosocial and physical environmental factors but also the biological processes resulting in disordered function. An attempt to conceptualize these interacting forces employing a visual aid was made by Richmond and Lustman (1954). The basic science underlying these clinical entities is the study of those processes controlled or affected by the central and autonomic nervous systems. This implies an exceedingly broad spectrum of pertinent psychological, physiologic, and biochemical processes, for the activity of the nervous system has far-reaching effects. This also explains, to some extent, the difficulties inherent in attempting to categorize a given disorder as psychosomatic.

For the most part, studies on psychosomatic disorders have dealt with the adult patient. This may have resulted, in part, from a greater ability of physicians and investigators to appreciate and identify psychosocial stresses in adults. It is also possible that psychosomatic disorders are more prevalent in adults than in children. Although writers like Rousseau seemed long ago to identify with the agonies of the neglected child, physicians, until very recently, neglected to assay the potential biological effects of early experience. A dramatic case in point was the recognition that institutionalized infants experiencing adequate physical care but little stimulation often developed severe wasting (marasmus) and died. People had previously attributed this condition to purely biological causes.

There is little question that psychosocial stresses in children may be associated with significant physiological changes. Furthermore, theorists repeatedly have pointed out the importance of early development in the generation of adult psychosomatic disorders. Therefore, one cannot overemphasize the need for increased understanding of the developing psyche as it relates to these disorders and also for further investigations of developmental changes in physiology, neurophysiology, and psychophysiology (Richmond, 1963).

Over the past few decades a number of theoretical models have been generated to account for the disorders of psychophysiological function. These models have attempted to resolve the following problems within a single framework: (a) How are life experiences translated into physio-

logic changes? (b) What factors determine which persons are most likely to develop psychosomatic disorders? (c) What factors determine the "choice" of the organ system? It is not our intent to deal with each of these theoretical approaches in detail. Rather, several will be dealt with briefly to provide a conceptual background for the subsequent discussion.

The concepts elaborated by Freud have had a profound influence on the orientations of many theorists in the field of psychosomatic medicine. One of the earliest such theories postulates that psychosomatic disorders are in essence conversion reactions and represent symbolic expressions of repressed feelings. Thus, the choice of a specific target organ can be understood only after one has discovered the patient's repressed thoughts and feelings as well as the totality of symbolic meaning associated with them. Many theorists at present reject this point of view.

Rejecting the notion of symbolic meaning and psychosomatic disorder, Dunbar (1943) offered what might be called the "Personality Profile" model. In essence she attempted to correlate various personality profiles with a specific disorder. This approach is consistent with the hypothesis that "... the very same bodily agent which organizes conscious material and behavior, which exercises control over the voluntary muscles and is the register of associations and behavior patterns, also probably organizes distribution of energy in the involuntary muscles and in the vegetative system" (p. 657).

Alexander (1950) was critical of both the conversion and personality profile approaches. Rather, he suggested a model based upon the concept of conflict or emotional specificity. He hypothesized that each conflict situation and emotional state is accompanied by a specific pattern of physiologic alteration. Thus, an individual is likely to develop a psychophysiological disorder if he chronically must deal with strong unresolved conflicts. Furthermore, the disordered organ, to some extent, is related to the nature of the involved conflict situation. Alexander, however, did not believe that the choice of a psychosomatic disorder was *solely* a function of the conflict. He was of the opinion that local or general somatic factors or predisposition played a significant role.

Wolff (1950) considered biological responses within the overall framework of the individual's protective reaction to stressful situations. When an individual is in a situation which is stressful for him, he tends to demonstrate a biological reaction pattern which is genetically determined and consistent for him. Exposure to stress in conjunction with this biologic predisposition would then result in disordered function of a specific organic system.

Still another approach places major emphasis upon the concept of

regression. Although authors employing this concept differ in regard to certain details, basically psychosomatic disorders are viewed as the result of a regression of physiological mechanisms to a more infantile developmental period. Mendelson, Hirsch, and Webber (1956) have considered this concept in some detail and have concluded that "... it is difficult to see that this term does anything other than to provide the illusion of knowledge" (p. 371).

Although we have approached this review as objectively as possible, it is appropriate that our own biases be made clear. There is little argument with the general approach of searching for a single theoretical model to encompass the field of psychosomatic disorders. Certainly the major advantages of such a theory would be to integrate the mass of data already available as well as to add direction to future investigations. However, it would seem valuable at this time to search for more limited concepts; that is, for the generation of hypotheses focusing not on psychosomatic disorders in general but on specific disease entities. This places emphasis on the determination of the processes or mechanisms which result in a given disorder. In addition, this working approach allows greater flexibility in exploring and integrating the diverse potential etiologies that can ultimately result in essentially the same disorder.

With these latter thoughts in mind we have elected to discuss a few representative psychophysiologic disorders of childhood. The specific choice of subject material was based on a desire to illustrate the diversity of organic systems involved as well as to contrast somewhat different psychophysiologic mechanisms. The systems discussed include the respiratory and gastrointestinal tracts, the skin, and the mechanisms involved in food regulation. The more classical disorders are represented because considerable data are available for discussion. Wherever possible the emphasis will be on studies involving children, with supplementary material from the adult literature. For this reason the subject of asthma is explored in somewhat greater depth and may serve to set the stage for the other disorders.

ASTHMA

The extent to which personality, emotions, and certain proposed reflex physiological mechanisms play a significant role in the initiation and persistence of bronchial asthma is the major subject of this section. It is recognized that in many cases, if not in most, allergic predisposition may underlie the asthmatic condition. Thus, a genetic contribution to the disorder prevails as it presumably does in most, if not all, psychophysiologic processes. That this alone hardly explains this complex disease

process should become apparent to the reader as he examines the evidence for other pertinent variables and pathophysiologic mechanisms.

Respiratory Physiology in Brief

The centers for automatic regulation of respiration reside primarily in the pons and medulla oblongata of the brain stem (Oberholzer and Tofani, 1960). Removal of the brain above these sites has little characteristic effect upon spontaneous breathing. The expiratory and inspiratory centers in the medulla are influenced by controls from the pons and cortex above and by reflexes from the lungs and peripheral receptors in the blood vessels, joints, skin, and so on. It has become clear in recent years that all of these factors are linked together in an extremely complex interdependent system. It is significant, however, that "voluntary influences upon respiration can produce a more powerful respiratory drive than any of the automatic and subconscious regulatory mechanisms. This fact is actually exploited when *maximum voluntary breathing capacity* is used as a test of lung function" (Bard, 1961, p. 613).

The neural control of the diaphragm, intercostal muscles, and other voluntary muscles of respiration allows for willful modification of respiratory rhythm and depth. In contrast, the vagus nerve, a part of the autonomic nervous system, supplies the smooth muscles surrounding the bronchioles (smaller air ducts) throughout the lungs which, upon contraction, may produce partial obstruction to the flow of air. This nerve also influences secretion of mucus into these ducts and controls the blood vessels in the bronchiolar walls. These, too, may produce further obstruction and wheezing.

The respiratory tubes normally lengthen and expand during inspiration and decrease in diameter and become shorter during expiration. Thus, any degree of obstruction would tend to become most manifest during the expiratory phase. The resultant wheezing is simply a consequence of air passing at high velocity through very narrowed passages. Presumably the smaller passages in young children predispose them to partial obstruction from a variety of causes.

Other mechanisms which might produce or enhance obstruction are the reflexes causing bronchoconstriction when various foreign substances enter the upper airway and the collapse of the posterior walls of the trachea and bronchi during certain types of forced expiration. These are detailed later in this review.

Definition and the Problem of Causation

Asthma is by far the most common of the childhood respiratory diseases presumed to be related, at least in part, to psychophysiologic

processes. It is a symptom complex, the definition of which varies among authors. Characteristic of the disease is the wheezing heard during the prolonged expiratory phase of respiration. The affected child experiences varying degrees of chest tightening associated with difficulty in inspiring and particularly expiring air either as rather discrete attacks or almost continuously throughout the year. The vital capacity test may indicate a decrease in air exchange even in the absence of other objective signs of the disease. Attacks of some severity may follow a long period of minimal symptoms or signs. Cough and mucus production are associated with severe episodes.

A major point at issue is whether one should include patients with so-called asthmatic bronchitis who have recurrent wheezing attacks with respiratory infections during the early years of life. These attacks generally subside by the fourth or fifth year although some of these children later manifest typical asthma. Peshkin (1963) maintains that most of these children are allergic according to skin testing procedures and that they benefit from hyposensitization. This is not a generally accepted concept or practice, though many recurrences of this type of asthma would certainly suggest such an approach.

It has been the contention of a majority of clinicians over the past few decades that bronchial asthma is caused primarily by a sensitization to certain allergenic agents in the child's environment. However, in more recent years a large number of physicians have questioned whether allergy is a major component of the condition. This, in a sense, represents a return to the thinking of the past when many considered asthma to be a disease of central nervous system origin. Indeed, in the seventeenth century, Willis suggested that this spasmodic disease could be brought on by factors affecting the nervous system (Peshkin, 1963).

Recent studies support the previous observations of psychiatrists and other physicians who contended that psychological conflicts served as the triggering mechanism and/or underlying cause of asthma in many patients. During the past several years a series of studies have supported the view that "all that is asthma is not allergy," to paraphrase the famous and useful clinical aphorism, "all is not asthma that wheezes."

Physiologic Mechanisms

The classical concept: allergy. The classical concept regarding the causation of asthma has focused on an antigen-antibody reaction with the resultant release of a noxious agent, histamine. This substance can produce spasm of the smooth muscle which surrounds smaller bronchioles. It also can increase mucus secretion and produce edema of the walls of these airways.

Particularly in pollen-induced asthma antihistamine therapy often affords appreciable, if not total, relief. This would seem to indict histamine as a significant culprit in such cases. Antihistamines, however, also have atropine-like effects which might in and of themselves counteract secretion and spasm. Furthermore, antihistamines alone are not successful in counteracting symptoms in the vast majority of asthmatic patients.

What is the evidence that allergy per se can produce asthma? To be sure most physicians have witnessed dramatic alleviation of asthma after the removal of, or hyposensitization to, an offending antigen which was identified in the environment and/or "proved" to be a potential cause on the basis of skin tests. A case in point is one little eight-year-old girl who visited the clinic one December 23rd with her second episode of severe wheezing. The first attack had occurred the previous year when she arrived at the clinic on December 22. Her asthma lasted throughout the Christmas season at that time. As a result of this history, the fir tree was removed to the outside of the house and the attack was alleviated dramatically. This is a classical instance of extrinsic asthma—so-called because an allergen in the external environment has been "proven" responsible. Ideally, one could substantiate this by aerosolizing the substance to produce an attack since it could be argued that other coincidental factors played a role even in this case.

Although such rather clear-cut instances of sensitivity and dramatic cure are not very common, a fair percentage of children are at least helped by allergy treatment procedures. This is particularly true when pollen sensitivity seems the predominant factor. Thus, it seems safe to conclude that in some patients allergy plays a major role in the production of asthma. Very often, however, skin tests are negative and/or hyposensitization, elimination diets, and removal of potential environmental allergens (e.g., animals, feathers, and the like) are of no avail.

Aside from the absence of beneficial or lasting results from hyposensitization in many cases, there are other observations that suggest that allergy alone is an insufficient explanation for asthma in these patients. While studying a group of 18 perennial, intractable asthmatics, 14 of whom manifested skin sensitivity to house dust, Long *et al.* (1958) sprayed the hospital rooms overnight with material collected in vacuum cleaners in their respective homes. In no case was asthma produced. In a similar fashion, Dekker, Barendregt, and deVries (1961) used aerosolized allergens to test skin reactions and discovered that there often was no correlation between the two tests. Others have demonstrated changing skin reactivity with emotional stress (Layton, Lee, and Yamanaka, 1962; Wolf, 1956).

The case for allergy has been supported by the belief that asthma and

the associated sensitivity tendency is genetically determined. Undoubtedly, one finds families in which members of several generations on both sides have been afflicted with eczema, hay fever, and/or asthma. Ratner and Silberman (1953) found that 59 per cent of children with allergic eczema later had asthma and/or hay fever. Furthermore, more allergy was found in the offspring if both parents were allergic. Commenting on their own experience with asthma and the world literature, they stated: "It seems to us from the data of Schwartz (1952) that what may be inherited is not the capacity to become sensitized, but a respiratory tract which may react with the production of asthma or rhinitis, due to a multiplicity of stimuli, one of which may be the antigen-antibody mechanism" (p. 374).

It should be borne in mind that the various genetic studies included all cases of asthma or allergy without attempts to separate out those which had dubious or minimal allergic tendencies. Schwartz (1952) attempted in a crude way with history and skin tests to separate his cases into two groups. The work of Purcell, Bernstein, and Bukantz (1961), Block *et al.* (1964), and Dekker *et al.* (1961) may ultimately lead to subclassifying asthmatics in a manner which will make genetic studies more fruitful.

For asthma, a version of Koch's postulates might be helpful in documenting an allergic basis: The disease must be reproduced by inhalation or ingestion of the suspected antigen without the patient's knowledge.

Reflex bronchoconstriction. There seems little question that asthmatic episodes in some patients are associated with upper respiratory infections. The release of histamine due to sensitivity to bacterial protein has been hypothesized. It has been suggested alternately that there may be in some patients an exaggerated inflammatory response to respiratory infections per se with resultant edema and mucus production, all contributing to occlusion of the airway.

Nasal and upper airway inflammation with the resulting secretions might conceivably initiate reflex bronchospasm in susceptible individuals. Evidence supporting such a reflex is found in studies of the effects of fluids and particulate matter introduced into the upper air passages of man and animals. The mechanism is one by which the tone of muscles controlling the size of the conducting airways can be modified via the vagus nerve (Stein and Ottenberg, 1958). Bronchoconstriction can be produced reflexly when receptor epithelial cells in the upper nasopharynx are stimulated by particulate matter including odorous substances and dust. Nadel and Widdicombe (1963) demonstrated that inert dust can provoke this reflex even in normal individuals and animals, and that

atropine can block the reflex. They suggested that the narrowing may facilitate expulsion of irritants by increasing the linear velocity of airflow during coughing. Whether respiratory infections could initiate this reflex is unproven but it is a tempting hypothesis. This reflex mechanism could also be responsible for the development of episodic outbreaks of asthma noted to be associated with various types of air pollutants (e.g., Beard, Horton, and McCaldin, 1964; Zeidberg, Prindle, and Landau, 1961).

Vagal discharge. It has been demonstrated (Curry, 1947) that mecholyl, which simulates vagus nerve parasympathetic effects, produced marked reduction of the vital capacity in 27 asthmatic patients. This was in contrast to its minimal effects in only 3 of 10 normal subjects and moderate effects in a group of 11 uncomplicated hay fever cases. Although histamine by injection or nebulization can have similar differential effects, it does not seem to act via the vagus nerve (Nadel and Widdicombe, 1963). Furthermore, Curry (1946) demonstrated that asthmatics are relatively more reactive to mecholyl than to histamine. For example, those without active asthma responded to mecholyl but not generally to histamine. This does not seem in keeping with the notion that asthma is primarily an allergenic response with histamine release. The obvious implication is that a vagal mechanism may be capable of initiating the asthmatic syndrome.

Airway collapse. A series of papers by Groen, Dekker, and colleagues have implicated a mechanism for the production of asthmatic breathing which is most intriguing. Both adult asthmatics and some nonasthmatic individuals can be taught to wheeze voluntarily by producing a positive intrathoracic pressure as a result of contracting the abdominal and chest musculature during expiration. This is done without glottic closure. Radiographic observations made during artificially produced wheezing and in asthmatics during attacks reveal a marked degree of narrowing of the trachea and larger bronchi due to inward compression of the membranous portions of the wall (Groen and Dekker, 1960). This conclusion receives further support from comparisons of the wheezing frequency spectrum produced voluntarily and during an attack (Dekker, van Vollenhoven, and During, 1961), as well as by intrabronchial and intraesophageal pressure measurements (Dekker, DeFarer, and Heemstra, 1958).

This proposed mechanism for the production of asthmatic breathing could explain the very sudden onset of wheezing in some patients, or the marked lability of wheezing over a short period of time. It is, of course, most appealing because of the ability of conscious processes to influence breathing through this route. However, even if it is not a learned or

acquired mechanism under central control, it could explain the deterioration of some asthmatics as the attack worsens and increasing positive pressure causes passive collapse of larger airways. The investigators could not entirely explain the edema and hypersecretion of the large and small bronchioles on this basis, though they suggested these could be secondary to respiratory obstruction.

We would consider this an alternate mechanism by which asthma can result. The classical spasm of smooth muscles in peripheral bronchioles, attendant edema, hyperemia, and secretion may well occur in attacks associated with allergens, infections, and the like. There may also be bronchospasm in some subjects resulting from nasopharyngeal reflexes described above. In others, the exclusive or primary mechanism may be that described by Groen and Dekker (1960). Furthermore, it is conceivable that allergen- or infection-induced asthmatic episodes may allow some subjects to learn how to breath like an asthmatic.

Psychophysiologic Factors

Studies in both man and animals attest to the effects of emotion on respiration. Asthmatoïd breathing in animals under varied stressful circumstances has been observed (Masserman and Pechtel, 1953; Seitz, 1959). Exposed to unpleasant, surprising, fearful, or anxiety-provoking situations, the respiratory changes in many human subjects are in terms of depth and rate or irregularity, as with sighing. Breathlessness is reported during anxiety both in clinical and in experimental situations (Wittkower and White, 1959). Wheezing per se has been produced only in individuals predisposed to expiratory obstruction.

Owen (1963) recently reported that the mother's voice recorded on tape produced greater variability in amplitude and greater breathing irregularity in the asthmatic child compared with other chronically ill controls matched for age and sex. Significantly, the results were not influenced by the nature of the material recorded (threatening versus non-threatening). The author also noted audible wheezing in a number of asthmatic children during the second of two experimental sessions.

Learning. A number of authors have considered the possible role of learning in the development of asthmatic attacks. For example, Turnbull (1962) discussed ways in which both classical conditioning and instrumental learning models can be employed. The complexity of the relationships between real-life occurrences and symbolic thought processes allows for a wide variety of hypotheses regarding the elaboration of learning.

Bykov (1957) has reported on respiratory conditioning in animals.

The striking finding in many of these animal studies was the persistence of the visceral (e.g., respiratory) component of the conditioned response long after the motor (e.g., avoidance) behavior had disappeared. Asthmatic conditioning in animals has been accomplished by Noelpp and Noelpp-Eschenhagen (1951) and Ottenberg *et al.* (1958). The earlier workers conditioned four out of eight guinea pigs to a sound stimulus which had accompanied a sensitizing protein aerosol spray or a histamine spray.

Ottenberg *et al.* (1958) noted differences between guinea pigs in their susceptibility to egg white sensitization, as had Ratner whose work they cited. Of six guinea pigs which had repeated asthmatic attacks (as observed clinically) upon exposure to the allergen, all continued to experience similar symptomatology when placed subsequently in the same aerosolizing chamber free of antigen. Thus, as in humans, one finds in guinea pigs evidence of individual susceptibility both to sensitization and to conditioning. Stein (1962), however, has questioned the significance of this study by emphasizing the need to obtain direct measurements of bronchiolar activity. In view of observations made by Masserman and Pechtel (1953) and Layton *et al.* (1962), monkeys would seem ideal candidates for future studies of more complex asthmatic conditioning.

In a study by Stein and Ottenberg (1958), 22 of 25 patients reported that odors were responsible for some asthmatic attacks. The authors considered most of these odors "anal" derivatives bearing connotations roughly classified as clean or unclean (e.g., urine, feces, disinfectants, smoke). Fewer were of an "oral" nature and about 20 per cent were associated with "romance" (perfume, flowers, and the like). These authors also present data indicating that feces and sweat are not described as unpleasant odors until children attained five years of age or older. They conjectured that attacks associated with these odors suggest conflict at the anal stage of psychosexual development. The nasopharyngeal bronchoconstrictive reflex is suggested as the route by which these attacks may be initiated. Odors could, of course, serve also as conditional stimuli after being associated with other asthmaticogenic factors. Thus, a patient truly allergic to ingested fish might manifest asthma at a later time when smelling fish or fish-like odors.

Dekker and Groen (1956) reported a marked decrease in respiratory vital capacity and clinical asthma in three patients (of 12 studied) by reproducing controlled situations akin to those reportedly responsible for attacks in daily life. Thus, viewing the picture of a horse or an artificial goldfish in a bowl was successful in producing an attack.

Dekker, Pelser, and Groen (1957) describe two patients who had

experienced asthma after a number of exposures to nebulized allergens and who subsequently had attacks when inhaling an antigen-free mixture, then oxygen, and finally when only the glass mouthpiece was placed in their mouths. Although it is appropriate to invoke a conditioning model to explain these results, "the occurrence of conditioning during the investigations for the presence of inhalation allergy is by no means the rule" (p. 106). The same authors reviewed other cases of presumed conditioned asthma in the literature, including the famous case, reported by Vaughn, of the lady, hypersensitive to roses, who developed an attack when shown a paper rose.

Purcell (1965), in his recent review, quotes personal communications from both Dekker and Knapp relating their negative results in attempting to condition asthma and concluded that "the successful conditioning of asthma remains to be demonstrated" (p. 2105). However, this summary statement does not deny that learning, when viewed broadly, may play a significant role in the development and elaboration of asthma in certain individuals. The need is for more imaginative research concerning the manner in which previous experiential factors can influence asthma.

Psychohumoral factors. A multitude of endocrinologic and neurohumoral factors could be discussed when considering either the production or alleviation of asthma. Steroids are considered effective by blocking allergic manifestations. However, they are also effective in combating many types of nonallergic exudative phenomena. Epinephrine and analogous substances are thought to counteract bronchoconstriction and reduce edema. It should be noted that both steroids and neurohumoral substances like epinephrine are secreted during various emotional states. Therefore, it is of interest that Funkenstein (1953) reported difficulty in inducing attacks with mecholyl in asthmatic students under external life stress, such as before examinations. This compared strikingly with marked responses in these same seven patients during control periods. Increases in blood pressure and heart rate suggested that norepinephrine or epinephrine was circulating in greater quantities during the stress periods. In a sense, then, emotions may sometimes exert a beneficial effect upon the allergic state, though the mechanism remains uncertain. This is in marked contrast to the broad conceptualization that "stress" induces asthmatic attacks.

Hypnosis. A recent study claimed that hypnosis, particularly so-called autohypnosis, appreciably improved the clinical status of 27 adult patients. The frequency of wheezing decreased in this group in comparison with a control group of 28 treated only with bronchodilators (Maher-Loughnan *et al.*, 1962). Another study (White, 1961) described the

same clinical effect, but of interest was the fact that the vital capacity was unchanged in these patients even though clinical relief was reported. This would seem analogous to the effects of tranquilizers, which may often allow the patient to become oblivious to what were formerly unpleasant symptoms.

A similar phenomenon has been described in children. Bernstein *et al.* (1960) claim that institutionalized asthmatic children treated by means of an overall multifactorial approach often experience a complete clinical remission. Some, however, may continue to manifest obstructive respiratory patterns discernible only by means of objective measures of pulmonary function. This points once more to the limitations of evaluating any therapeutic approach in asthmatic patients simply by judging clinical status or subjective complaints.

Electroencephalographic Findings

A number of studies of asthmatic children and adults have resulted in descriptions of abnormal brain waves in from 30 per cent to 60 per cent of the patients (Holmgren and Kraepelin, 1953; Panzani, Boyer, and Turner, 1960). These findings have been attributed to such factors as decreased oxygenation of the brain, allergic effects on cerebral blood vessels, and a midbrain dysfunction responsible for the asthmatic syndrome. Similar EEG changes have been described as concomitants of behavioral disorders (Jasper, 1949). It should be noted that the interpretation of EEG's varies considerably even in the hands of competent investigators. However, even if confirmed by others, these electrophysiologic abnormalities may relate either to the causes or the effects of the basic pathology. It is hoped that a prospective study of brain waves in potentially asthmatic children might aid in understanding the nature of these findings.

Psychological Factors

Psychodynamic processes: crying. Many authors have described the absence or deficiency of crying as a characteristic of asthmatics. It has been suggested that the vocal apparatus is sensitized early in life as a result of crying unheeded or punished by the maternal figure. Later, fear of estrangement of the mother or a substitute figure supposedly leads to cry repression and resultant asthma through an undetermined mechanism. The inhibited cry is thought to relate to anxiety or rage directed toward the mother. Gerard (1946) and others have described the relief of asthma with crying, particularly during psychoanalytic sessions.

Mindful of the previously described observations regarding bronchial

collapse with effort (Groen and Dekker, 1960), investigators may now wish to study the physiology of crying in both normal and asthmatic children. It is conceivable that laughing, crying, or panting with exercise may predispose to wheezing as suggested by some authors (French and Alexander, 1941; Purcell, 1963).

Introjection. Fantasies of asthmatics dealing with incorporation of another person (e.g., the mother) have often been described. The ambivalence toward that person is supposedly symbolized by the struggle over urges toward intake and retention in competition with powerful riddance impulses. It has been hypothesized that these are expressed in the retention of air in the chest as the individual restrains "the scream of rage which might destroy the person whom he needs. . . ." Knapp deals with these complicated conceptualizations in a recent theoretical paper (Knapp, 1963). Consistent with the views of Sperling (1963), among others, he suggests that "insofar as symbolic stimuli and the emotions they arouse provoke asthma . . . the complex can be regarded as a conversion process, using a predisposed organ system" (p. 252).

Personality characteristics. A large body of literature, much of which is of a descriptive, nonexperimental nature, has tended to mold an image of a distinct asthmatic personality and of a specific maternal-child constellation. Various authors deduced either that these factors were primary and causative or that they were secondary, resulting from the disease and its effects on child and family. That many children suffering from asthma manifest behavioral disturbances is hardly denied even by the least psychologically oriented physicians.

The literature generally attributes certain characteristics to many asthmatic patients. Psychiatrists find almost total agreement on one point: that these patients have an inordinate attachment to their mothers. There is considerable agreement that the mothers are ambivalent toward, if not rejecting of, these children; however, their overt behavior is more generally described as overprotective (Gerard, 1946; Long *et al.*, 1958). Often the mother appears to be dependent upon the child for needs unfulfilled in the marriage, resulting in mutual interdependence (Block *et al.*, 1964; Mohr *et al.*, 1963).

Terms such as anxious, immature (or pseudomature), hypersensitive, conforming, insecure, and lacking in self-confidence are commonly found in the literature describing the asthmatic child (Block *et al.*, 1964; Fine, 1963; French and Alexander, 1941; Gerard, 1946; Wittkower and White, 1959). Thirty years ago, Rogerson, Hardcastle, and Duguid (1935) described many of these characteristics along with latent aggressive tendencies. Gerard (1946) subsequently also noted that hostile and sexual urges were often repressed out of fear of maternal estrangement.

After a careful perusal of the literature particularly relating to children, we have to agree at least tentatively with those authors who have explicitly stated that asthma is not associated with a very specific personality type (Knapp, 1963; Neuhaus, 1958; Rees, 1964; Sperling, 1963). However, the following studies provide evidence that asthmatic children and their families often manifest more behavioral disturbances than normal control subjects. Whether these are specific for asthma or are commonly associated with various types of chronic illness are questions explored by only a few investigators.

Comparative studies. Rees (1964), utilizing crude rating scales of personality, observed differences between outpatient asthmatics and matched controls in the accident clinic. The author described the asthmatics to be more sensitive, anxious, obsessional, and achievement-oriented. Conflictual home environments and faulty parental attitudes (e.g., overprotection, overt rejection, and perfectionism) were found in significantly greater frequency in the asthmatic group than in controls. Five per cent of the group had their first attack within about a week of starting school and overdependency on the parents was the attributed cause.

There is evidence in the literature that the abnormal behavior described in asthmatics is not characteristic of asthma per se. Comparing 34 asthmatic children with well-matched chronically ill cardiac patients who were restricted in their activities, Neuhaus (1958) found no essential differences on psychological testing with the Rorschach test, Despert Fables, and Brown Personality Inventory. Furthermore, he could find no difference between the well siblings and the sick children in the same families; however, both the patients and siblings differed from healthy children. They "were significantly more maladjusted" or "neurotic" than were the children of the normal control group; their personalities were characterized by traits of anxiety, insecurity, and dependency.

Neuhaus (1958) reviewed similar findings by others, and particularly the study by Vles and Groen (1951), wherein both the patients and their siblings were more neurotic than healthy controls. In contrast, Fine's study (1963) described marked differences between siblings and patients. This was done in a very low socioeconomic population of different ethnic and racial origins and these siblings appeared healthy in contrast to the asthmatic children. Fine observed more serious psychological problems in the male patients.

Mohr *et al.* (1963) recently compared five asthmatic children with five children with infantile eczema, some of whom later developed asthma. The former were clinically more conforming, passive, submissive, and immature, and struggled with strivings for independence in the

face of infantile wishes. Separation was a mutual threat for both mother and child. The parents of the asthmatic children were dissatisfied with each other and often in open conflict. This study is of importance in that it contrasts two conditions considered by many to have allergic and/or psychosomatic implications. It would suggest that personality characteristics and the family milieu are different in these situations but the small numbers of patients studied set limits on such an interpretation. Furthermore, some of the eczema cases later manifested asthma.

Well-controlled studies have been few and far between. With the exception of a recent investigation (Block *et al.*, 1964), we are unaware of any other that was carried out with a scrupulous attempt to evaluate the data unmindful of the child's physical symptoms. That this can be done with psychological test data is evident, yet even the careful study by Neuhaus (1958) does not mention such an approach.

The evidence in many of these investigations points toward disordered behavior in asthmatic patients if not also in family members. It appears that the personality of the asthmatic may reflect the struggling, anxiety, capitulation, and/or defenses evolving in a situation of family conflict, chronic illness, and maternal-child interdependency. An important issue has been raised in more recent studies: Are there characteristic differences even between asthmatic patients which allows them to be categorized along a spectrum reaching from primarily physically induced (allergic?) asthma to those whose basis is largely psychological?

Comparisons of asthmatic subgroups. Dekker and associates (1961) attempted to categorize adult female patients into "allergic" and "non-allergic" groups with the aid of the history, skin tests, and responses to inhalation of suspect allergens. A personality inventory (Herron) produced no significant differences between the subgroups.

Some recent studies in children appear to have been more successful in detecting subgroup differences. In a continuing series of investigations at the Children's Asthma Research Institute and Hospital in Denver, Colorado, investigators have separated patients into groups on the basis of whether or not spontaneous remissions occurred within several months after admission (Bernstein *et al.*, 1963; Purcell *et al.*, 1961).

Of 20 patients categorized as rapidly remitting (R.R.), 15 considered such emotions as anger and worry to be factors triggering an asthmatic attack. This contrasts with 6 of 18 patients remaining dependent on steroids (S.D.) who volunteered similar information (Purcell, 1963). A larger number of R.R. children also utilized some "mental" techniques (e.g., watching television) in an attempt, sometimes "successful," to relieve the attack.

A number of other tentative findings have been cited suggesting psy-

chological and social differences between the two patient groups and their respective parents. The resultant hypothesis states that "the asthmatic syndrome more often functions like a psychogenic symptom among rapidly remitting children than among steroid-dependent children. . . ." (Bernstein *et al.*, 1963, p. 242).

A more recent study (Baraff and Cunningham, 1965) involving 40 of the patients from the same institution reports striking contrasts between the rapidly remitting patients and matched controls. Fewer differences were found between the control and the steroid-dependent groups.

Another approach to the subdivision of asthmatic patients was demonstrated by Block and associates (1964) who devised a technique for scoring a patient's predisposition to allergic reactions. The Allergic Potential Scale (A.P.S.) is based upon such items as family history, blood and nasal eosinophile count, skin tests, and other variables. Using the Children's Apperception Test (CAT) and doll play dramatization of six stories, they concluded that members of the low A.P.S. group (presumably less predisposed to allergy) were generally more conforming, pessimistic, occupied with orality and aggression, and had a low frustration tolerance. Both parents, independently, said their children were rebellious, clinging, nervous, jealous, and whiny. A number of other tests were performed, including the MMPI, TAT, PARI, and the Rorschach. Observations were also made of mother-child and mother-father interaction. In each test situation statistically significant differences could be identified between high and low A.P.S. patients.

The authors insisted that in all of this work there was "scrupulous independence of medical and psychological data." This is a very impressive study since a large number of items discriminated statistically between the groups of patients, parents, and interactional situations in the predicted direction: the "low allergy" group manifested more psychosocial disturbances.

A different approach was taken by Dubo *et al.* (1961) who correlated variables relating to the family situation and the asthmatic child's adjustment with the age of onset, severity, and response to therapy. None of these comparisons resulted in statistical significance. Subdividing these same families on the basis of family adjustment, it was demonstrated that this variable was positively correlated with the child's behavioral adjustment but not with his disease process *per se*. This is not consistent with the findings of Knapp and Nemetz (1957) who described a significant relationship *in adults* between personality disturbances and severity of asthma. The longer duration of the illness in adults might, of course, account for differences when compared with findings in children.

It may be that many of the children who manifested poor adjustment

in the study of Dubo *et al.* (1961) would fall into the R.R. and/or low A.P.S. categories of the aforementioned two studies. Certainly it would seem important in such studies to categorize asthmatic children on the basis of allergic potential and/or response to hospitalization. Furthermore, it would be of interest to determine the extent to which A.P.S. measures would correlate with the R.R. and S.D. categories in chronically ill children in residential treatment centers for asthma. It should be emphasized that this latter group represents the most seriously ill asthmatic patients, in contrast to the subjects in the other studies.

The observations of improvement or disappearance of symptoms and signs in certain asthmatic children admitted to hospitals date back at least to the early thirties (Peshkin, 1963; Rogerson *et al.*, 1935). Clinicians since that time have often noted the remarkably rapid improvement during an acute attack (sometimes hours after hospitalization) which did not seem attributable simply to a changed physical environment (allergens, and so on). The subdivision of patients on the basis of response to a changed environment by Purcell *et al.* (1961), and/or allergic predisposition (Block *et al.*, 1964), allows for contrasting psychosocial and other variables related to the patients and their families in a manner previously not fully exploited.

Synthesis Attempts

It is evident that many conceptualizations of the major causative psychological factors in asthma have been suggested. A nuclear theme in most of them has been the conflict in the child over dealing with independence from the maternal figure. Early "sensitization" of the respiratory apparatus is suggested as resulting from inconsistent maternal responses to crying in infancy, unusual attention during respiratory illnesses, or constitutional factors such as allergic predisposition.

Most investigators have tentatively agreed that allergic sensitization may play at least some role in most patients. It is likely, in view of some evidence cited, that emotions can modify the sensitivity of the respiratory tract within an individual, thus increasing his susceptibility to allergens, infections, irritants, and other factors (Wolf, 1956).

Whether psychological processes *alone* can initiate asthma remains debatable, though laboratory and clinical data tend to substantiate that claim. The mechanisms proposed include trachobronchial collapse, excessive vagal activity, reflex bronchoconstriction due to "sensitized" nasopharyngeal receptors, and conditioning related to previous associations between attacks and certain situations or forms of stimulation (e.g., odors). A recent paper suggested that asthma may, in certain instances,

represent a learned response, with differential reinforcement by the mother ultimately shaping the nature of the respiratory symptom (Turnbull, 1962). Thus far there is little evidence supporting a specific personality type, and the often cited nuclear conflict appears to be the non-specific dependency problem characteristic of many patients with so-called psychosomatic or chronic diseases beginning in childhood.

Certainly the studies of allergic potential and response to hospitalization may be productive in separating out those patients whose symptoms are more prominently associated with psychosocial variables. The fact that such individuals manifest asthmatic symptoms under certain conditions may relate less to *specific* psychosocial factors than to the mechanisms within the patient which predispose him to expiratory obstruction. Given this constitutional predisposition, certain conflictual or affective states very likely initiate the asthmatic syndrome and may tend to perpetuate it.

INFANTILE ECZEMA

It is not surprising that the skin should be an organ of great complexity, for it is responsible for such diverse functions as elimination of waste products, temperature control, and sampling the environment through its many sensing systems. The varied glands, blood vessels, smooth muscles controlling hair erection, and neural transducers seem inextricably interconnected by a vast network of neurones, and yet these structures manifest a remarkable independence of function (Rothman, 1954).

The glands, vessels, and smooth muscles are under control of the autonomic nervous system and through these pathways it is possible to induce such emotional response concomitants as pallor, flushing, cutis anserina ("goose bumps"), hives, sweating, and cold hands. It is little wonder that this complex organ demonstrates a multiplicity of disorders and that investigators have looked to the nervous system for explanatory mechanisms. Infantile eczema, which has so often in the past been associated with the field of allergy, is a useful example for illustrating the psychophysiologic mechanisms involving the skin.

Infantile eczema (atopic dermatitis, Besnier's Prurigo) is a not uncommon skin ailment usually beginning in the first year of life. It is characterized by a raw, exuding and/or bleeding skin surface, resulting in crusts of material, all of which leads to intense itching, trauma from scratching, and often secondary infection. In the less acute stage, redness, thickening, and scaliness of the skin occur. The face and flexural surfaces of the extremities are most commonly involved.

The tendency toward remissions, exacerbations, and chronicity makes the task of prognosticating a difficult one although the symptoms generally abate considerably within several years. In Sedlis' (1965) series of 26 severe cases in infancy, 20 per cent at eighteen months and only one patient at five years of age remained severe.

Pathophysiologic Findings

In his excellent text on skin physiology, Rothman (1954) reviewed what he considered to be constitutional factors associated with eczema. The impedance of the skin to an electric current has been found to be subnormal in affected adult subjects. Gentle pressure elicits unusually intense and long-lasting pallor even on uninvolved skin. The vasoconstrictive response to cooling is not consistent in all areas. It is very dramatic at many skin sites; however, certain flexural skin surfaces manifest less vasoconstriction with cold than in normal subjects. Furthermore, these sites manifest more vasodilatation with heat (Kierland, 1965). These are areas that commonly become sites of eczematous change.

These patients manifest hypersensitivity to the injection of the drug acetylcholine, resulting in a paradoxical delayed blanching of the skin. Also in contrast to the usual vasodilatation reaction, eczema subjects react with constriction of blood vessels to nicotinic acid esters (Rothman, 1954). Most of these findings suggest that patients with eczema have some vulnerability of the blood vessels. It is of importance to note that Kierland (1965) finds these responses in many allergic patients with or without eczema.

A recent study (Solomon, 1964) suggests that pruritis (itching) in acute eczema may be the result of a hereditary defect in the cutaneous metabolism of norepinephrine, a chemical mediator of neuronal discharge. Since neither this nor the previously mentioned studies have, to our knowledge, been performed on uninvolved infants prior to the onset of the disease, one cannot be assured that these are constitutional physiologic alterations rather than the result of the eczematous process itself.

Itching and Trauma

Whatever the initial cause of the blood vessel and skin changes in infantile eczema, the disease seems to persist because of mechanical trauma in many if not all cases. According to Rothman (1954), "the state of itching hyperexcitability creates the soil for the tormenting itching-scratching cycle" found in contact and atopic dermatitis, urticaria, and so on.

The exact cause or mechanism of itching is not well understood. Sen-

sory control mechanisms in the brain seem to influence the intensity of itching. One is immediately reminded of the midbrain mechanisms responsible for a person's capacity to concentrate on certain sensory inputs. Hernández-Peón, Scherrer, and Jouvet (1956) studied unanesthetized cats by recording the electrical response of the cochlear nucleus to auditory clicks presented alone and in conjunction with visual, olfactory, or shock stimuli. These latter three conditions resulted in a diminution of the neural response to the auditory clicks. This presumably reflects the capacity of an organism to modify his responsivity to environmental stimuli. Analogously we have noted that infants with severe eczema may be distracted from scratching if novel visual or auditory stimuli are provided.

Although itching may represent a central response to peripheral stimulation, it may also be central in origin. The ensuing scratching and rubbing may, in predisposed individuals, produce vascular changes, excoriation, weeping, and, possibly, the picture of acute eczema. Whether vascular and/or local metabolic changes leading to eczema are initiated through the central nervous system remains conjectural. It has been demonstrated that under hypnosis and psychological stress urticaria (hives) and skin exudation ("weeping") can be produced in both normal subjects and those with skin disease (Graham and Wolf, 1953; Kepecs, Robin, and Brunner, 1951). Certainly the sensation of itching can also be produced by hypnotic means.

Allergy

Many authors concede only that itching and scratching lead to persistence, not initiation, of the disease. A majority of these physicians are allergists who are convinced that hypersensitivity mechanisms *alone* underlie most if not all cases of infantile eczema. In actual fact, however, limited evidence can be marshaled to support this contention. One can cite the known familial allergic predisposition in many cases and the subsequent occurrence of hay fever and/or asthma in some patients.

In Edgren's (1943) series of 331 subjects with infantile eczema studied later as young adults, 25 per cent had experienced asthma, 10 per cent hay fever, 27 per cent urticaria (hives), and 24 per cent had suffered recurrences of eczema. In a control group of 298 subjects with nonallergic skin diseases, these figures were between two and six per cent. Similar figures were recently obtained by Stiffler (1965) in a smaller series of 40 infants with severe eczema restudied twenty-two years later. Pasternack (1965) has demonstrated a higher incidence of asthma in infants developing eczema before six months of age in contrast to those developing it later.

In further support of an allergic etiology are the observations of occasional mild cases of localized acute eczema which respond to the elimination of one or more suspected food allergens from the diet. However, in our own experience and that of others, neither the elimination nor the free feeding of these presumed allergens seems to alter the course of the disease (Leider, 1956).

Stiffler (1965) found that feeding foods which gave positive skin tests in 27 patients had some effect on the course of eczema in only four. Meara (1955) provoked only urticaria and not eczema in a few egg "sensitive" patients liberally fed eggs. Most of them manifested no difficulty whatever. In a recent conference on infantile eczema, Baer (1965) questioned the productivity of this concept and quoted Jacquet's expression, "it is not the eruption that is itchy but the itchiness that is eruptive" (p. 157).

Several briefly reported observations have direct relevance to the formulation proposed by Jacquet. Engman, Weiss, and Engman (1936) studied a child whose skin was clear of eczema but who suffered intense itching and exacerbations of lesions whenever fed wheat. They effectively bandaged the left arm and leg to avoid mechanical trauma from scratching. Wheat was then fed to the child, resulting in generalized pruritus. The next morning patches of eczema were found on all previously affected body parts except those that were protected from scratching. These findings were later confirmed by the same authors as well as by Hill (1965).

The complexity of the interrelationships between central nervous system processes and allergy has been described by Wolf (1956). He cited the evidence that skin tests involving allergens or histamine and skin responses to mechanical stimulation (dermatographia) may vary with the emotional state of the patient. These observations are analogous to the discovery by Layton *et al.* (1962) that fear in Macaque monkeys may inhibit skin reactions (wheal formation) during a passive sensitization test.

One can conclude that although an allergic predisposition may be associated with infantile eczema, other factors probably play important roles in triggering, potentiating, and causing persistence of the skin lesions. Many authors have assigned a central role to the emotions and their visceral counterparts.

Psychosocial Factors

Several fascinating studies have recently been cited to demonstrate the effects of environmental change on the incidence of infantile eczema in

certain populations (Sedlis, 1965). By way of example, Chinese families moving from Formosa to Hawaii or San Francisco experienced an eight-fold increase in such cases. It is certainly true that in such studies one has a very large number of variables to contend with, many of which could influence the occurrence of skin disease. Diet and contact irritants (soap, clothes, and so on) are often considered first, but it is also possible that sociocultural influences on such families and their children might be significant variables (Tichauer, 1963).

There are many suggestions in the literature that certain personality characteristics and/or family constellations antedate the eczematous skin condition (Obermayer, 1955). Few authors, however, claim that these *alone* are causative. Most of these studies have been performed with adult subjects long after the onset of the skin disease. Gilberstadt (1962), among others, has found that a wide variety of traits may be discovered in studying these subjects with objective psychological tools, such as the MMPI. Approximately 50 per cent of his adult subjects were "characterized by use of suppression, repression, and other hysteroid character traits."

In a study of 10 eczematous and/or asthmatic patients by Mohr and associates (1963), the children appeared immature, unassertive, and passively dependent upon their mothers. The infantilization by the mother was viewed as a defense against her hostile, destructive impulses toward the child. These mothers were noted to separate themselves emotionally from their children, often encouraging the father or another surrogate to function in a maternal role. Asthma occurred in some when older, seemingly associated with emerging aggressive or sexual impulses.

Rosenthal (1952) suggested maternal inaccessibility as one predisposing causative factor. He briefly interviewed the mothers of 25 infants with infantile eczema. The resultant retrospective data indicated that many of these mothers, in contrast to control cases, tended to let their infants cry without picking them up unless there was some obvious reason for discomfort. This reflected what the author considered inadequate caressing and cuddling, and seemed associated with a rejection of the burdens and responsibilities of motherhood. Rosenthal's plea for physical contact is reminiscent of the "contact comfort" suggested as a necessity in Harlow's (1958) studies of infant monkeys.

Many authors recognize the weakness of the suggestions that early family relationships are in some way causative of infantile eczema. No prospective studies have been made in a group of potentially eczematoid infants. The retrospective data describe events from a vantage point of many months or years after the onset of the disease. Distortions, particu-

larly of emotionally charged factors, are common in such data (Wenar, 1963). Furthermore, an infant with severe eczema is pathetic and inviting but at the same time repulsive in appearance. The chronic daily routine of skin care, constant alerting to inhibit scratching, exhausting attention to medical details, and the like may readily play havoc with maternal-child relationships.

Thus, it does not seem unreasonable to suggest that some, if not all, of the described maternal characteristics stem from the situation and do not cause it. However, even if such relationships simply result from the circumstance, they may have considerable impact upon the child's early life and subsequent behavior (Bergman and Aldrich, 1963).

Summary

Patients with eczema of the infantile and adult types often manifest generalized skin hyperreactivity to mechanical, thermal, and other stimuli which may be constitutional in origin. Although hypersensitivity to skin test allergens can often be demonstrated, the relevance of food sensitivity has not been documented as well as many believe. Furthermore, it appears that allergic reactions of the skin can be modified by emotional activity.

Clinical experience and some experiments suggest that mechanical trauma may be an essential component of chronic eczematous disease. The persistent scratching results from itching which may in some instances be primary and not simply secondary to the diseased skin. Itching is a poorly understood phenomenon but central processes appear capable of either initiating or significantly modifying it.

Since the skin disorder is probably associated with changes in skin, blood vessels, and glands, the autonomic nervous system, which has some controls over these structures, may be etiologically involved. Through this mechanism and the responses to the sensation of itching, one could postulate the influence of psychosocial and cultural factors on disordered skin function. Studies of population groups and individual subjects in post hoc fashion strongly suggest such influences. As with all psychophysiologic processes, there is a need for studies in a predisposed population of infants before and during the genesis of this disorder.

ANOREXIA NERVOSA

Clinical Manifestations

In an "Address in Medicine," Gull (1868) briefly mentions emaciation in young women resulting from "hysteric aepsia." Subsequently,

case histories were presented which described marked weight loss "explained by the anorexia which led to starvation, and a depression of all vital functions; viz., amenorrhea, slow pulse, slow breathing" (Gull, 1874, p. 23). Significantly there was no organic basis for the anorexia. Since these reports this syndrome has generally been referred to as anorexia nervosa.

A major problem in dealing with anorexia nervosa is the lack of agreement among authors about the defining clinical features. Probably the broadest definition would allow inclusion of all patients losing an excessive amount of weight (i.e., greater than 25 pounds) for psychological reasons (Bliss and Branch, 1960). Included within this description would be not only patients who fail to ingest food but also those who vomit following feedings either spontaneously or because of manual induction. However, other investigators would limit this diagnosis to females demonstrating a decreased food intake, loss of weight, and changes in menstrual habits which cannot be attributed to any organic pathology (Nemiah, 1950). More recently, Mayer (1963) has argued that the term be applied only to patients exhibiting the triad of denial of excessive thinness, denial of hunger, and denial of fatigue.

The majority of investigators would probably agree that one of the most fundamental criteria for the designation of this disorder is a pathologic decrease in food intake in the face of no apparent organic derangement. Consequently, this defining criterion is chosen with the recognition that we are dealing with a "syndrome" and attempts to impose a more limiting definition at this point would be premature.

Anorexia nervosa is a disorder having its onset primarily during the second decade of life and tends to occur predominantly, though by no means exclusively, in females. Menstrual disturbances, usually in the form of amenorrhea, have been observed frequently. In approximately 50 per cent of the 38 patients studied by Kay and Leigh (1954), amenorrhea developed either prior to, or at the same time as, the feeding disturbance.

A number of different investigators have noted in some patients an increase in muscular activity or at least its persistence in the face of malnutrition (Bruch, 1962; Cole *et al.*, 1958; Falstein, Feinstein, and Judas, 1956; Frazier, 1965; Gull, 1874; Meyer and Weinroth, 1957; Nemiah, 1950). As indicated earlier, this phenomenon has played a major role in the conceptualizations of several authors. However, not all observers are in agreement about the objectivity (Bliss and Branch, 1960) or the generality (Nemiah, 1958) of this finding.

Blitzer, Rollins, and Blackwell (1961) noted, "The most striking aspect of the starved children of our study was their denial of their emacia-

tion. Although most of the patients resembled the starved inmates of a Nazi concentration camp, not one expressed the slightest concern about being so thin. On the contrary, many insisted that they were too fat . . ." (p. 373). Similar observations have been made by other investigators (Bruch, 1962; Frazier, 1965; Lesser *et al.*, 1960; Mayer, 1963; Meyer and Weinroth, 1957). The importance of this disturbance in the body image as a diagnostic criterion as well as an index of therapeutic effectiveness has been emphasized by Bruch (1961, 1962, 1963) and Mayer (1963). These authors argue that unless this disturbance in body image is corrected only temporary improvement in eating habits can be anticipated.

Although the excessive weight loss secondary to inadequate intake is often the presenting complaint, many patients demonstrate a more generalized eating difficulty. Not infrequently, real or imagined obesity led to a limitation of food intake which persisted in the form of anorexia nervosa. Furthermore, detailed history and close observation often reveals episodes of excessive food intake alternating with starvation.

A good deal of research effort has been directed toward evaluating the endocrinologic status of these patients. These studies have been reviewed recently by Bliss and Branch (1960) and would suggest the presence of gonadal insufficiency as a *consequence* of inanition. However, thyroid and adrenocortical function do not appear to be affected.

In view of the emphasis placed on a severe disturbance in food intake as the primary criterion in this diagnosis, it is appropriate to consider studies directed toward an understanding of the mechanisms involved in feeding behavior.

Biological Mechanisms in Feeding Behavior

The "process" of maintaining adequate food intake is a complex one and requires an effective integration of numerous biological systems. Investigators have approached the study of these mechanisms by examining biochemical changes and physiological alterations of the gastrointestinal tract and more recently of the central nervous system (Anand, 1961; Brobeck, 1960; Nasset, 1961). Earlier studies suggested that the basic regulation of appetite and the subsequent searching for and ingestion of food was determined by the activity of the gastric musculature. However, further studies revealed not only that appetite persisted following denervation of stomach afferents but also following surgical removal of the entire stomach.

More recent investigations have focused on the role of the central nervous system in the regulation of food intake. As a result of studies em-

playing selective stimulation as well as selective destruction of various brain parts, it has become clear that the hypothalamus is of exceeding importance in the determination of feeding behavior. It is suggested that the hypothalamus is the anatomical site of two different centers: (a) "feeding" center and (b) "satiety" center. The "feeding" center is located in the lateral hypothalamus and, when stimulated, results in hyperphagia and obesity. Furthermore, destruction of this area is associated with aphagia. The medial hypothalamus contains the "satiety" center which when stimulated produces a decrease in feeding behavior. Destruction of this area results in hyperphagia. It has been hypothesized that these hypothalamic centers act by facilitating (feeding center) or inhibiting (satiety center) more peripheral feeding "reflexes," such as chewing, salivation, and so on. It also seems reasonable to assume that activity in these centers results in the transmission of neural impulses upward toward the phylogenetically newer brain parts.

Consistent with the overall concept of the feedback functioning of the central nervous system are the observations that numerous afferent discharges as well as biochemical changes can modify feeding activity (Anand, 1961; Brobeck, 1960; Nasset, 1961). Stimulation resulting from the passage of food through the oropharynx and gastric contraction and distention probably play an important though not crucial role in affecting both the hypothalamus and the more fundamental feeding reflexes. Studies also point to the relevance of body temperature and such biochemical alterations as the degree of glucose utilization, concentration of various metabolites within the blood, and the fluid concentration of various body compartments.

Of additional significance is the observation that generalized motor activity is associated with degree of satiation. For example, there is a marked decrease in the activity of an organism satiated for food. The increase in activity generally occurring with hunger would seem teleologically to increase the likelihood that nourishment would be found. It should be noted that some authors believe that hunger has no *direct* effect on activity (Campbell and Sheffield, 1953). Rather, it results in a lowered threshold to stimulation, with a consequent increase in the tendency to respond to otherwise noneffective stimuli.

The importance of higher brain centers in influencing various aspects of feeding behavior, though very often taken for granted, cannot be overemphasized. Previous individual experiences and sociocultural factors determine to a large extent the methods of obtaining food, the times we eat, the types of food we eat, as well as how we eat. Experimental support for the significance of cerebral structures stems from such studies as those

by Anand, Dua, and Chhina (1958). Various types of cortical lesions produced in cats and monkeys resulted in alterations in the amount and type of food ingested.

There seems little doubt that animals including man have rather complex mechanisms for establishing both qualitatively and quantitatively the biological need for food and for facilitating the incorporation of adequate food. The hypothalamus appears to represent the anatomical site wherein integration of many of these physiological processes takes place. However, the consequences of these more basic organic needs can be modified to a large extent by activity occurring at higher brain levels, i.e., the limbic system, cerebral cortex. Thus, the ingestion of foodstuffs necessary to maintain the appropriate growth and integrity of the biological organism requires an effective integration at all levels of the central nervous system.

Etiology

For the most part, students of anorexia nervosa agree on the psychological origin of the eating disturbance. However, there is much disagreement on the fundamental psychodynamics and underlying mechanisms. Some of this lack of agreement stems from a tendency to overgeneralize from a study of individual cases. Still another probable source of difficulty resides in the assumption that a single etiology can account for the inadequate food intake. In view of the very complex nature of eating behavior, it is reasonable to expect difficulty at a number of different levels.

A simple categorization of the various theories proposed to explain anorexia nervosa can be developed by considering the concept of anorexia. According to *Stedman's Medical Dictionary* (1961), anorexia is defined as a "loss of appetite" (p. 110). Anorexia nervosa would then represent a failure to eat because of a deficiency in "hunger sensations" or an inability to identify appropriately these stimuli. However, while some authors consider a perceptual defect of primary importance, others deny its existence. Thus, it is not surprising that differences in theoretical approaches have developed.

Perceptual deficit. One of the outstanding characteristics noted by Bruch (1962) in her ten-year study of 12 patients with anorexia nervosa "is a disturbance in the accuracy of perception or cognitive interpretation of stimuli arising in the body, with failure to recognize signs of nutritional need as the most prominent deficiency of this type" (p. 189). Phrased somewhat differently, "These people are unable to recognize when they are hungry or satiated, nor do they differentiate need for food

from other sensations and feelings of discomfort" (Bruch, 1961, p. 52). A consequence of such a deficiency would be a denial of hunger sensations.

Unable to identify the usual visceral sensations, eating habits in these patients are influenced by other stimuli. This presumably results in episodes of excessive eating (without awareness of hunger) alternating with periods of decreased food intake. It is hypothesized that the fundamental state is one of satiety. Consequently, submission to the external demands for food ingestion is also interpreted as a loss of control.

Hyperactivity is still another manifestation of the hypothesized deficiency in the ability of these patients to identify biological states. In essence, they fail to perceive the fatigue and weakness resulting from their malnutrition. "On the contrary, the subjective feeling is that of *not* being tired and of wanting to do things" (Bruch, 1962, p. 190).

What mechanisms are responsible for the development of this perceptual deficiency? Does it represent inadequate stimuli, a defect in the reception of these stimuli, or an inability to accurately associate these stimuli with the appropriate referent? One attempt at answering this question is that by Russell and Bruce (1964). These authors compared the peripheral utilization of glucose in controls and patients with anorexia nervosa and were unable to assign a causative role to this factor. Anand (1961) directed attention to the hypothalamus as a possible site for the anorexia. He "suggests that at least some cases of anorexia nervosa are due to overstimulation of the medial hypothalamus containing the satiety mechanism. This region of the hypothalamus also influences the secretory activity of the anterior pituitary, and so anorexia nervosa may be accompanied by signs of endocrine dysfunction" (p. 684).

Bruch (1961) employed a learning model. "Recognition of bodily needs and the behavior appropriate to their satisfaction depend to a large extent upon learning, from infancy on" (p. 51). Effective and appropriate learning requires that the sensed need be translated into appropriate action, either by the individual or others, with the consequent satisfaction of the need. However, in patients with anorexia nervosa, Bruch hypothesizes a family environment in which self-expression is not encouraged nor the need consistently reinforced.

Another theoretical approach to this problem would focus on the effect of various ongoing psychological processes on hunger sensation. This could take the form of inhibiting sensations at their site of origin or in preventing them from coming into awareness.

If we accept the idea that the stimuli are sensed and brought into

awareness, the modification could occur in their interpretation. For example, in some patients these stimuli could be distorted and interpreted as originating from the genitalia and representing sexual impulses. Since hunger is a subjective experience, one cannot rule out the additional possibility that some individuals would be unwilling, for any of a number of reasons, to report the hunger experience to observers. Thus, the patient would deny being hungry if any of these situations prevailed.

"Voluntary" food restriction. In a large percentage of reported cases the patient does appear to be aware of hunger sensations. However, contrary to the drive properties of these stimuli, food is avoided. For example, Cole *et al.* (1958) studied a thirteen-year-old girl with anorexia nervosa who "... had no vomiting and no anorexia. She avoided all foods because when she did eat, she would eat excessively" (p. 50). Blitzer *et al.* (1961) identified not a loss of appetite but a fear of eating, and appropriately entitled their article, "Children Who Starve Themselves: Anorexia Nervosa."

Frazier *et al.* (1955) emphasize the child's compliance with parental wishes, conscious as well as unconscious, in the development of eating problems. In the case of anorexia nervosa "... the hostility is so marked that the child is repelled by food because of the parent's revengeful attitude about eating" (p. 230). Lesser *et al.* (1960) noted in the early histories of their patients that dependency problems were often expressed in the feeding situation. The restriction of food intake at the time of puberty might thus represent an attempt to avoid the acceptance of a more adult role.

Food, the ingestion of food, and the consequences of eating and over-indulgence are all associated with a good deal of symbolic elaboration. Blitzer *et al.* (1961) reported that "Preconscious and conscious fantasies relating to food and eating included animistic ideas about food, delusions that certain kinds of food were poisonous, fear of oral impregnation and gastric pregnancy, ideas of anal birth, orally aggressive and sometimes cannibalistic impulses, and the equation of not eating with a lifelong, childlike dependent status" (p. 382). A number of authors have noted these symbolic associations in the detailed anamnestic material obtained from patients and have attributed the avoidance of eating to these unconscious or preconscious fantasies (Berlin *et al.*, 1951; Bliss and Branch, 1960; Cole *et al.*, 1958; Falstein *et al.*, 1956; Thomae, 1963).

A symbolic relationship between the intake of food and some form of sexual behavior frequently has been observed. Beech (1959) attempted to objectify this relationship by studying a twenty-seven-year-old

woman with anorexia nervosa, employing the technique of subliminal stimulation. Both sexual and nonssexual ("neutral") words were presented below the auditory threshold and the subject was required to record the first word that came to her mind. Subsequent analysis revealed a significantly greater percentage of food responses to the sexual than to the neutral words. This is consistent with the hypothesis that food serves as a sexual symbol. Since this study was performed on but one subject, there is still the urgent need for many more investigations of this type.

Summary

Since the early reports by Gull (1868) and Laseque (in Kaufman and Herman, 1964), a great deal has been learned about patients manifesting the syndrome of anorexia nervosa. Most significantly, no single etiological conceptualization seems adequate to all patients with this disorder. In view of the recent advances in our knowledge of the biological factors involved in eating behavior, it is appropriate to direct further efforts toward a more detailed evaluation of these various biological systems in patients with anorexia nervosa. This should be done in conjunction with studies aimed at elucidating the essential psychodynamics and their development in individual patients.

PEPTIC ULCERS

Until the early twentieth century peptic ulceration in children had been considered a rarity. However, within the past twenty years an increasing number of reports have detailed the occurrence of this pathologic entity in children under sixteen years of age (Milliken, 1965). These reports, for the most part, have been clinically oriented and do not attempt to clarify the mechanisms involved in the production of peptic ulcerations. As a consequence, the later discussion on the physiology and psychophysiology of peptic ulcer formation will rely heavily on studies conducted on adults and animals.

Clinical Features

The manifestations of peptic ulcerations in children differ markedly in many instances from those noted in adults; this contrast is more evident the younger the child (Craver and Glenn, 1958; Michener, Kennedy, and DuShane, 1960; Muggia and Spiro, 1959; Ramos, Kirsner, and Palmer, 1960). In the neonatal period the presence of a peptic ulcer is usually heralded by the sudden occurrence of vomiting or blood in the stool. Although sudden gastrointestinal hemorrhage is also the usual

manifestation between two weeks and two years of age, other signs are often present. These include vomiting, vague abdominal pains, refusal to feed, loose stools, and possibly failure to thrive.

Complaints of a more chronic nature are evident between two and nine years of age. Symptoms occurring between ages nine and fifteen years are similar to those noted in adults. There are recurrent episodes of abdominal pain frequently at night and upon rising, and vomiting which generally occurs during or immediately following meals. The ingestion of food often but not invariably relieves the abdominal pain.

The experiences of Berg (1961) and Prouty (1962) who claimed to see a large number of cases yearly (up to 34 reported in a twelve-month period by the latter author) suggest that peptic ulcers may be more common than many clinicians believe. Depending upon whether one derives statistics from autopsy material (Benner, 1943; Guthrie, 1942), X ray findings (Alexander, 1951; Berg, 1961), or retrospective studies of adults with ulcers (Proctor, 1925), the resulting ulcer incidence figures in children range from 0.5 to 10 per cent. Obviously, this variation in results can be explained in part by the differing populations studied with each approach.

The incidence of peptic ulcers tends to be at a minimum between five and ten years of age (Alexander, 1951; Bird, Limper, and Mayer, 1941; Muggia and Spiro, 1959; Tudor, 1954). For example, in the study by Tudor (1954), 45 per cent of children with peptic ulcers were under six years of age, 26 per cent were between six and eleven years, and 29 per cent between eleven and fifteen years. Of additional interest is the observation that 13.5 per cent of peptic ulcers in children occurred during the first two weeks of life, 16.7 per cent between two weeks and one year, and 15 per cent between one and six years of age. Thus, about 30 per cent of children within this series were less than one year of age.

Different studies agree in demonstrating a preponderance of duodenal as opposed to gastric ulcerations (Muggia and Spiro, 1959). In addition, both types of ulcerations are more common in male children (Berg, 1961; Karlström, 1964; Muggia and Spiro, 1959; Tudor, 1954).

A number of investigators have commented on the frequent occurrence of peptic ulceration in the family members of children with such pathology. For example, Prouty (1962) reported that "The majority of our patients have at least one parent with an ulcer" (p. 389). However, other investigators do not observe so high an incidence. Various studies report percentages of 10 (Ramos *et al.*, 1960), 17 (Newman, 1942), 20 (Goldberg, 1957), 25 (Block and Serby, 1937-38; Muggia and Spiro, 1959), and 39 (Berg, 1961). In a recent study of peptic ulcer in

Swedish children, 86 out of the 184 cases (47 per cent) had an associated family history of ulcers (Karlström, 1964).

Gastric Physiology

All psychosomatic explanations of peptic ulcer formation presume that psychological factors exert their effects through some basic underlying pathophysiologic route. Although much is yet to be learned about the physiologic basis of ulcer formation, there is sufficient evidence to allow a fair degree of understanding (Allen, 1959; Ivy, Grossman, and Bachrach, 1950; Magee, 1962; Menguy, 1964).

Peptic ulceration results from the proteolytic digestion of gastrointestinal tissue by gastric juice. Under usual circumstances, gastric and duodenal tissue maintain their integrity in spite of almost constant exposure to both pepsin and hydrochloric acid. Thus, peptic ulcerations develop when either one or both of the following conditions prevail: (a) an increase in the amount or duration of protein lysing activity, or (b) a decrease in the mechanisms available for protection of these tissues.

Pepsin, an active proteolytic agent, is stored in the chief cells of the stomach as the inactive precursor pepsinogen. Activation and conversion of pepsinogen to pepsin generally occurs when gastric activity reaches a pH of less than six and is optimized at a pH of about two. The secretion of pepsin appears to be controlled predominantly by the vagus nerve. Consequently, vagal stimulation either directly or via the vagal nucleus in the medulla or the hypothalamus will result in an increased amount of pepsin in the gastric juice.

Acid secretion by the gastric mucosa is influenced by both neural and humoral mechanisms. As is the case with pepsin, vagal stimulation, either directly or indirectly, causes an increase in gastric acidity. Evidence has also accumulated to implicate the hormone gastrin as a stimulant to acid secretion. Gastrin is released by the mucosa of the antral portion of the stomach following vagal stimulation, antral distention, or contact with alkaline foods. It has been observed clinically that peptic ulceration is a frequent complication of adrenal steroids (e.g., cortisone) or ACTH administration. One explanation for this effect is that these substances increase the sensitivity of the gastric mucosa to other physiologic stimuli.

Several means are available for the protection of the stomach and duodenal mucosae against the destructive effects of acid and pepsin. Probably of greatest importance are such factors as (a) the nature of ingested foods, (b) the inherent high resistance of the mucosal cells to acid-pepsin digestion, (c) the rapid regeneration of injured mucosal cells, and

(d) the protective influence of gastric mucin. Mucin provides a highly resistant covering for the underlying mucosa and is secreted throughout the stomach following mechanical stimulation of the mucosa. Except in the pylorus, vagal stimulation also increases mucin secretion. It is significant that the administration of adrenocortical steroids in dogs not only decreases the rate of production of mucus, but also appears to alter its biochemical properties, thereby diminishing its effectiveness against proteolytic activity (Menguy and Masters, 1963).

Peptic Ulcer Formation

Patients with duodenal ulcers tend to secrete a significantly greater amount of total free acid than normal individuals. It could be argued that this increase in acidity occurs as a result of an active duodenal ulcer and is not of etiologic significance. We are not aware of any studies in which gastric secretory measures were obtained prior to the formation of the ulcer. However, several investigators failed to find a change in gastric secretion in patients tested during and following the healing of a duodenal ulcer (Ivy *et al.*, 1950; Levin, Kirsner, and Palmer, 1948).

Another study in support of the etiologic significance of increased gastric secretion was conducted by Weiner *et al.* (1957). These authors determined the blood pepsinogen levels of Army inductees prior to basic training. This was performed on the presumption that the blood pepsinogen level was positively related to gastric secretory activity. Significantly, subsequent to the stress of basic training, there was a tendency for the individuals with increased blood pepsinogen levels to develop duodenal ulcers. Ader (1963) obtained comparable results employing rats and a similar experimental design.

Several suggestions have been offered to explain the increased secretory activity in patients with duodenal ulcers. These have included hypertonicity of the vagus nerves, increased sensitivity of the parietal cells to stimulation (neural as well as humoral), and an increased number of parietal cells (Allen, 1959).

Although increased gastric secretion, as well as increased gastric motility, has been noted in patients with *duodenal* ulcers, the same has not been found in individuals with *gastric* ulcers. In contrast, these latter patients tend to have fasting hypoacidity, as well as gastric hypomotility. In view of the additional observation that gastric ulcer is not an uncommon sequela of vagotomy, the suggestion has been offered that this type of ulcer is basically the consequence of stasis of food in the stomach (Dragstedt, 1956). The effect of gastric stasis would be to increase gastrin secretion and consequently gastric acidity.

Another set of hypotheses concerning the etiology of peptic ulceration emphasizes the role of the mucosal protective mechanisms. Local changes in mucosal integrity could result from vascular stasis, hemorrhage, a septic process, or trauma. In addition, alterations in the amount or biochemical properties of mucin (i.e., secondary to an increase in circulating adrenocortical steroids or ACTH) would also be relevant.

Both the blood level of adrenocortical steroids and the amount of total gastric acidity are elevated during the first hours and days of life (Smith, 1959). These factors could be responsible for the relatively high incidence of peptic ulcerations noted in the newborn period.

Emotions and Gastric Function

The psychosomatic approach to an understanding of peptic ulcer formation postulates not only that emotional experiences influence gastric function, but also that prolonged physiological alteration can result in tissue damage. This section will consider those studies which add support to this more general formulation.

The sight, smell, taste, or thought of food can initiate gastric secretion and motility. This effect has come to be known as the cephalic, nervous, or psychic phase of gastric secretion. In 1929 Cannon reviewed some of the literature dealing with these effects, as well as the possible influence of various emotions on gastric function and concluded that vexation, worry, anxiety, anger, and fear all resulted in a decrease in gastric activity.

These findings, as well as those of several other investigations on human subjects, are summarized in the accompanying table. The study by Engel, Reichsman, and Segal (1956) of "Monica" represents the only reported detailed observations made during the first years of life and indicated that outgoing affective states were associated with high rates of gastric secretion. In contrast, activity marked by withdrawal from environment contact was associated with diminished secretory activity. A more recent study of a somewhat older child by the same group did not reveal such consistency (Reichsman, Samuelson, and Engel, 1965). Affect states in a four-year-old child were not clearly associated with gastric secretion.

Except for the study by Wolff and Levine (1955), anxiety resulted in increased gastric activity in patients with peptic ulcers. However, contradictory results have been obtained with normal adults. In some reports, anxiety was associated with an increase in gastric function, whereas in still others a decrease was noted. The study by Wittkower (1935) is of interest because he did not observe any consistent gastric

EFFECTS OF EMOTION ON GASTRIC FUNCTION

Investigator	Subjects	Affects and State	Gastric Function*
1. Cannon (1929)	Normal	Worry, anxiety, anger, fear	dec.
2. Wolf & Wolff (1947)	Gastric fistula	Fear, sadness hostility, resentment, anxiety	dec. inc. (erosions if chronic) dec.
3. Crider & Walker (1948)	Gastric fistula	Anger, fear, anxiety, resentment	dec.
4. Engel, Reichsman, & Segal (1956)	Gastric fistula	Rage, joy (outgoing) depression (withdrawal)	inc. dec.
5. Mittelman & Wolff (1942)	Peptic ulcers Gastritis Normal	Anger, guilt, anxiety, frustration, resentment	inc. (less so in normal)
6. Dragstedt <i>et al.</i> (1956)	Peptic ulcers (pre-op)	Anxiety	inc.
7. Seymour & Weinberg (1959)	Peptic ulcers	Anxiety	inc.
8. Szasz <i>et al.</i> (1947)	Peptic ulcer	Anger	inc.
9. Wittkower (1935)	Normal	Disgust, joy, sadness, fear, anger	No consistent effects; with some subjects there is always inc., whereas with others there is dec.
10. Eichhorn & Tracktir (1955)	Normal	Contentment fear a) High anxiety subjects b) Low anxiety subjects anger a) High anxiety subjects b) Low anxiety subjects	inc. inc. dec. dec. inc.
11. Goldman (1963)	Peptic ulcers Normal	"Stress"	inc. No effect
12. Wolff & Levine (1955)	Peptic ulcers Normal	Anxiety	No significant effect inc.

* dec. = a decrease in either gastric secretion, motility, or vascularity.
inc. = an increase in either gastric secretion, motility, or vascularity.

response to a given emotional state; rather, some subjects responded with hypoacidity and others with hyperacidity when apparently exhibiting the same affect. However, given individuals were consistent by responding to different emotions in the same manner.

The experiments in which hypnosis was utilized present unique interpretive difficulties (Eichhorn and Tracktir, 1955; Wittkower, 1935). It has been questioned whether the overt evidence of an affect represents anything more than a superficial mimicry of a state unassociated with the usual visceral components. Such a discrepancy between feelings and physiology can be noted, for example, in asthmatic patients relieved of their symptoms by hypnosis though still manifesting unchanged signs of respiratory obstruction.

Several suggestions have been made to explain at least part of the contradictory nature of these data. For example, Mittelman and Wolff (1942) emphasize the difficulty in evoking a single pure emotion. The emotional reactions induced are generally complex and multiple.

Mahl (1950) has differentiated conceptually between acute and chronic conscious anxiety. He hypothesized that acute anxiety is associated with an inhibition of gastric activity, whereas chronic anxiety, regardless of how it is produced, is responsible for an increase in function. In a study conducted by Mahl, anxiety induced in students by discussing with them an upcoming important examination was associated with an increase in both free and total acid. These results can be interpreted as either in agreement with or contradictory to Mahl's hypothesis, depending upon whether one considers this chronic or acute anxiety.

Margolin *et al.* (1950) suggested that the level of gastric activity is a function of unconscious and not conscious mental states. Support for this stemmed from observations of a female with a gastric fistula who was undergoing psychoanalysis. On two occasions her conscious content was essentially the same, yet the gastric responses as well as the unconscious mental content derived from the analytic process were different. In one instance, there was an increase in gastric activity, whereas in the second there was a decrease. It should be pointed out, however, that the first instance was also associated with a great deal of overt motor behavior, whereas the second was not. Wolf and Glass (1950) disagree with this formulation and instead emphasize "... the comparative importance of the conflict rather than whether it was conscious or unconscious" (p. 673).

Psychological Theories of Peptic Ulcer Causation

A number of authors have pointed out the possible relevance of emotional factors to the production and recurrence of peptic ulcer in children.

Franklin (1942) identified a considerable degree of emotional instability and anxiety in a nine-year-old boy with a duodenal ulcer. Of five patients studied by Crosett (1957), the emotional problems in three were of sufficient intensity to warrant consideration as possible etiologic significance. Michener *et al.* (1960) reported that 22 of the 92 patients in their series had "emotional problems." Prouty (1962) reports emotional problems in all the children in her series. Muggia and Spiro (1959) observed that most of their patients developed peptic ulcerations in the midst of a conflict or following a loss of security. Consistent with this is the finding by Goldberg (1957) that a significant precipitative cause was the death of the father.

Taboroff and Brown (1954) studied six male children with a radiographically proven duodenal ulcer by means of a series of psychological tests. These children were noted to come from stressful homes in which the parents were emotionally immature and overtly rejecting or over-protective. The children themselves were shy and overtly passive with much unexpressed hostility. They were overdependent upon their mother and had marked ambivalence toward her. In general, they were tense, shy, and tended to keep their feelings to themselves. In each instance the onset of symptoms occurred in association with an apparent or real loss of mother. Essentially the same observations were made by Chapman, Loeb, and Young (1956). Unfortunately, in none of the studies mentioned above was information available to determine which of these psychological characteristics resulted from or predated the ulcer formation.

Sullivan and McKell (1950) support a multifactorial theory to explain the development of peptic ulcers and include such factors as genetic predisposition, a predisposing personality, and an acute precipitating emotional situation. Observations on 200 adult patients with peptic ulcers suggested that 72 per cent had what might be called an ulcer personality. These were tense, anxious, driving, active, ambitious individuals with strong strivings for independence and who had assumed a great deal of responsibility.

Many other investigators have studied ulcer patients for the purpose of defining an ulcer personality. Roth (1955) critically reviewed over 40 of these studies and found a great deal of disagreement. A number of authors were unable to isolate a characteristic personality. Furthermore, there was much disagreement between studies in which an ulcer personality seemed to be identified. Roth concluded from his review that "... the nature or even the existence of the ulcer personality cannot be considered as established" (p. 40).

Alexander (1950) also took issue with the concept of an ulcer personality. "It was not so much a personality type which was found to characterize the patient with an ulcer as it was a *typical conflict situation* which might develop in many different personalities" (p. 102). These individuals were felt to have persistent strong oral-dependency needs (resulting from inadequate satisfaction in childhood) which were in conflict with their aspiration for independence and self-sufficiency.

Many psychoanalytic investigators have been able to identify strong oral-dependency needs in patients with peptic ulcers. However, the question of specificity demands evidence that this type of conflict differentiates patients who develop peptic ulcers from those who develop other psychosomatic disorders. A study by Streitfeld (1954) directly bears on this point. He administered the Rorschach and Blacky tests to adult patients with peptic ulcers, as well as to patients with other psychosomatic disorders, and found no difference between these groups in terms of conflicts related to oral-dependency needs.

The possibility of a congenital physiologic predisposition to peptic ulcer formation receives support from a briefly reported observation by Mirsky (1953). Measuring blood pepsinogen levels, and presuming this to be a measure of gastric activity, he noted "... the presence of hypersecretors even among infants. In fact, some infants may have values as high as those observed among adult patients with active duodenal ulcers" (p. 172). Of further interest is his speculation that high pepsinogen levels may be associated with high oral drive which could also appreciably affect the developing mother-child interaction, resulting in a persistence of oral-dependency needs in later life.

Summary

Although much inconsistency is found in the reviewed material, one important factor does stand out: emotional experiences can have a profound effect on gastric function. Marked increases as well as decreases in function have been noted in association with psychic changes. In view of the discussion on the physiologic pathogenesis of duodenal and gastric ulcers, it is reasonable to assume that either of these latter two conditions, if persistent, could result in ulcer formation.

There is also the suggestion that apparently comparable affect states are associated with marked individual variations in gastric activity (both in magnitude and in direction). To what extent this is genetically determined or a function of previous experiences will have to await further research.

The level of gastric functioning prior to the occurrence of the affect in

question should also be considered a possible determinant of the subsequent response. The importance of this variable has received some support from the discussion by Brandt (1962) of the law of initial values as it relates to gastric secretion.

It is our belief that many of the contradictions noted in the literature have been the result of overgeneralizations from studies based on a single subject as well as the tendency to overlook or underestimate differences between individuals when groups of subjects were studied. There is a need for studies of large numbers of subjects tested under varied conditions with emphasis placed on the detailed analysis of the responses of individual subjects.

An adequate understanding of the role of psychic experiences on gastric functioning and in the generation of pathologic states requires that greater research emphasis be directed toward the study of children. These investigations should ultimately include the long-term study of individuals from early infancy.

CONCLUSIONS

This review of psychophysiological disorders in children could hardly avoid emphasis on the relevance of genetic and developmental factors. Any bias we may have as pediatric investigators must be weighed by the reader against the very considerable supporting evidence in the literature.

The concept of a constitutional predisposition to these various disorders permeates many hypotheses and is restated in the interpretations of many investigative studies. Furthermore, the hypothesis of individual differences in physiological and biochemical functioning has often been proposed but seldom explored. Investigations have indicated that constitutional, if not genetic, differences in cardiac rate and in cardiac responses to stimulation exist immediately after birth (Bridger and Reiser, 1959; Lipton, Steinschneider, and Richmond, 1961). Although modifications in these responses occur during the first few weeks of life, some stability of function appears shortly thereafter (Lipton, Steinschneider, and Richmond, 1966). Sontag (1963) recently reported that heart rate lability measures in 11 adolescents were significantly and positively correlated with fetal values in the same subjects. Studies such as these may ultimately allow selection of a population of hyperresponsive and/or labile infants, among whom may later be found patients with cardiac dysrhythmias such as paroxysmal auricular tachycardia and/or with a propensity toward marked cardiac responses to physical or psychological stress.

Data from the Berkeley longitudinal study suggest that blood pressure is "a relatively stable developmental characteristic" (Harris, 1958, p. 50). Barnett *et al.* (1963) demonstrated that 31 young adolescents who manifested heightened blood pressure reactions to the cold pressor test (hand immersed in 4°C. water for one minute) were hyperreactive when again tested in adult life some twenty-seven years later. Furthermore, the four subjects who had become clinically hypertensive were in the hyperreactor category when tested earlier.

There remains the need for a vast amount of work to delineate the characteristics of individual full-term infants, prematures, and twins, to describe the maturational changes in function and to assess the stability of these characteristics with age. Investigators should have no rigid preconceptions regarding what will ultimately emerge from studies of young infants. It has been assumed by many, for example, that a given affect is invariably associated with a characteristic physiologic state; yet certain studies of gastric function in children and adults have yielded no such findings (Reichsman *et al.*, 1965; Wittkower, 1935). If anything, they suggest the possibility that the psychophysiologic portrait of individuals may be unique even to the point of manifesting qualitative and directional individuality.

Possibly the frustrations of investigators attempting to define *the* biological correlates of human emotion have stemmed not alone from the difficulty of producing and defining affects. An added reason is that the species *Homo sapiens* contains specimens with a wide range of reactions. A physiology of emotions may describe general characteristics of man but not of men.

Much the same case may be made for an understanding of the perceptual capacity of the individual and its development in the early years. The effects of certain significant early life experiences on children *generally* may be in a given direction but the complexities of this period dictate that the effects will be unique to the individual.

It could be hypothesized, for example, that a severe oral conflict situation might ultimately distort the perception of hunger in a child with a high threshold for these types of signals, leading to anorexia or obesity in later life. However, it might have no effect on a child who readily senses the call to eat. Is it not possible that the varied cyclicity of hunger among individual infants might be predictive of such predispositions? It would be interesting to follow infants with any deviation in the usual pattern of feeding in order to detect possible eating disorders in later years.

A majority of investigators relate the genesis of such disorders as asthma and peptic ulcer to certain critical events in early development. Dependency conflicts and sexual identification emerge as frequent prob-

lems in the recapitulations of the lives of these subjects. Few if any studies *in depth* have been devoted to the common characteristics of these maturational problems in normal children *not* destined for chronic physical or emotional disability. In almost all instances the problems have been viewed post hoc in a subject whose disease has conceivably sparked, rekindled, and enhanced old conflicts. A nagging question persists: Were there really such severe problems of adjustment *before* the illness experience?

It must be noted that experiences may be conflictual if not disastrous at one age and hardly significant at another. Transient or permanent separation from loved objects may conceivably be associated with the onset of a peptic ulcer. This does not deny that the same emotional trigger would have little adverse effect at another age or for another child. For this and other reasons we do not adhere to the belief that the search for a particular nuclear conflict stemming from early life and *specifically* associated with a particular disorder will ultimately prove very productive. The literature tends to bear this out, for the described characteristics of the family situations and the parent-child interactions associated with varied disorders are strikingly similar. It is reminiscent of the earlier attempts at formulating specific personality profiles.

Research must turn toward studies of the emergence of disease in predisposed subjects. Ideally, this should involve studies of families even before the birth of the infant who will potentially be affected. This can be done efficiently and economically only when the disease is of early onset, as is the case with eczema and asthma. These latter two conditions are ideal also because of the relatively high yield of patients in a population of families predisposed to the atopic state. Hopefully, we will also learn to identify the constitutional factors and their respective signs in other disorders such as encopresis, enuresis, rumination, and breathholding which also occur with some frequency.

The investigations of Kalis *et al.* (1961) and Barnett *et al.* (1963) of prehypertensive adolescents, and by Weiner *et al.* (1957) of peptic ulcer development in young Army recruits, represent valiant attempts to overcome the usual post hoc investigative situation. These represent very significant models for the types of studies that hopefully can be accomplished in young children. We would be particularly curious about identifying the life events immediately preceding the onset of varied psychophysiologic disorders since clusters of significant separating experiences have been implicated in post hoc fashion by some investigators.

It should be evident from the data presented in this review that investigators must remain open to the possibility that these disorders often re-

sult from multiple causes. The imaginative studies by Holmes, Treuting, and Wolff (1950) support the concept that various simultaneously occurring events (organ hyperfunction, exposure to an antigen, and emotional state) may summate in the ultimate production of hay fever symptoms. Another excellent example of this conceptualization of disease is represented by the asthma syndrome in which there is a wide assortment of possible pathways for the production of wheezing.

If the review has focused more upon potential psychophysiologic factors and less on more purely biological and physical variables, it was with the intent of balancing the vast amount of medical literature which has largely ignored these variables. We have made it abundantly clear, for example, that asthma and eczema may on occasion be caused almost exclusively by hypersensitization to one or more allergens. Similarly, clinicians recognize that rare lesions of the hypothalamus may lead to anorexia and that tumors of the adrenal gland may produce sustained hypertension.

Since disorders that have a large potential psychophysiologic component are often quite complex, the research requirements would appear to be necessarily complex. There is little question that superficial studies will avail us little. The requirement is for studies in depth particularly directed toward understanding the uniqueness of individual subjects while studying the group.

Ruesch (1961) has indicated that if "... we would curb our need to encompass the whole universe at once and if we would content ourselves with smaller slices of knowledge, we perhaps might make more progress. Forsaking completeness and tolerating uncertainty would prevent us from introducing theoretical notions which give the impression that problems are solved but which actually serve to hide our ignorance" (p. 283). The studies of subcategories of asthmatic children and their families represent an attempt to break through the limiting aspects of trying to study "asthma" *per se*. Clinicians have for many years recognized that certain of these children seemed to react with wheezing almost exclusively to emotionally charged events, while others were primarily reacting to infections, pollens, and other allergens. It has taken too long for investigators to translate these observations into more heuristic conceptualizations which will have far-reaching potentialities.

In this review we have indicated the possibilities of separating anorexia cases into several categories. Infantile eczema cases might be subdivided on the basis of allergic potential, susceptibility to itching, or varied skin reactions to multiple stimuli, and so on. It will rest on the creativity of future workers to identify subgroups in other disorders which

might manifest differing psychological or biological characteristics. In this manner the multivariate etiologies might become more clearly and usefully discernible.

Since we have been discussing the complexities of "easily" identifiable psychophysiologic processes, it may be helpful to indicate that a very wide spectrum of such disorders occurs in childhood. These have been listed according to organ systems by Prugh (1963) in the context of a discussion regarding proposed theories and mechanisms. He, too, suggests that these disorders are defined simply by the prominent involvement of both psychologic and physiologic components. It is our belief that little purpose is served by engaging in polemics on the issue of a definition. Rather, we must be concerned with all biological processes which can potentially be affected by the cerebral cortex. The recent evidence of the deleterious effects of stress on the susceptibility to micro-organismic and neoplastic disease in animals and, to some extent, in man serves further to broaden the horizons of psychophysiology.

We have said little regarding therapy of any type in this review and the reader may feel that we have been particularly remiss in not reviewing psychotherapeutic methods. Although there are many case reports regarding successful analytic and other psychotherapeutic approaches, no distinct pattern seems to emerge. Some of the more interesting techniques relate to milieu therapy within institutions but these deal primarily with very sick children. Since we could not discern specific psychological conflicts in specific diseases (although some adhere to this idea), specific remedies do not seem appropriate. It is evident that many individuals with psychosomatic ailments are severely disturbed and require therapy. Clinicians and investigators have reported many significant successes in alleviating symptoms and there is no question regarding the indication for psychotherapy whenever the psychological aspect of the problem appears to be a primary factor. However, there is no evidence that the diagnosis of asthma, peptic ulcer, or essential hypertension necessarily indicates a need for psychiatric treatment. Many cases of anorexia nervosa, on the other hand, seem to profit from such therapy. Furthermore, children with a variety of psychophysiologic processes often require support beyond that generally offered to many adult patients.

There is an obvious need for an abundance of investigative work with children. Personnel of diverse training are required to deal with the multiple problems in the social, psychological, and biological aspects of psychobiology. There is no simple formula for the production of creative and highly motivated investigators. Flexible opportunities must be made available for behavioral scientists to work in settings where clinicians and biological investigators deal with the clinical problems of children.

Such models are available in an increasing number of departments of internal medicine around the world.

Pediatricians have come on the scene only of late and it is to be hoped that more departments in medical schools will seek research in this direction, for psychophysiologic processes abound in childhood. We are ill-equipped to deal with many of them because of a basic lack of knowledge regarding mechanisms. Animal research and studies of developmental processes in normal children may fortify us, but the crucial answers will ultimately result only from careful and persistent investigations of these processes in affected children.

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Socialization and Social Structure in the Classroom¹

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WHAT IS THE NATURE of the social structure of the elementary school classroom? What is the process of socialization of the individual into the classroom and, perhaps, via the classroom, into society? Investigators have been dealing with these questions for at least a generation now, and this review will attempt to organize the relevant findings of their work. Primary attention has been given to that empirical research carried out since 1930 in the classroom setting in the United States, mostly in the public schools.

But it is first desirable to establish certain points of reference, define some of the terms in general use, and allude to some of the techniques favored by workers in the field.

A Starting Point

A considerable number of observations, studies, and experiments about and in elementary school classrooms have yielded rather convincing support for some longstanding ideas about the social distinctions among individuals making up elementary school classrooms. Briefly, these ideas are: (a) some people—both pupils and teachers—are more

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widely liked than others; (b) some are more competent than others in classroom affairs; (c) some have more influence than others over what goes on in a classroom.

These three ideas can be restated in such a way that they form one of the many possible bases for the study of socialization in the classroom. Socialization may be defined as the process by which an individual learns the alternative modes of behavior available in various social settings and the consequences of adopting each mode. The socialization process may also be viewed as a continuing sequence of interpersonal interactions by which an individual first acquires and then modifies a position in a social system. Three of the several dimensions along which one may differentiate an individual's current or changing position in a social system are (a) emotional acceptance, (b) personal competence, and (c) social power.

These are three conceptually distinct but empirically interrelated components of classroom social structure. Emotional acceptance-attraction is the most familiar. It refers to the affective aspect of interpersonal relations: Who likes whom? It has been studied by direct observation, i.e., observing which children are seen together in various informal situations (Wellman, 1926); and sociometrically, i.e., by asking each child to rate each of the others in the classroom with respect to how much he likes them. Sometimes the child is asked to report the three (or some other number) he likes best and least, and sometimes he is asked to indicate how much he likes or dislikes every child in the classroom.

Competence is a more complicated concept. Clearly, the particular competence dimension must be in some way relevant to the situation, yet much of the research has failed to distinguish adequately between work and play competencies, between interpersonal and substantive competencies, between perceived and objective competencies. In the classroom setting, for example, is competence actual scholastic ability? Scholastic ability as the children perceive it? Skill in interpersonal relations? Skill in sports and other playground activities? Or is it possibly even a cluster of skills irrelevant to classroom activities but known to and respected by the group? Obviously, if competence refers to a group-assigned status, it must be perceived by the group. Thus, ability as objectively assessed is a major determinant of the perception of competence, but it is not the same thing. Further, the group's perception is probably the more crucial in this case. The sifting out of the components of the competence dimension of social status is an important and as yet inadequately studied problem. In the research to be reviewed, competence has been measured in many ways. But perhaps the operational definition that comes closest

to the meaning implied here is the one used by Lippitt and his associates (Butman, 1961), in which the children were asked: "Who is good at doing the things you do at school?"

Social power may be defined as the ability to influence others. Moreno (1934) inferred the power position of an individual from the extent to which he was chosen by those who were themselves often chosen. For example, one child is chosen by five children each of whom was, in turn, chosen by three, four, or five others. Another child is chosen by seven others who, in turn, are not themselves chosen. The second child is popular, but not powerful, because he is in a position to influence but seven others. The first child, on the other hand, may influence but five others directly—but these five others, in turn, may influence most of the classroom. This method assumes that "liking" or emotional acceptance is the major source of power. As will be indicated, there probably is validity in this assumption, but power develops on other bases, too. More recent studies have measured power behaviorally by direct observations of which children are successful in their attempts to influence their classmates, and by near-sociometric techniques such as asking the children: "Who can get you to do what he wants you to do?" (Gold, 1958; Lippitt and Gold, 1959; Lippitt *et al.*, 1960). Lippitt and his colleagues (1960) have found positive correlations between the behavioral and near-sociometric measures ($r=.55$).

These three variables—acceptance, competence, and power—are the dimensions of classroom social structure most frequently studied. The empirical evidence from these studies will be discussed and organized according to five main concerns: (a) the development, stability, and composition of a classroom social structure; (b) the degree of centralization or dispersion of emotional acceptance, perceived competence, and social power in classrooms; (c) the social power of the teacher and its use; (d) the social antecedents of the development of the classroom social structure; and (e) the personality antecedents and consequences of the development of the classroom social structure.

DEVELOPMENT, STABILITY, AND COMPOSITION

Speed of Development

The data available about the speed with which the social structure develops are quite convincing. Within a few weeks—perhaps within a few hours—of the formation of the elementary school classrooms, the individuals in them had found, or were allocated, a readily observable

position along at least three dimensions of social structure: emotional acceptance, perceived personal competence, and social power. The rapid development of such differentiated positions has been discerned by trained observers (Bonney, 1942; Lewin, Lippitt, and White, 1939; Moreno, 1934); perceived by teachers (Bovard, 1951; Bower, 1957; Boyd, 1960; Laughlin, 1954); and seen by the children themselves, as indicated by sociometric and near-sociometric studies by a large number of investigators (Bonney, 1942, 1943; Force, 1954; Lippitt and Gold, 1959; Moreno, 1934).

Almost none of the typical sociometric studies included the teacher as a subject. There have been, however, a number of investigations (to be reported more fully later) in which the pupils' liking or acceptance of the teacher, or her competence and power as perceived by them, was examined in relation to teaching style or methods and, in the study by Schmuck and Van Egmond (1965), in relation to academic performance. Because of the pervasive cultural base and social legitimation of the teacher role, it seems likely that the position of the teacher develops more rapidly than that of anyone else in the classroom, but no precisely relevant evidence was found.

Stability

The empirical research gives a clear picture of a quite stable social structure in elementary classrooms in a wide variety of social and economic settings. The stability extends over the school year, from one school year to the next, and over several school years. As early as 1926, Beth Wellman observed the constancy of playmates and workmates over a period of five months (Wellman, 1926). Later, Moreno (1934), Jennings (1937), Newstetter (1938), Criswell (1939), and Hunt and Solomon (1942) found a significant persistence of sociometric choices over several weeks and over several years.

Bonney's correlational studies (1942, 1943) also supported the stability findings. In his samples from schools in Texas, positions in the classroom structure at the beginning of the year were positively correlated with those at the end of the year, the coefficients ranging between .64 and .94. From one year to the next, the correlation coefficients ranged from .68 to .90.

Lippitt and Gold (1959) examined stability over one year separately for emotional acceptance, perceived competence, and social power; Gellert (1961) for dominance and submission at play. The findings can be summarized as indicating that the average correlation between positions at the beginning and the end of the year was about .70 for social power

and about .80 for acceptance and competence. Such correlations have been found, as has been indicated, in many studies over a number of years, in many different social settings, and they indicate a core of stable social organization in the typical classroom in the United States.

Correlations, nevertheless, can be misleading. Correlations of the order .70 clearly provide a "better-than-chance" basis for the prediction of the positions of a group of children from one time to the next and they reflect an important stability. It should be noted, however, that "better-than-chance" does not necessarily denote a very high degree of success in making predictions. A rough estimate of the predictive success is available from the unpublished data of the St. Louis County Studies (Glide-well, 1964). In those studies, the year-to-year correlations were also of the order .70. Using those data, if one were to predict that the pupils of a classroom would remain in the same decile of emotional acceptance from one year to the next, one would be correct about five times out of ten. Such success in prediction is significantly more accurate than the success to be expected from random predictions (one time out of ten). It seems likely, however, that to a practicing teacher, such limited predictability is not a very exciting prospect.

Several investigators have attempted to induce changes in the social structure of classrooms. The experiments of Kerstetter and Sargent (1940), Kerr (1945), Shoobs (1947), and Rehage (1951) showed that change induction was possible, but that it was seldom self-sustaining. The work of Shoobs especially showed that successfully induced changes reverted to the original structure, once the induction was discontinued. These experiments further substantiate the findings of stability—and even resistance to change—of classroom social structures.

Components of Classroom Social Structure

The studies cited in the foregoing paragraphs, in addition to demonstrating the stability of classroom social structure, also indicated that the extent of that stability was related to the number of mutually attracted pairs and to the number of subgroups of mutual friends found in the classroom. Both Moreno (1934) and Criswell (1939) found little change in either mutual choices or in isolated individuals. Such changes as did occur took place most often among unreciprocated friendship (acceptance) choices and the unreciprocated choices occur most often between subgroups. Jennings (1937) produced similar findings, interpreted in terms of the constancy of leadership (interpreted here as the stability of social power).

Most classrooms seem to be systems of a few isolates, some pairs, and

a few subgroups—with much friendship, influence, and interaction within subgroups but relatively little across subgroups. The stable subgroups of mutual choices tend to be composed of children—usually of the same sex—who (a) have social values and attitudes that are similar, (b) are often in contact because of the proximity of their location in the classroom or home, (c) see each other as having desirable personality traits, and (d) are seen as friendly, good-looking, and cheerful (Austin and Thompson, 1948; Bonncy, 1943; Criswell, 1939; Kuhlen and Lee, 1943; Seagoe, 1933). With respect to these four bases of attraction, the children are very much like the college students studied by Newcomb (1961) and the adults studied by Hall (1959). The social and personal antecedents of these bases of friendship will be reviewed in a later section.

Awareness of Social Structure

Children have responded to sociometric questions, interviews about social relations, rating scales about interpersonal perceptions, and open-ended questions about the reasons for their responses. Their ability to provide these data is a manifestation of at least some awareness that a social structure existed. Gold's (1958) work on children's perceptions of social structure indicated that the children quite often saw more than one dimension. They distinguished between emotional acceptance, perceived competence, social power, and coercive power.

On the other hand, Painter (1962) has reported that, in the practice of child psychiatry, some quite healthy children are referred to him as emotionally ill. Their only symptom was that they seemed to be unaware of the social expectations other children have of them, in the classroom or on the playground. The work of Gronlund (1959) and that of Northway (1944) also indicated that there are some healthy self-sufficient or socially uninterested children who are simply not aware of the existence of a classroom peer structure.

In general, however, the research findings indicate that most children hold an accurate perception of the classroom structure and of their own position in it. Potashin (1946) demonstrated this tendency in an economically privileged community; Goslin (1962) obtained similar findings in a middle-class suburban community; Lippitt and his associates (1960), studying the power dimension in a camp for boys, found an average rank-order correlation of .90 between one's self-perception and the perception of oneself by the group.

There are conditions, however, that influence the accuracy of a pupil's perception of his position in the classroom. Accuracy has been found to

be higher among well accepted and more powerful pupils and lower among the rejected and less powerful ones (Goslin, 1962; Potashin, 1946). When rejection was based on some readily observable condition, like a physical handicap or speech defect, the rejected child more accurately perceived his status (Force, 1954). Accuracy was also greater in the classroom social structures containing a concentration of influence in a few pupils, and smaller in classrooms having a more diffuse distribution of social power (Epperson, Luszki, and Schmuck, 1961; Schmuck, 1962a, b, 1963). Davitz (1955) demonstrated a tendency for the child to perceive those children whom he liked as being very much like him in many of their personality traits, more like him than they really were.

The work of Lippitt and Gold (1959) encompassed most of the scope of the previously cited studies, and, by and large, confirmed them. They found that the self-perceptions of the pupils tended to correspond well with the ratings of the pupil by his peers. They proposed that the accuracy of the child's perception of his own position in the classroom structure was related to the child's sensitivity to the feelings expressed by others. Their work, when related to that of Douglas (1959), indicated that low-power children and rejected children were less accurate in predicting the ratings of their peers when their defenses were more primitive (like denial) and more accurate when their defenses were more sophisticated (like rationalization). In their sample, low-power children were more likely to use primitive defenses and were more inaccurate in social perception.

Summary: Development, Stability, and Composition

Classroom social structures develop quickly, remain relatively stable, produce reasonably accurate perceptions by individuals of their own position in the structure, are composed of stable pairs and subgroups of mutually attracted and respected children, plus a few continuing isolates. The subgroups, their individual members, and the isolates can be differentiated with respect to at least three variables: emotional acceptance, perceived competence, and social power.

CENTRALIZATION AND DISPERSION

Most of the studies on classroom social structure deal with the individual's position in that structure and relate it to some other trait or social status of the individual. Less attention has been paid to the structure of the class per se. Moreno (1934), a pioneer in the study of chil-

dren's groups, was interested in this phenomenon and noted that the sociometric responses of children in elementary school classrooms revealed certain patterns. Most mutual choices were within sexes. Such pairs could be linked by other mutual choices to form subgroups or cliques, almost always of the same sex. Such subgroups could also be linked by additional choices, mutual and other, into a larger organization, excluding only the isolates who were not chosen by any others. Moreno's interpretation of these phenomena was that the stability and cohesion of the classroom were determined primarily by the number of mutual choices forming the subgroups and by the degree of interlocking across subgroups. The number of isolates, from his point of view, was not a significant influence on cohesion and stability—as important as the isolation might be from the standpoint of the personal impact of isolation.

Neither Moreno nor Jennings (1937), who interpreted the centrality of the power structure in terms of leadership roles, produced evidence establishing the prevalence of clear concentrations of power or popularity in only a few children in elementary classrooms, for their sampling made it quite impossible to generalize their findings. In the work previously cited, Bonney (1942) produced evidence that "social status" (some combination of acceptance, competence, and power) was concentrated in a few pupils, but his work was confined to a relatively few schools in Texas. Kuhlen and Lee (1943) studied 700 children in the sixth, ninth, and twelfth grades and found that they could identify a definite, centrally dominant subgroup on the basis of popularity and power. All these research efforts suggest a general tendency toward a concentration of status, but the sampling of classrooms is quite limited.

It is clear, however, that classrooms differ with respect to social structure and a few studies have indicated some of the factors that seem to bring about such differences. For example, Kerr (1945) found that, during the period from the fifth to the sixth grade, boys tended to increase their choices and to disperse them, while girls tended to decrease their choices and concentrate them. Since the study was based upon only one classroom, its generalization is questionable. Still, it does suggest that the end of the elementary years may find girls drawing together into cliques, and boys moving outside their previously formed "gangs."

Hare (1952) investigated the nature of the interaction and consensus in different sized groups of Boy Scouts. His conclusions were that in large groups, as compared to small, individuals perceived themselves to be less powerful, group structure was more hierarchical, and power was more closely concentrated in the hands of the more aggressive or skilled

boys. The implications are that the size of the classroom may have a significant influence on the concentration of social power.

In interpreting the findings from the well-known Robbers Cave Experiment, Sherif and associates (1961) proposed that, in the course of interaction oriented toward a common goal, definite group structures arise involving stable status hierarchies and group norms. They also found that the constructive or destructive nature of the between-group interactions was largely determined by whether the desired goals were available to only one subgroup (as the winner in competitive games) or to all subgroups (as a safe water supply). When the groups were working in competition toward a goal not available to all, the groups developed strong in-group loyalties and hostile intergroup interaction. When the groups were working in cooperation toward a superordinate goal available to all, they developed a friendly and helpful intergroup interaction. Applied to classrooms formed of subgroups, the implications are that a change in the goal orientation might be a more effective approach to modifying the classroom power structure than intervention to change the composition of the subgroups.

Some interesting work has been done by Schmuck (1962a, b, 1963) on the effects of classroom structural organization on the child's self-perception and academic performance. Schmuck differentiated two kinds of sociometric structure—central and diffuse. The two groups were distinguished as follows:

Centrally structured peer groups are characterized by a large number of pupils who agree in selecting only a small cluster of their classmates as pupils they like. Along with this narrow focus on a small number of pupils, many other pupils are neglected entirely. Diffusely structured peer groups, on the other hand, are distinguished by a more equal distribution of liking choices; by no distinct subgroups whose members receive a large proportion of preferences; and by fewer entirely neglected pupils (1963, p. 341).

Diffusely structured peer groups were found to have a more positive and supportive emotional climate (1962a). It was also found that pupils were more accurate in estimating their own status in the centrally structured groups and particularly the low-status children were more aware of their low status. The greater accuracy in the centrally structured classrooms was interpreted in terms of the clarity of status positions in such a structure and the absence of general emotional support which might otherwise obscure a child's low status. The importance of these results is heightened by Schmuck's further findings that the perception that one has low status—more than the fact of actually having such status—

was related to underutilization of intellectual abilities and to holding negative attitudes toward the self and toward the school.

Perceptions of Acceptance, Competence, and Power

In the preceding discussion of hierarchies and cliques, the three dimensions of acceptance, competence, and power have not been systematically distinguished. The relationships described were assessed along one or another of these dimensions and sometimes even a composite of the three. It is pertinent, however, to consider the extent of the interrelationships among these three dimensions. Is the most accepted individual also perceived as the most competent? Is the most competent perceived as the most powerful?

Shoobs (1947), in his study of one classroom of 34 children, differentiated friendship choices and workmate choices, and found that friendship (acceptance) choices played little or no part in the choices of workmates (competence). Gardner (1956), on the other hand, presented evidence to indicate that functional leadership, defined as relative influence (power), is directly related to popularity (acceptance). Harvey and Rutherford (1960) also found that leadership (measured sociometrically) was related to popularity. In addition, they demonstrated experimentally that the reported judgments of high-status classmates had more influence than those of low-status, and that *susceptibility* to influence was negatively related to leadership but unrelated to popularity.

Zander and Van Egmond (1958) also investigated the relationship of social power and interpersonal behavior experimentally. Their sample included boys and girls from all social classes in the second and fifth grades. They found only a limited relationship between power and perceived competence. Lippitt and Gold (1959) contributed additional data relevant to this problem. Taking account of their data, along with those of other investigators, Table 1 shows a summary of all the available findings concerning the relationships between acceptance, competence, and power. In the interest of brevity, Table 1 presents the summary in terms of estimates of average correlation coefficients.

TABLE 1. ESTIMATED CORRELATIONS* BETWEEN EMOTIONAL ACCEPTANCE, PERCEIVED COMPETENCE, AND PERCEIVED SOCIAL POWER

	<i>Emotional Acceptance</i>	<i>Perceived Competence</i>	<i>Social Power</i>
Emotional Acceptance	—	.40	.60
Perceived Competence		—	.30
Perceived Social Power			—

* Partial correlations—all third factors "partialled out."

The seeming divergencies in the findings, as reported by the investigators, are due to the differences in the practical significance attributed to correlation coefficients in the thirties and forties. Some investigators saw them as unimportant even if statistically significant; others saw them as important relationships. The findings were, in fact, consistent and are reasonably well represented in Table 1. The relationships exist; the extent of the relationships—while limited—has meaningful implications. For example, social power is more closely related to emotional acceptance than to competence.

TEACHER POWER AND ITS USE

There have been a large number of researches yielding results that confirm the great social power of the classroom teacher. Lewin and associates (1939) experimentally demonstrated the significance of the power of an adult leader of boys' clubs, and they stimulated much analogous work in classrooms. H. H. Anderson (1939) distinguished the influence of dominative and integrative teacher contacts with pupils. Thelen and Withall (1949), Withall (1951), and Flanders (1951) analyzed the teacher influence on the social-emotional climate of classrooms. Mitzel and Rabinowitz (1953) demonstrated that teacher differences represented the major source of variation in the social-emotional climates of classrooms. Henry (1957), the anthropologist, interpreted his observations in classrooms to indicate that pupils received a relentless training in "giving the teacher what she wants." Ojemann and Snider (1959) found that most pupils in their sample perceived their teacher as a "checker-upper" rather than a person who helps pupils learn. Page (1958) found that experimentally controlled variations in very brief teacher comments written on returned objective examinations had significant effects upon the pupils' performance on the next examination. Sechrest (1962) found similar results. Crandall, Good, and Crandall (1964) found a teacher's silence had effects on pupil behavior significantly different from her activity in response to pupil efforts. Flanders and Havumaki (1960), in a laboratory experiment, found that the children praised by the teacher were perceived as more competent by their peers, even though the recipients of the praise were randomly selected.

The importance of the teacher is particularly highlighted in two recent studies. Bronfenbrenner and his colleagues (1965) discovered that the child's report of his teacher's behavior toward him showed a higher relationship to his value orientation than did his report of his parent's behavior. Schmuck and Van Egmond (1965) also found that the relationship with the teacher was important in affecting academic performance and, particularly for boys, more important than parental attitudes toward

school. These two studies are extremely interesting because, although the major interests of the two investigations are entirely different, their findings are remarkably similar. Both found that a positive relationship with the teacher was effective in socializing the child toward adult values—moral values in the one case and academic values in the other. Caution is necessary in interpreting the findings that suggest the primacy of the teacher over the parent, since both studies were conducted in the classroom and the teacher's behavior may be more salient than it would have been had the studies been conducted in the home. The teacher has clearly been shown to be an important socializing agent, however. And it is interesting to note that, although boys generally have poorer relationships with their teachers than girls do (Lippitt and Gold, 1959; Schmuck and Van Egmond, 1965), a good relationship with the teacher is at least as potent a factor in the boys' socialization as in the girls'.

A teacher's social power can be to some extent delegated to the pupils, and a teacher's emotional acceptance can be widely dispersed among the pupils. The data strongly indicate that such delegation of power and dispersion of acceptance have marked effects upon the social organization of the classroom. In the study by Bronfenbrenner and his colleagues (1965), it was found that in the classrooms where the teachers encouraged group participation in decisions, the children held adult-oriented moral orientations, whereas in the more traditionally taught classrooms, the moral outlook of the group was more peer oriented. Studies at the Bank Street School (Minuchin, 1964) have suggested that the distribution of teacher power and acceptance—one of the factors distinguishing their "modern" from their "traditional" schools—induces more social independence and flexibility of thought, more concern for social causation, and less stereotype of the social role conceptions of the children.

Generally, such dispersion of social power and emotional acceptance has been found to (a) stimulate more pupil-to-pupil interaction; (b) reduce interpersonal conflicts and anxieties; (c) increase mutual esteem, rapport, and self-esteem; (d) induce a wider dispersion and flexibility of peer social power as manifested by a greater tolerance for divergent opinions in the initial phases of decision-making and a greater convergence of opinion in the late phases of decision-making; (e) increase moral responsibility, self-initiated work, independence of opinion, and responsibility in implementing accepted assignments. Table 2 includes a representative sample of the relevant investigations.

Kounin and Gump (1958) focused their investigations on some second-order effects of the teacher's use of her power. They showed that, when a teacher's control attempts are directed to a single pupil, the

TABLE 2. EFFECTS OF THE DISPERSION OF THE TEACHER'S SOCIAL POWER AND EMOTIONAL ACCEPTANCE

<i>Effect on Classroom Social Organization</i>	<i>Investigators</i>
More frequent pupil-to-pupil interaction	Thelen (1950, 1951) Bovard (1951) Rehage (1951) Medley & Mitzel (1959)
Wider dispersion of peer power as manifested by a greater tolerance for and resolution of divergent opinions	Bovard (1951) Rehage (1951) Cogan (1958) Kounin, Gump, & Ryan (1961) Minuchin (1964)
Increased self-initiated work, independence of opinion, and responsibility	Flanders (1951) Rehage (1951) Levitt (1955) Cogan (1958) Ojemann & Snider (1959)
Reduced inter-pupil conflict and anxiety	Flanders (1951) Rehage (1951) Perkins (1957) Leeds (1956) Kounin, Gump, & Ryan (1961)
Increased mutual and self-esteem	Rehage (1951) Polansky (1954) Perkins (1957)
Increased prevalence of adult-oriented moral values	Bronfenbrenner <i>et al.</i> (1965)

control attempts have differential "ripple" effects on the other children in the classroom. The reactions of the watching children to the teacher's attempt to control a misbehaving child were influenced by several factors: (a) the newness of the situation—the strongest reactions occurred on the first day of school; (b) the activity of the watching children—those who were themselves misbehaving showed the strongest reaction, specifically, an intense vacillation between conformance and nonconformance; (c) the clarity, firmness, or roughness of the teacher's control technique—clarity increased conformance, firmness increased conformance but primarily in those codeviants who were watching, and roughness only disrupted the learning experience. Gnagey (1960) and Kounin, Gump, and Ryan (1961) also demonstrated that these "ripple" effects were greatest when the "target" child was high in the classroom power structure, and that the effects varied with the extent to which the powerful pupil defied or submitted to the teacher's control attempt. The "ripple" effect was almost negligible when the "target" pupil was low in the power structure, whether or not he defied the control attempt. Successful

(conformance producing) teacher control attempts also increased the teacher's social power in the perception of the watching pupils—but only when the target child was high in the classroom power structure.

In addition, data are available to show that pupils' responses to various teacher-influence attempts differ in accordance with such interpersonal response tendencies of the pupils and the teacher as dominance, dependency, defiance, and need for affection. These investigations include the work of Cook, Leeds, and Callis (1951) on teacher attitudes; Glidewell (1951) on group composition; Wispe (1951) on teaching styles; Polansky (1954) on teacher domination and pupil status; Della Piana and Gage (1955) on teacher attitudes and pupil expectations; Leeds (1956) on observer perceptions and teaching styles; Rocchio and Kearney (1956) and Stein and Hardy (1957) on teacher popularity and attitudes; the data of L. M. Smith (1958) relating changes in teacher attitudes and the teacher's emotional support from other teachers during the first year of teaching; McKeachie (1958) on a special organization of teaching; Flanders (1959, 1960), Amidon (1959), and J. P. Anderson (1961) on direct and indirect teacher influence attempts, goal clarity, and the responses of dependency-prone children; Scott and Brinkley (1960) on the validity of measuring teacher attitudes; Boyd (1960) on the underchosen child; and Thelen (1961) on the formation of "teachable" classrooms.

All the foregoing investigations have indicated systematic effects of the degree of dispersion and the manner of employment of teacher social power and emotional acceptance. Intervention of any sort at any point in the system has been demonstrated to induce effects in all the related parts and, sometimes, throughout the classroom social system. The manner of intervention by a teacher into the affairs of any individual pupil not only influences the response of the individual pupil, but also (a) the behavior of many watching pupils, (b) the perception by the peer group of the teacher's power and competence, and (c) the perception by the group of the target pupil's power and competence—in sum, the whole social organization and work pattern of the classroom. Some points of intervention induce a wider "ripple" than others. Some modes of intervention (e.g., firmness versus roughness) produce more intense and more widespread effects. The effects include changes in (a) interpersonal conflict and anxiety, (b) rate of interaction, (c) divergence and convergence of opinions, (d) autonomous work and independent thought, (e) responsible commitment to agreements, (f) conformance and nonconformance to teacher and peer influence attempts, and (g) sometimes, simple disruption of the learning experiences of the classroom.

SOCIAL ANTECEDENTS

Social Class

A number of social theorists have described the school as an agency of middle-class culture and the classroom as a faithful reflection of the community social organization. McGuire (1950) proposed that two social functions of the public schools are (a) to make certain only a minimum number of middle-class children decline in status, and (b) to recruit the necessary proportion of lower-class children into the middle-class way of life—the proportion necessary to meet the ever-increasing need for the motives, ideas, and skills typical of the middle class. The data available do not substantiate McGuire's assertion, but they do give it considerable support.

Moreno's (1934) original studies in New York showed two social-class effects: (a) a tendency for children to *be chosen* more often by other children from their own social class—a social-class cleavage—and (b) the higher the social class the more extensive the acceptance—a positive correlation between social class and classroom acceptance. In other words, although children tend to choose others in their own social class, their out-of-class selections go to persons in a higher social class rather than a lower one.

These two tendencies—to be chosen by one's own class and for the higher social classes to be more often chosen—have been found by Bonney (1942) in Texas; by Neugarten (1946) in the Middle West; by Grossman and Wrighter (1948) in Pennsylvania; by Potashin (1946) in Canada; by Wilson (1959) in the San Francisco Bay Area; and by Glidewell (1964) in St. Louis County, Missouri.

One aspect of the findings deserves special mention. There is, to a noticeable extent, a "cutoff point." If a child is much below the modal social-class level for his particular classroom, he is unlikely to be chosen, even by the children in his own general social class. Being in at least the lower margin of the modal social class appears to be necessary, but not sufficient, for a pupil to attract many choices—even in the upper middle-class schools. (See Potashin, 1946.)

The importance of social class in friendship groupings may vary from one locale to another as suggested by Udry (1960) in comparing his results to those of Hollingshead (1949). Udry's study, conducted in a new metropolitan suburb, showed more social-class heterogeneity in friendship groupings than did Hollingshead's, conducted in a small, stable, midwestern community. Udry suggests that there was less knowledge about a child's social class on the part of both students and teach-

ers in the new suburb, and possibly also a selective factor such that the suburban residents from each class were atypical in certain important respects.

The classroom behavior of children from different social classes varies considerably, as indicated in most of the previously cited investigations (e.g., Glidewell, 1964; Neugarten, 1946; Pope, 1953a, b; Wilson, 1959). Since both behavior and social class also relate to classroom social status, the critical question is whether pupils respond to the child's behavior or to their knowledge of his social-class membership.

Adequate data are not yet available to answer this question, but such data as exist suggest that middle-class behavior may be more crucial than middle-class status. The list of behaviors and traits shown to correlate with high status in the classroom (see page 247) bears a striking resemblance to the behaviors generally found as more typical of middle-class than lower-class children. Furthermore, the sociometric studies—*usually conducted in middle-class schools*—abound with findings that children explain their sociometric choices on the basis of what are generally considered to be middle-class values. Thus, they say the children chosen are friendly, kind, even-tempered, act "in a nice way," honest, loyal, active, good-looking, tidy, get along well with other children, are neither hostile nor withdrawn (Austin and Thompson, 1948; Baron, 1951; Bodwin, 1959; Bonney, 1942, 1947; Glidewell *et al.*, 1959–60; Gold, 1958; Hardy, 1937; Mensh *et al.*, 1959). However, very few of the studies that identified the behaviors or values associated with classroom acceptance attended to the factor of social class and most of these studies were carried out in middle-class schools. Thus, they leave open the issues of whether lower-class children gain classroom status by these same behaviors and whether lower-class children use the same values in judging their peers.

There are two studies that bear on these issues. The first is a study by Feinberg (1953). He studied 2,000 adolescent boys to see if there were social-class differences in the behaviors and background factors which predicted to popularity among classmates. His findings indicated that most of the items predicting social acceptance at one economic level also predict at the other. His data would suggest that it is the child's behavior which is important, not social-class membership itself. Social class comes in only because middle-class children are more likely to have background experiences and exhibit behavior favorable to classroom acceptance.

The Feinberg study, however, did not consider whether the subjects were being rated by lower-class or middle-class classmates. If the majority of the children were middle class, then a given child's popularity might depend upon his conformance with middle-class standards—what-

ever his own social class. Theoretically, in such a classroom, a lower-class child who was well liked by the other lower-class children might not appear to be popular if the middle-class majority did not like him. It is important, then, to know if the two social classes judge by the same standards. A study by Pope (1953a, b) suggests that they do not. He found social-class differences in the behavior that was valued. The lower-class boys valued belligerence, strength, loyalty, friendliness; middle-class boys valued skill, activity, competition, but not belligerence or dominance. There were fewer social-class differences among girls, both social classes valuing femininity ("the little lady"); but middle-class girls placed a greater value on such traits as buoyancy and activity.

Each of the schools used in the Pope study was homogeneous with respect to social class, and the contrasts he found were undoubtedly highlighted by this fact. There is evidence that the social class which is in the majority in a school sets the values, so that lower-class children in middle-class schools tend to hold middle-class values, while middle-class children in lower-class schools tend toward lower-class values (Wilson, 1959.)²

None of the studies, however, asked the children directly about social class, and it remains difficult to know to what extent the children were oriented in their ratings toward social-class status per se. Some relevant data are provided by Stendler's study of the *Children of Brasstown* (1949). The children there manifested little awareness of the usual symbols of social class (house, neighborhood, dress, money, speech) when they were in the first grade. The awareness steadily increased with age to the point of super-sensitivity at adolescence. On the other hand, Gardner, Gardner, and Loeb (1942) suggested that, at least in one southern town, white children were "taught to know their place" in the white society quite early in life. There is some suggestion in the data then that there are regional differences in children's orientations toward social-class status. The comparison of the Hollingshead and Udry studies discussed above indicates that there may be rural-urban differences as well. An adequate understanding of the relationship between social class and classroom social status, however, will require further research.

Social Class of Teachers

The social class of teachers was given special attention by Warner, Havighurst, and Loeb (1944) whose research indicated that 92.5 to 98

² All of the studies discussed in this section were conducted in the school and involved ratings of one's classmates. It is quite possible that the school setting influences the evaluations so that the values employed there are not the same as those used when judging peers in the neighborhood.

per cent of teachers were middle class. It is quite widely held that teachers are middle class themselves, that they come from middle-class parents, and that they are carriers of middle-class values. With respect to the first of these, the findings depend on the definition of social class. If class is defined by occupation, all teachers are middle class since teaching is classified as a middle-class occupation. To a somewhat more limited extent, most of the other social-class criteria—education, income, life styles—also place teachers in the middle class. With respect to the social-class *origins* of teachers, however, there can be some argument. Carlson (1961) found that many teachers, particularly male secondary school teachers, had made substantial gains over the social class of their parents. His sample of female elementary school teachers, on the other hand, had origins in the middle and upper-middle classes and often showed a drop in social class from that of their parents.

A more important question, however, is whether or not teachers, as socialization agents, try to instill middle-class values in their pupils. A view that teachers do try to do so has been put forth by many writers, notably, Gardner, Gardner, and Loeb (1942); Warner, Havighurst, and Loeb (1944); West (1945); and Sims (1951). However, a careful evaluation of these studies indicates that the evidence presented is complicated by methodological difficulties. Charters (1963) in an excellent review of the data concerning middle-class value orientations in the teacher's classroom behavior concludes only that the evidence is inconclusive.

There are some studies dealing with the quality of the interactions between teachers and lower-class children. Becker (1952) interviewed 60 teachers in the Chicago public schools. They reported that more problems of discipline and achievement came from the lower-class children, but that their handling of these problems took into account the social-class background of the offender and the kind of appeals and control attempts varied with the social class of the pupil. Hoehn (1954) used a modified version of the Anderson-Brewer scale of domineering and integrative teacher behavior in observing teacher-pupil interaction. He found that lower-class children received as much attention from the teacher as middle-class children but the "domination with conflict" kind of contact was more frequent with the lower-class children. However, it was also noted that low achievers were the prime recipients of "domination with conflict." Considering that the lower-class pupils were the low achievers, it is quite possible that the teacher is responding to low achievement, not to "low" class. Both Becker (1952) and Hoehn (1954) encountered this problem but could not resolve it with the data available to them.

Peisach (1965) has presented data which suggest that differences in speech patterns between middle-class teachers and lower-class pupils—particularly boys—may reduce communication. This line of research may lead to new insights about the effects of social-class discrepancy between teacher and pupil.

Mobile Families and Classroom Structure

Modern society being exceedingly mobile, elementary school classrooms are subject to considerable in-migration and out-migration. In the St. Louis County Studies (Glidewell *et al.*, 1959–60) about a third of the children in 30 classrooms in October, 1954, had moved out of the classroom by October, 1955. A corresponding third moved in to replace the out-migrants.

What is the position of a newcomer in the social structure of a classroom? Studies by Joy (1933), Sackett (1935), Tetreau and Fuller (1942), and Gilliland (1959) indicate that mobility enhances the position of some children in the competence structure of the classroom, insofar as that is determined by measured achievement. Children from the upper social classes profited more from their experiences in moving than did those from the lower social classes; children with high intelligence profited more than children with low intelligence. Because of the relationships between social class and intelligence, it is not possible to ascertain how much of the effect is attributable to social class and how much to intelligence. None of the investigators examined the effects of either of these variables while the other was held constant. In addition, although the evidence is not consistent, there may be some optimal number of moves or amount of experience with changing schools, beyond which achievement gains no longer occur. Tetreau and Fuller (1942) found, for example, that transient children who had been in not more than two schools previously fared better in the achievement area than those who had moved more often, while Gilliland (1959) found that the superiority of the transients in mean achievement increased as the number of schools attended increased.

With respect to the emotional acceptance dimension of classroom social structure, the findings have been markedly different. Kerr (1945), Downie (1953), and Liddle (1955) all found that newcomers to classrooms were significantly underchosen in sociometric studies of acceptance. Downie (1953) also found that one or two previous moves, or having been in the school from one to three years after having moved, produced greater-than-average acceptance by the other pupils. The implications were that emotional acceptance increases, generally, with the time the child has been in the school. In reviewing his results, Liddle

(1955) also saw some trends in improved acceptance with time in the classroom.

The question may be raised as to whether these effects are brought about by moving or whether they are associated with moving for other reasons. The relevant evidence is not clear-cut. Smith and Demming (1958) found no significant differences between late and early entrants on either teacher ratings or the California Test of Personality—although, like the other studies, they found the late entrants lower in social status (but making progress through the year). W. D. Smith, in a later study (1959), also found that late entrants scored higher on achievement tests than early entrants but, nevertheless, had lower social acceptance. These findings suggest that the low social status was a function of newness *per se* rather than personality traits that characterize children who move or their academic standing.

On the other hand, it has been noted by others that the very highly mobile children are often older than their classmates, and, in several studies (Bedoian, 1954; Elkins, 1958) it has been found that the older children in a classroom were most likely to be rejected and the younger ones accepted. This would suggest that the age of the migrants relative to their classmates may be a factor contributing to their rejection.

Kantor (1965; Kantor and Gall, 1958) has contributed to the issue of cause and effect by getting measures of the migrant children before they moved. Her subjects were third-graders in St. Louis County. She found the children who moved were more emotionally maladjusted, as measured by teacher ratings, than those who remained in the classroom. Further, she followed the children who moved within the St. Louis area and studied the increase or decrease in behavior symptoms reported by their mothers. Changes in residence without change of social context appeared to have no effect upon the number of symptoms reported. A family move, however, is often accompanied by a change in the father's job (Andrews, 1945; Dewey, 1948; Meyers, 1950). Kantor found that when the move was accompanied by the father's change to a more highly regarded occupation, the child retained more old symptoms or developed more new ones than did the children of the nonmobile families. This would suggest that the emotional maladjustment of the migrants relative to their classmates may be a factor contributing to their rejection.

With respect to the process of assimilation in the classroom, Liddle (1955) found that new children are more often cautious than aggressive in their approach, and are often seen as withdrawn. They do make approaches to the group, however, particularly to the teacher or the most obviously respected child. Early approaches often seem to be some form

of imitating the behavior of the children seen by the newcomer as most highly regarded (Phillips, Shenker, and Revitz, 1951). Early influence attempts are probably often unsuccessful even when the new child was a leader previously but, after a period of conformity or imitation, of learning the group's frame of reference, the new child's influence attempts become more successful (Merei, 1949). While the social class and intelligence factors set limits on the child's assimilation, the acceptance and power of the new child grows within these limits over time. The time required to reach a stable position was not indicated by the research findings reviewed.

W. D. Smith (1959) has added to an understanding of the effects of mobility upon the total classroom. After comparing the achievement progress during the year of classes with high in-migration with that of classes with low in-migration, he found no significant achievement differences between the groups. In his study early and late entrants in each classroom were matched on age, socioeconomic status, sex, and I.Q., and the children were all white. These findings suggest that in-migration of children with characteristics similar to those of the children in the receiving classroom does not interfere with the academic progress of the classroom.

Clearly, a great deal more research must be done before one can isolate the effects of moving from (a) the characteristics of the movers and (b) the events that accompany the move. Further clarification would also result if attention were given to the age of the children, the cohesion of the receiving classroom, and the sharpness of the contrasts between the old and the new classroom settings. On the other hand, certain empirical generalizations do emerge from the data: newcomers, as compared to nonmobile children of the same ability, tend to be less well accepted, less powerful, but no less competent at achievement tasks. Newcomers from relatively higher social classes, and with higher intelligence, appear to profit from their previous experiences in moving from school to school. Those from the lower classes and those of lower intelligence profit less or not at all.

Summary: Social Antecedents

The research evidence available indicates that (a) children tend to be attracted to other children of their own or a higher social class, (b) pupils from the relatively higher classes tend to be liked and respected (in competence and power) more than those from lower social classes, and (c) the perceived behavior probably exerts more influence on acceptance and perceived competence than does social class itself. Social mo-

bility and spatial mobility reduce the acceptance of children, at least for a time; but for more privileged children, it often enhances their achievement. In this section, it has also been pointed out that there is insufficient evidence to support the prevalent idea that nearly all teachers have middle-class origins, or that teachers apply middle-class standards of behavior to all children. Social-class discrepancies between teacher and pupil may, however, interfere with rapport.

PERSONAL ATTRIBUTES AND SOCIAL STRUCTURE

Each child enters a classroom, early or late, with certain personal attributes already developed. For purposes of convenience, these can be classified as physical attributes, intellectual attributes, and mental health attributes. Most of the relevant studies report correlations between measured attributes and aspects of the social structure, without establishing the direction of causality. These data are interpreted here in terms of the following hypotheses: A child's personality is expressed in behavior which "earns" him a position in the social structure. Such a process has at least two consequences. It changes the initial social structure to some degree and also modifies the individual pupil in certain respects.

Physical Attributes

The data available indicate that the presence of readily observable physical handicaps tend to limit the acceptance and social power of elementary school children. In the absence of observable handicaps, the correlation of general physical fitness with position in the social structure is a very low positive correlation, generally of little practical predictive value (Bonney, 1942; Force, 1954; Long, 1959; Northway, 1944; Whaley, 1954; Woronoff, 1954).

Data on physical handicaps merge into data from studies of special psychomotor skills. Rorick and McKee (1949) in a study of highly proficient and highly nonproficient third-grade children found the able children more active (and powerful) in after-school playground groups. In a study of summer camp social structures, Lippitt, Polansky, and Rosen (1952) found the psychomotor skills of "perceived fighting ability" and "perceived campcraft skills" to be positively related to attributed power. In one camp, where there were few actual fights, physical size was related to "perceived fighting ability." The relationship did not appear, however, in another camp where considerable fighting occurred. Presumably, in the more peaceful camp there were insufficient opportunities to observe fighting ability directly and so size was taken as *prima facie* evidence. It may

be hypothesized that as the social setting permits direct observation of the relevant behaviors, the easily assumed but not necessarily valid personality correlates pale into insignificance. Some interesting work might be done concerning the effects of prior belief systems of the children.

It might be noted here that although there is generally a close relationship between a child's attributes as perceived by his peers and the same attributes as measured objectively, these are not identical. For example, Pielstick (1963) found that children with I.Q.'s of 130 and over were identified by their peers as being bright—significantly, but not perfectly, and with certain differences in accuracy between younger and older classrooms. It has often been speculated that the perception of the attribute is a more powerful predictor of classroom social status than the objective possession of it; but the empirical evidence has, as yet, neither proved nor disproved this hypothesis.

There has been some work on physical growth rates and classroom social status. Among adolescents, late-maturing boys were found to be somewhat lower in social acceptance (Jones and Bayley, 1950; Jones and Mussen, 1958). For girls, however, accelerated development is not an advantage throughout the adolescent period, as it is for boys. Faust (1960) found early physical maturity to be detrimental to classroom status in the sixth grade, but a decided asset in junior high school.

A final physical attribute to consider—physical attractiveness—has been found to relate positively to social acceptance (Kuhlen and Lee, 1943).

Intellectual Attributes

The major works relating cognitive variables to social structure center on intelligence, academic achievement, and creativity. A number of investigators have found relationships between tested intelligence and social acceptance. The correlations range between .00 and .45, and average about .20 (Bonney, 1942, 1943; Deitrich, 1964; Grossman and Wrighter, 1948; Kuhlen and Lee, 1943; Laughlin, 1954; Potashin, 1946; Shoobs, 1947; Young and Cooper, 1944). Some data exist which suggest that lack of social acceptance centers heavily on the mentally retarded child (Grossman and Wrighter, 1948; Johnson, 1950; Johnson and Kirk, 1950). Jordan (1961) utilizes these data to buttress the position that the special classes for the retarded child do not add to his social isolation and segregation, for he is in that position already in the regular classroom.

The data relating academic achievement to social structure resemble the foregoing statements concerning intelligence. That is, low positive

correlations exist between measured academic achievement and socio-metric acceptance (Bonney, 1942, 1943; Glidewell and Stringer, 1961; Grossman and Wrighter, 1948; Porterfield and Schlicting, 1961). Two tentative extensions have been suggested. Buswell (1951) found no relationships between social acceptance and achievement at the kindergarten and first-grade level, but a decided one at the fifth-grade level. She argues a causality hypothesis: that it is the achievement which determines classroom status. Buswell's causal hypothesis could be supported if one could establish that (a) the child's relative achievement remained constant from kindergarten to fifth grade, (b) the child's relative position in the social structure changed, and (c) the change increased the association between achievement and classroom position. The data available do, in fact, indicate some constancy in achievement status but also fluctuation (Stringer, McMahon, and Glidewell, 1961). The data also suggest constancy of position in the classroom social structure (see pages 224-225). In fact, Bonney (1943) reported that among children in the second, third, and fourth grades, social acceptance was found to be about equally as constant as measured intelligence. Accordingly, the causal connection remains uncertain.

Some interesting work has been done relating the utilization of intelligence (a discrepancy between intelligence and achievement) and the child's position in the classroom social structure. Several studies have found that the utilization of intelligence is positively related to both acceptance and power (Epperson, 1963; Epperson *et al.*, 1961; Keislar, 1955; Schmuck, 1962a, b, 1963; Schmuck and Van Egmond, 1965; Sears, 1959; Van Egmond, 1960).

The interpretation of the relationship suggested by Schmuck and Van Egmond is that low status in the classroom social structure has a demoralizing effect which adversely affects utilization of the intellect. This interpretation receives considerable support from their finding that the self-perception of low status is even more crucial than actually having low status; that is, having low status and knowing it is more closely linked to low utilization than having low status and not knowing it. Furthermore, they report that the performance level of girls was more closely linked to acceptance while that of boys was more closely linked to power. A highly tenable interpretation of this is that girls are more demoralized by being disliked than by lacking influence, whereas the reverse is true for boys.

There is some suggestion in the data of a lack of relationship between social status and the utilization of intelligence when peer group values do not favor academic performance. For example, the relationship was

not found among second-grade boys (Van Egmond, 1960). Moreover, the study by Pope (1953) discussed earlier and one by Porterfield and Schlichting (1961) suggest that it might not hold among lower-class boys.

Torrance (1963) reports some of the work of the Minnesota studies on creativity and social structure. The major findings of these exploratory studies indicate that highly creative children are perceived as odd, are less accepted sociometrically, and receive less credit for contribution to group problem-solving than their peers. At the adolescent level, teachers show less acceptance of highly creative youngsters than they show of those youngsters who are highly intelligent but not so creative. Likewise, highly creative children show less acceptance of their teachers, and of adult norms in general (Getzels and Jackson, 1962).

Mental Health Attributes

The mental health domain, while broad and not clearly differentiated conceptually or operationally, has been the focus of considerable interest by students of classroom social structure. Investigators have used such concepts as adjustment, self-esteem, anxiety, emotional handicap, and emotional disturbance. Operationally, the concepts usually refer to paper-and-pencil tests of "personality" or to teacher ratings or nominations. The key finding in the area is that position in the classroom social structure is significantly related to mental health. L. M. Smith (1955, 1958) has organized the earlier evidence supporting this finding into five types:

Opinion statements (Fox and Segal, 1954; Frankel and Potashin, 1944; and Pepinsky, 1949).

Pupil ratings and nominations (Austin and Thompson, 1948; Bonney, 1943, 1947; Horowitz, 1962; Kuhlén and Lee, 1943; MacFarlane, Honzik, and Davis, 1937; and Young and Cooper, 1944).

Adult ratings (Bonney, 1947; Forlano and Wrightstone, 1951; Jennings, 1950; and Northway, 1944).

Camp leader ratings (Hunt and Solomon, 1942; Newstetter *et al.*, 1938; and Northway, 1940).

Psychiatric referrals (Tagiuri, 1952).

Smith's (1958) data indicated a correlation of .47 between teacher nominations of adjusted and seriously maladjusted sixth-grade boys and peer acceptance and rejection.

More recently, pupil mental health—defined as anxiety and measured by the Taylor Manifest Anxiety Scale—has been found to relate significantly to social structure: the greater the anxiety, the lower one's social acceptance (Coopersmith, 1959; Feldhusen and Thurston, 1964; Horo-

witz, 1962; McCandless, Castameda, and Palermo, 1956; and Trent, 1957). Douglas's finding, based on a story completion projective, has already been mentioned: the rejected children used more primitive defense mechanisms.

Northway (1940), Kerr (1945), Bonney (1947), and Comboss (1962) further demonstrated that rejected children tended to exhibit behavior symptoms usually associated with poor mental health. They were overly aggressive or withdrawn, listless and in poor physical health, and emotionally unstable.

Bower's work (Bower, 1959; Bower, Tashnovian, and Larson, 1958) was primarily concerned with using a pupil-nomination device to assess mental health and to select children for referral. It was quite apparent in Bower's research, however, that the child's mental health influenced his social role. For example, Bower found that the emotionally disturbed children were selected by their peers in the casting of a school play to take the roles reflecting social inadequacy and hostility. He suggested that further study of specific interpersonal competencies might yield new understandings of classroom social structure and of mental health.

Behavioral Correlates of Classroom Status

A variety of methods have been used to assess the behaviors that characterize accepted and rejected children. Schmidt (1958), Lippitt and Gold (1959), and Jennings (1950) used behavioral observations. Pope (1953a, b), Gold (1958), and Elkins (1958) used classmates' reports. Teacher ratings of behaviors have also been related to classroom status (Bonney, 1947; Bronfenbrenner, 1961; Lippitt and Gold, 1959). Self-reports have been used by Feinberg (1953). Lippitt and Gold, as well as Elkins, have even used the child's behavior in rating others as a measure of the rater's affect toward peers.

There is considerable consensus from these studies about the behaviors and personality traits that correlate with social status in the classroom. For example, hostility has been well linked to rejection. Thus, Schmidt's provocative study indicated that sociometrically rejected boys and girls in fifth-grade classrooms show more aggressive behavior, and less cooperative behavior, than do sociometrically accepted children. Lippitt and Gold found that the rejected children in the fourth through the sixth grade expressed less positive affect in their sociometric ratings of others and more often engaged in unfriendly behavior—either of the aggressive type or the passive-hostile type. The only study which indicated contrary evidence is the one by Pope. Pope reported that in the socioeconomically low schools belligerence and aggressiveness characterized a certain kind

of leader among both boys and girls—a leader who was not liked, but was respected and influential.³

Pope's findings on his lower-class subjects provides the exception to several of the generalizations from the other studies. Thus, Pope found that classroom conformity gains a lower-class boy rejection. This is not at all true in the other studies. In general, the bulk of the data indicate that high status is awarded to the active, nonhostile, not-overly-dependent child, who is helpful to others or makes them feel comfortable in his presence, and who demonstrates a responsibility or dependability with respect to group goals and interpersonal relations, and who does not engage in behavior that disrupts the classroom. All of the studies, Pope's included, indicate the extreme importance of socioemotional characteristics in determining a child's position in the classroom hierarchy. Certain specific traits, such as sense of humor or role flexibility, were often cited as conducive to acceptance.

THE CIRCULAR PROCESS

In summary, if a child is fortunate enough to be strong and healthy, intelligent, upper-middle class, and possessing well-developed interpersonal skills, he is likely to have a high self-esteem and a capacity to perceive accurately the nature of the approaches and responses of others to him. Under such conditions, he is likely to begin to initiate cautious interaction attempts with others—especially the most obviously respected children and the teacher. He is likely to be willing to take some social risks, but, at first, only moderate ones. He is likely to be quite sensitive to the responses he gets to his first experimental interactions. If the responses are positive, he is likely to perceive them as positive, and he is likely to repeat the approach to others. If the responses are negative, he will perceive them as negative and is likely to try new provisional approaches. He is likely to avoid becoming unusually visible in his first experiments. He is likely to make good use of his intelligence. As the skillful child develops more acceptance, power, and competence in the classroom, he appears also to develop still greater self-esteem. Under some conditions, he also develops more willingness to take risks by trying new approaches to people and tasks. His new approaches can modify his position in the system. As the risks—small or large—turn out to be profit-

³There may be some similarity between these children described by Pope and the impulsive children in the camp study by Lippitt *et al.* (1960). Although not usually leaders, these impulsive children became influential in situations of stress when adult controls were particularly irritating.

able, self-esteem further increases and his position in the social system becomes more satisfying. A circular, self-perpetuating interaction process thus becomes established—sometimes at the level of popular conformity in a stable social structure and sometimes at the level of relative independence, originality, and creativity in a flexible social structure. The latter conditions appear to be the less frequent.

Turning to the other extreme, consider the child who enters the classroom with less vigorous health, with limited intellect, inadequate interpersonal skills, from the lower classes. He is likely to have a low level of self-esteem and relatively high anxiety. The data indicate that he is likely to initiate interaction with his peers and the teacher with awkwardness, and that he is likely to induce responses which are, at best, a restrained embarrassment, or at worst, hostile ridicule. He is likely to feel humiliated to some degree, and he is likely to respond with some degree of either aggression or withdrawal, or both in alternation. If he responds with aggression, he is likely to promote counteraggression. If he responds with withdrawal, he is likely to promote some form of passive rejection or counterwithdrawal. It has even been noted (Lippitt and Gold, 1959) that the low-status boys—often aggressive and troublesome—evoke more criticism from the teacher than do their high-status classmates; while the low-status girls—often overdependent and passive—receive more support from the teacher. Although the teacher's reaction is understandable, it increases hostility and dependency, respectively. The response of the others—peers or teacher—to this child's interaction attempts are not likely to increase his self-esteem or his interpersonal skills. He is likely to distort his perception of the responses by denial or projection in order to protect whatever limited self-esteem he can marshal in the face of his rejection by others. His utilization of his intelligence is likely to be reduced. Again, a self-sustaining circular process is established. Rejection breeds defensiveness, perceptual distortions, further aggression or withdrawal, and reduction in self-esteem. Further aggression or withdrawal and further counteraggression or passive rejection complete the circle, and symptoms of emotional conflict and disturbance appear.

This circular process model possesses some empirical support. For example, dominative behavior precipitates dominative behavior and integrative behavior stimulates integrative behavior (H. H. Anderson, 1939). Likewise, child leaders must meet group norms if they are to influence their new groups (Merei, 1949). Further, boys who exhibit the highly valued active-assertive behavior pattern are also the ones most responsive to peer approval (Patterson and Anderson, 1964). The cir-

cular process has been analyzed conceptually and convincingly elaborated by Lippitt (1962). The careful examination of its validity in elementary school classrooms, however, remains to be undertaken.

A SUMMARY OF EMPIRICAL FINDINGS

Classroom social organization develops quickly and remains relatively stable. Almost all pupils are quite aware of the nature of the classroom social organization and perceive their own position in it with considerable accuracy. Most classrooms are composed of stable, mutually attracted and respected pairs and subgroups, plus a few continuing isolates. A hierarchy of individuals, pairs, and subgroups has been found in many of the classrooms studied. While the sampling has not been adequate to establish the prevalence of such hierarchies, factors such as group size and goal orientations have been shown to account for some of the variations. A centralized hierarchy, as opposed to a diffuse structure, seems to provide a less-supportive emotional climate and to produce more accurate self-perceptions of status—particularly among the low-status children.

Teacher behavior has been shown to be enormously potent—affecting the socioemotional climate of the classroom, the status relationships among the children, individual behaviors, moral orientations, and intellectual performance. The elementary schoolteacher influences not only the target of her action, but the witnesses as well. The delegation of some of the teacher's power and the dispersion of a teacher's acceptance of the pupils in the classroom tends to increase pupil-to-pupil interaction, reduce interpersonal conflict and anxiety, and stimulate autonomous work, independent thought, and moral responsibility.

Pupils from higher socioeconomic classes tend to be more widely accepted and respected, but this influence is tempered by a tendency to accept and respect others of one's own social class. While the evidence is not satisfactory, it seems likely that pupils' choices are more influenced by classroom behavior than by a knowledge of social class as such. Geographical mobility almost always reduces acceptance in a new classroom, at least for a time. However, the mobility of the more privileged children enhances their achievement rates, as compared with those of similar nonmobile children.

There is a reliable but limited relationship between individual physical and intellectual attributes and position in the classroom social structure. There is a relatively close relationship between the mental health of the child, certain personality traits and behavior patterns, and his

position in the structure. The interaction processes which appear to influence the relationships between individual personality and individual position in a social organization can be explained by the assumption of a self-reinforcing circular process, but the validity of that assumption remains to be established.

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Psychological Testing of Children

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PSYCHOLOGICAL TESTS are ubiquitous on the American scene today, influencing a wide range of vital decisions about children from institutional placement to the selection of prize winners. Scientific disciplines as diverse as genetics and sociology draw freely upon such test findings, and even the law has recognized the tests in numerous ways. In 1954, for example, the Supreme Court indicated in *Brown v. Board of Education of Topeka* that it had considered psychological test findings in arriving at its decision that school segregation was inherently harmful. Further legal recognition came in 1962, when Judge David Bazelon of the U.S. Court of Appeals ruled that qualified psychologists were competent to render expert testimony, based on test findings, in the field of mental disorder (Hoch and Darley, 1962). Clearly, tests have received widespread acceptance and recognition.

However, psychological tests are also under attack today from various viewpoints. It is a strength of scientific method that any procedure is open to vigorous criticism and the demand for empirical verification. Tests have no special immunity, and this process of continuous re-evaluation has highlighted some important weaknesses.

In addition to scientific and professional criticism (Meehl, 1954, 1960), opposition has arisen on social and political grounds. Both reasoned and irrational voices have been heard condemning tests. At a more thoughtful level tests are said to be unfair to some individuals (Klineberg, 1963), to be destructive of sound thinking and creativeness (B. Hoffman, 1962), and to be a source of unwarranted intrusion upon privacy (Gross, 1962). More extreme and less responsible sources view tests as part of a conspiracy to undermine, subvert, or corrupt American character (Stormer, 1964), and some have even urged that laws be passed prohibiting the use of certain tests. (See Eron and Walder, 1961; Hathaway, 1964; Nettler, 1959.)

It seems inevitable that testing practices will change markedly in re-

sponse to the variety of criticisms which have been directed toward the field. For this reason, the present chapter will tend to emphasize the criticisms likely to lead to change.

It would be impossible, of course, to do justice to all tests in a single chapter. Emphasis, therefore, will be given to those procedures which are commonly employed in clinical assessment of individuals, rather than to those which measure "normal" characteristics such as introversion and extroversion. There will be no extensive treatment of group tests, even though these are widely used in counseling and educational situations. We shall not deal at all with aptitude tests, which offer estimates of the probability an individual will succeed in learning in a given area; achievement tests, which measure how much an individual has learned in a given area after having been exposed to training; and interest tests, which are used in vocational and educational guidance.

This review will focus, in general, on intelligence tests rather than on personality tests and will consider clinical problems in the use of tests more than technical ones. It will attempt to provide an overview of informed opinion concerning the merits and deficiencies of testing procedures when used as a means of obtaining information on which to base decisions that will affect children's lives.

HISTORICAL BACKGROUND

A history of the early background of intelligence tests (Peterson, 1926), which are the oldest and most influential of testing procedures, illuminates other tests as well, since all have some degree of kinship. The immediate intellectual background for the development of intelligence tests was provided by Charles Darwin's work, first published in 1859. The theory of evolution emphasized variation in the characteristics of living creatures, the adaptive or survival value of these variations, and their inheritance. During this same period, the development of psychophysics by Gustav Fechner provided a scientific basis for attempts to measure "mind stuff." Stimulated by Darwin's views and the developing experimental psychology of his time, Sir Francis Galton constructed some tests and called attention to the range of individual differences in moral and intellectual traits in men. He also developed statistical correlation, a mathematical tool central to test research and one eminently suited to the study of fixed traits.

By the early 1900's, Alfred Binet and other workers had shown that performance on tests of judgment and reasoning varied systematically with chronological age in children. Binet and Theodore Simon were then

commissioned by the French Minister of Public Education to develop objective means for selecting subnormal children, the growth of popular education having forced recognition of the fact that some children did not learn as well as others. Their mission was to identify children who would require special educational facilities. While Binet was seeking to measure general intelligence, it is important to recognize the educational context in which the first tests were developed. The first tests were considered successful because they differentiated between children known to do well, and those known to be slow, in school. Since subsequent tests, including the Wechsler Intelligence Scale for Children (Littell, 1960), were validated against a Binet-type test, the influence of a school-learning context upon measures of intelligence continues even today.

During World War I, group tests of intelligence were developed to select men who could profit from special training. Positive correlations of test scores with education, and differences in scores between occupations, were accepted as evidence of the validity of the group tests. Interest in mass testing was also generated by such provocative and controversial findings as regional, ethnic, and racial differences in scores. The feasibility of mass testing having been demonstrated, testing programs spread with great rapidity.

The success of the group-testing approach in measuring intellectual abilities encouraged the development of group-administered questionnaires or inventories for determining the presence of significant psychological symptoms—such as anxiety, phobias, suspiciousness, obsessions and compulsions, and the like. Such inventories, which depend on a self-report, had tentative experimental use as screening devices for the military service during World War I. The concept that intangible qualities could be measured led to the development of a wide range of questionnaire measures of personality, attitude, and interest.

The Rorschach test, developed in Switzerland in the 1920's independently of the psychometric tradition, made its way to America in the early 1930's. In the mid-thirties, Henry Murray, influenced by psychoanalytic thought, developed the Thematic Apperception Test (TAT). Related thematic instruments such as the Rosenzweig Picture Frustration Test, the Blacky Test, and others followed. After World War II, with the spread of the mental health concept and the growth in numbers of clinically trained people stimulated by the Veterans Administration training programs, application and development of tests mushroomed. Tools which once had limited clinical use were now applied widely in clinical and industrial settings as well.

The field of testing is enormously broad. There are literally hundreds

of tests, purporting to measure just about every conceivable human characteristic. The variety of functions tested include intelligence, humor, anxiety, ascendancy, conservatism, dogmatism, neuroticism, introversion, extroversion, alcoholism, creativity, logic, cognitive complexity, artistic preference, sociability, social intelligence, supervisory judgment, and on and on.

It would be a useless and tedious task to list here all of the human characteristics which have been tested, inventoried, questionnaired, or scaled since 1920. Even a cursory examination of a library's collection of the successive volumes of those excellent reference works, the *Mental Measurements Yearbooks*, edited by O. K. Buros (1938-1965), offers convincing evidence of the indefatigability of successive generations of test-oriented psychologists.

TEST CONCEPTS

A test is usually defined as a technique which elicits a representative sample of responses in relation to a standardized stimulus situation. All people taking a test are exposed to the same set of test items, presented or administered, and scored in accordance with a definite set of instructions and directions.

It is a basic assumption of psychological tests that people have relatively stable degrees of characteristics such as "intelligence" or "extroversion" or "anxiety" which will be manifest in a variety of situations. If the test provides an adequate sample of the characteristic, then it should be possible to make a statement about the individual tested which will hold true in a variety of situations. The adequacy of that sample is thus most important if one is to generalize about a person from a test result.

Test scores rarely have significance in and of themselves. For most types of tests, the score which an individual subject makes is compared with a distribution of scores, called norms, made by an appropriate reference population. For example, scores made by a five-year-old child are compared with scores made by a representative sample of five-year-olds. It would usually be inappropriate to compare a male high school student's score with norms for adult females.

A good test should be standardized, should elicit an adequate sample of the behavior in question, and should have norms for a sufficiently large and representative sample of the population for whom it is intended. A test manual should provide information to enable the user to decide whether a test can be appropriately employed with a given individual. But test manuals can be tricky. Although they do present technical informa-

tion about a test, the manuals also serve commercial needs, and the information is frequently presented in a light most favorable to the test. Such manuals should therefore be evaluated by someone versed in psychometrics. However, those who wish to obtain independent critical judgments about specific tests are advised to consult Buross' *Mental Measurements Yearbooks*. Published tests are there evaluated by one or more qualified reviewers, on the basis of both the test manual and published research. There are also extensive bibliographic references to the pertinent research literature. A set of standards for the information offered in test manuals has been established by the American Psychological Association (1954).

Tests can be classified in a variety of ways. We usually distinguish tests of intelligence and mental ability; tests of aptitudes; achievement tests; personality tests; and tests of interests, attitudes, and values. Any one of these types may be designed to be administered individually or in groups. The format may be either *objective* or *projective*. Objective tests are distinguished by the fact that the subject makes a selection from a limited set of responses supplied by the test. The familiar multiple-choice test and the inventory which calls for answers of "yes," "no," or "uncertain" are examples of the objective type of test. Projective tests provide relatively ambiguous stimuli and relatively ambiguous instructions which require the subject to produce his own response. The subject tells what the inkblot looks like to him, or makes up a story about a picture he is shown, or draws a picture from his own imagination.

Classically, two issues are paramount in discussing psychological tests: *reliability* and *validity*. Reliability in a test refers to the stability of an obtained result. Validity refers to whether or not a test can do what it claims to do. Both problems must be faced by every test constructor, and it is his responsibility and that of his publisher to provide such information in the technical manual accompanying the test (American Psychological Association, 1954).

Reliability

There are three aspects of reliability: (a) To what extent would the same finding result if the test were to be administered again immediately? (b) How much will an obtained result change over a longer period of time? (c) To what degree will qualified examiners arrive at the same conclusion, given the same data?

Reliability data are available for almost all objective tests. The typical test would never see the light of day unless it had at least some minimally acceptable degree of reliability or internal consistency. Projective tests

present somewhat different technical problems, and it has been questioned whether the traditional concepts of reliability are applicable to projective tests. It is also difficult to characterize projective tests by a single reliability coefficient, because each variable may have a different degree of stability.

The second question concerns the long-term stability of a result. A test may be reliable within itself, but the score may have no predictive value through time. For example, a subject may respond to all test items tapping a feeling of contentment because he happened to be in a contented mood at that moment. The next time he takes the test, events may have altered his mood. Both tests may show considerable internal consistency, but the score from one point in time to the next may change radically.

One might say the change is a systematic and lawful one. In a sense, it gives us confidence in the test to know that a process reflected in the score is regular and lawful. For example, Sarason, Hill, and Zimbardo (1964) found the test-anxiety scale to have poor stability over time. A child who was rated highly anxious one year was not necessarily so the next year, according to the test. However, Sarason and his colleagues were able to show that a change in the test-anxiety score was systematically related to a change in I.Q. score, and thus reflected a real change in the child. Nevertheless, if we wanted to be able to predict a child's degree of test anxiety in the future from a knowledge of his score in the present, the data would show that the prediction could not be made with any accuracy. In short, the trait being measured may itself not be a stable one. In this connection, the data concerning the long-term stability of intelligence-test measures are particularly interesting and will be reviewed in a separate section of this chapter.

The various projective tests, such as Rorschach and TAT, present special issues of reliability, but informed opinion (Jensen, 1959) holds that many of the measures from projective tests are relatively unstable. Many aspects of projective test findings are responsive to situational variables, including the personality of the examiner and the perceived purpose of the examination (Masling, 1960; Zax, Stricker, and Weiss, 1960).

Some measures from both structured and projective tests show modest stability over periods of ten and fifteen years, despite the growth which takes place from the school years through adolescence and adulthood (Kagan, 1960; Kagan and Moss, 1962; Levine and Spivack, 1964). In general, the longer the time interval and the more that conditions of examination and reexamination differ, the less the stability of obtained

findings. How long one can continue to rely on a previous result as representative of an individual's functioning will differ radically for different kinds of test results. Generally speaking, detailed information of this kind is lacking for most test variables.

A third question of reliability arises when the raw test material must be coded into elaborate scoring schemes, or when the test protocol is the basis for a conclusion which can only be inferred from the basic data. Will different examiners dealing with the same raw materials reach identical conclusions?

If one asked two examiners to count the number of words in a Thematic Apperception Test story, it is unlikely their results would differ appreciably. However, if one asked the two examiners to infer the degree to which a state of anal-sadistic regression was reflected in the stories, it would be extremely difficult to get them to arrive at the same conclusion. In general, the simpler the judgment, the more clearly specified the criteria for the judgment, and the greater the opportunity for people to work together and to understand each other's thinking, the greater will be the agreement. In research studies, it is frequently possible to obtain good agreement between judges about rather complex variables by carefully specifying the basis for the judgment, and by training the judges to respond in a consistent manner to the test material. In the absence of such careful training for consistency, gross discrepancies sometimes may be found in the conclusions of competent examiners. Even the same examiner may vary in his conclusions from one time to the next—not because he is incompetent but because the basis for the decision, or the conclusion, is inherently uncertain. In clinical situations, the psychologist and the consumer of his findings would do well to stay in close personal touch with each other.

Validity

When the question is asked whether a test really accomplishes its purposes, validity is the point at issue. In some situations how valid a test is can be decided by seeing how well it predicts a criterion measure. A criterion is defined as that behavior one wishes to predict. For example, one might want to select good workers in an electronics plant. A "good worker" can be defined in terms of the number of assemblies he completes each week which pass inspection. When a simple, clear-cut criterion is available and the criterion measure is all one wants to predict, the validity of a test can be stated with relatively little ambiguity.

Some problems of concern to mental health and child care workers are of this nature and the situation and the criterion response can be specified

exactly. Will a student admitted to college complete the degree? Will a child set a fire if admitted to a residential treatment center? Will a child, who is not now delinquent, be arrested in the next four years? All of these questions can have precise answers, and it is conceivable that one might devise tests to predict the answers. The validity of the test would be determined by how well it did, in fact, predict the answers. L. H. Levy (1963) has used the term "bounded" to describe the sort of test problem which has a specific and objective criterion measure.

Even when used to answer bounded questions, tests validated in one setting cannot simply be taken over for use in another. While one could guess which test would be most useful from previous research, it would probably be necessary to repeat the research in one's own setting before feeling secure that the test would accomplish its purposes in the new situation.

Practical considerations. The degree of validity of a test is not the sole basis for determining whether or not to use it as a means of prediction in a particular situation. Under some conditions, the most valid test available might result in more errors than not using a test at all. Under other conditions, a test with modest or even relatively poor validity can be helpful in a practical sense. Given a situation in which the rate of occurrence of the criterion event is fairly high, and where one can afford the luxury of using only extreme scores on a test, practical advantages can be obtained even from using a poor test. For example, assume that fully half the attendants in a mental hospital were unsatisfactory and that all except those who scored above, say, the 10th percentile of a test could be turned down. Considerable advantage could be obtained here even from a test which had a relatively low validity coefficient for predicting "good attendants."

On the other hand, if the criterion event occurred only rarely, it would be difficult to get a test which would be helpful in prediction, in a practical sense. If only one per cent of attendants proved to be undesirable and if the pool of potential employees was small, tests would be of little help. Even a good test would not pick out all of the potentially poor attendants, and it would turn away too many potentially adequate ones to make it worthwhile.

Meehl and Rosen (1955) have pointed out that infrequently occurring events (e.g., suicide, fire-setting) are extremely difficult to predict efficiently. They argue that one must know the base rate or the antecedent probability of the criterion event, in the particular situation, in order to decide whether to use tests. If the event to be predicted occurs rarely, the

test will make many more errors than simply assuming that the event will never occur (unless the test is a perfect predictor, and no such tests exist today).

Whether it is worthwhile to use tests for practical predictive purposes has to be assessed very carefully in each situation. Close study may reveal that the time and funds expended in trying to predict an event could be better utilized in some other strategy for dealing with the problem at hand. For example, it might prove a better tactic to supervise or to train attendants more carefully than to attempt to screen out poor risks beforehand. Similarly, it might be better to seek a fireproof setting for potential fire-setters than to accept any risk at all. The costs and consequences of hits and errors in prediction must always be considered before reaching a decision on how to use tests most effectively.

Construct validity. A clinical psychologist is sometimes asked to make highly specific predictions about whether a patient will prove to be suicidal, whether a schizophrenic in remission is dangerous, or whether an emotionally disturbed child will function effectively at a regular school. In the narrowest technical sense of the meaning of validity, the psychologist should not use tests to make such predictions unless the tests have been specifically shown to predict performance in the particular setting. Such purism is not practical, and some individual examiners are nonetheless quite effective in their predictions. Furthermore, the clinician is not usually called upon to make highly specific predictions in closely defined situations, but is asked to provide an appraisal of his client as a means of understanding and conceptualizing how the client functions in a broad variety of interactions.

When the specific behavior to be predicted and the situation in which the person functions are both unspecified, L. H. Levy (1963) speaks about an "unbounded" problem. On what grounds does the psychologist make broad, general statements, meant to apply in a variety of situations?

A test report might state that the child responds with anxiety, manifested in marked passivity, when faced with a demanding authority figure. The demanding authority figure might be a teacher, a policeman, a playground supervisor, or his father. The report is couched in general terms, meant to apply in each situation even though the *specific* behavior will differ. In the classroom, for example, passivity might be manifested in an inability to work unless the teacher stays with him and directs each step. With the policeman, passivity might be inferred from an inability to state he has legitimate business when chased from the schoolyard.

With the playground supervisor, the boy may fail to volunteer for the position he wants in a game. With his father, he may unprotestingly acquiesce to any request.

If we look at most personality variables such as anxiety, hostility, passivity, or dependency, it is perfectly clear one cannot pick out one situation and one behavior pattern which would provide an ultimate criterion for the variable. The test developer's strategy, therefore, requires the use of many different criteria against which he validates his test. In effect, the researcher makes up a miniature theory or a generalized definition of what it is his test measures. He derives predictions from his theory or his definition and then determines whether his predictions are borne out. For example, the test may purport to measure dependency. It is perfectly possible to structure a variety of experimental conditions tapping dependency. Dependency may be observed in a laboratory situation, or in relation to peers or adults. Dependency may be manifest in verbal responses, in specific motor actions, in reaction time to make a decision, or in uneasiness when asked to make a decision without any cues from the other person. Dependency may be judged by other people who have the opportunity to observe the subject in everyday life. Other investigators may use the test in their research and thus a variety of situations and a variety of response modes (verbal, affective, motor) may be employed in different studies. The construct may be validated by showing it predicts to far-removed situations. A test of dependency, for example, may be partially validated by showing it differentiates patients with gastric ulcers from those without ulcers.

As the record of successful prediction to a variety of situations grows, the researcher's confidence in the theory of the characteristic measured by his test grows. If the experimental predictions fail, it is incumbent upon him to modify his understanding of the theory of his test, and to conduct further studies to verify his modified viewpoint. In effect, the process of test validation is very similar to the process of testing any theory.

Cronbach and Meehl (1955) have termed this approach to studying the worth of tests "construct validity." The concept of construct validity is particularly appropriate for problems in clinical or personality assessment. The clinician translates his observation in the test situation into generalized statements about the subject. Since the clinician is almost always concerned with people who function in situations different from the ones in the validating studies, his confidence in his clinical conclusions depends on his understanding of the theoretical constructs involved. The more research studies have shown that the test and the construct

predict appropriate criteria, the more confident the clinician can be that his next prediction to a new, but appropriate, situation will be correct.

Construct validity and clinical assessment go beyond tests, obviously. How much confidence one can have in the results of formulations and predictions made from personality tests and other clinical assessment techniques is limited by how much confidence one has in the supporting body of knowledge, consisting of the various theories of personality and other generalizations derived from both formal studies and clinical experiences. People will take different positions on a continuum extending from "we know nothing" to "we know a great deal."

Even if we accept the view that "we know a great deal," it is useful to remember that we are rarely, if ever, able to assess the situation in which the other person will function. An anxious and distractible child may learn poorly with a permissive, soft, undemanding teacher who tolerates a great deal of excitement and spontaneity. He may do much better with a well-organized, demanding, but nonpunitive teacher who maintains a very quiet and orderly room and who sets very definite tasks for the children to complete. Thus, knowing the child's load of "anxiety" and his potential for distractibility may not be sufficient to make the prediction that he will inevitably do poorly in school. Our predictions may prove to be wrong—not because our judgment of the child's dynamics or traits was wrong, but because we could not know anything of the life situations in which he would function. As Sarason (1954) has emphasized, in large measure the situation determines what finally happens.

Interpretations from Tests

If it can be said that there is a bias in the interpretation of test findings, it is toward an overemphasis on statements of psychopathology and an underestimate of psychological strengths. The tester's job being to find out what is wrong, he tends to interpret his findings as indicating something *is* wrong. Partly, he is also a victim of the fact that most personality theory and concepts come from the study of "sick" people. There is very little language to describe psychological strengths and very little knowledge of how people adapt to and master challenging situations. Such concepts are just beginning to be developed. For example, Murphy (1962) has described normal preschool children coping with newness and stress. Silber and his associates (1961) have described the process adolescents use in making decisions to select colleges, and in accepting and mastering disappointment when rejected from the college preferred. White (1963) has called attention to the theoretical status of "effectance energy" (the striving to maintain and expand effective interaction

with the environment) and competence (a person's existing capacity to interact effectively with his environment). As research and theory focus on the competent, conceptual tools and language for the understanding and the interpretation of personality strengths will evolve. As things stand now, test reports are likely to overemphasize weakness and pathology and underemphasize strength. MacFarlane, Allen, and Honzig's follow-up study (1954) has shown that dire long-range predictions based on symptoms of apparent emotional disturbance are often unwarranted.

There is general agreement, then, that one should not rely on personality tests and other assessment techniques as the sole basis for vital decisions, helpful as these often are in illuminating the problems presented by a given child. Sometimes they are the only source of information on a child's attitudes and feelings about people and events in his world. However, test information is best employed when integrated with interview data, behavioral observations, and personal history. A blind interpretation (interpretations made from tests with no other information about the subject except age and sex) is sometimes a clever and impressive achievement, but at the level of decision and recommendations clinical psychologists feel more comfortable when test findings can be interpreted in light of evidence from other sources. Clinical decisions are difficult and uncertain at best, and it is unwise to restrict sharply the sources of information. A single source may introduce unknown degrees of distortion into the picture. It would be helpful if there were a simple formula with which one could weight various sources of information. Unfortunately, no such formula exists, and he who has final responsibility for clinical decisions about other people's lives is in a lonely position. Tests can be helpful but one cannot look to them for final and absolute answers.

INTELLIGENCE TESTING

Before the development of tests, "intelligence" meant a combination of consciousness and volition. It did not really refer to variations in degree of ability among men. The testing movement emphasized individual variation in intelligence, a term which proved difficult to define. Some spoke of learning ability, some spoke of problem-solving ability, some of thinking ability, and some of hypothetical biological properties of the organism. Such disagreement eventually led some sage to produce that ultimate in operational definitions, "Intelligence is what an intelligence test measures." Spiker and McCandless (1954) have analyzed the concept of intelligence and conclude that it does not exist in any concrete

sense. Intelligence, they hold, is an operationally defined theoretical construct, useful only insofar as it relates to other variables and is helpful in thinking about people.

Concepts of intelligence have continued to change and to develop. They have varied from an emphasis on a fixed, biologically based intelligence dependent upon inherited physico-chemical characteristics to an emphasis on the conditions of early development which are involved in the formation of learned strategies of information processing (Hunt, 1961). Factorial views of intelligence emphasize the cognitive skills composing intelligence. Other viewpoints require the concept to apply to an organism adapting to its social environment. That some people are mentally deficient by test standards only, and that some test well but act stupidly in society, has revealed the limitations in narrow, test-defined concepts of intelligence. In recognition of these deficiencies, Wechsler (1943, 1950) wants the concept to include nonintellective characteristics such as persistence and frustration tolerance. The psychoanalytic concept of an adapting ego and the psychiatric concept of ego strength overlap considerably with definitions of intelligence as effective social adaptation.

Factorial Views of Intelligence

Factor analysis refers to mathematical techniques which reduce a large set of intercorrelated test scores to smaller subsets of test scores. The test scores within each subset tend to vary with each other, but each subset is essentially independent of every other. Factor analysis is a procedure which finds the subsets. Factor analytic researchers examine the subsets and try to name each one in a way which will be helpful in understanding the significance of each grouping. For example, a group of scores based on solving analogies, finding synonyms, finding antonyms, and finding similarities and differences among sets of words might be labeled *reasoning with words*. A group of scores involving the solution of number series, equations, and arithmetic puzzles might be called *reasoning with numbers*. For a few extreme advocates, factors are thought to reflect basic dimensions of the mind or of the nervous system. Most factor analysts feel factors are best considered useful theoretical explanations, devised to account for the observation that performance on various types of tests hangs together. Presentations of the history, findings, and differences in viewpoints among factor analytic schools may be found in Vernon (1961) and in Royce (1958, 1963).

Factor analysis, as a school of thought and as a set of techniques for dealing with tests, has been central to the development of concepts of

intelligence almost from the beginning of the test movement. Binet combined the results of a number of different types of tasks to arrive at a single intelligence score. Although not a factor analyst himself, he worked with the implicit assumption that intelligence was a generalized characteristic—in the sense that a child's intelligence would show itself whether he was dealing with words or numbers, whether he was remembering or creating something new. Very early, Charles Spearman intercorrelated performance on a number of different types of tests and concluded there was indeed some sort of general intellectual ability. He labeled this general ability "g," but he pointed out that there were specialized abilities as well. Spearman's "g" was said to be pure intelligence. It was thought to reflect mental energy or mental power, and such energy or power was considered irreducible to any more molecular or atomistic level. Spearman defined "g" as the ability to detect and to specify relationships. Subsequent studies have suggested that "g" is best measured by tests of the ability to abstract and by tests of vocabulary.

Later factor analysts, notably Thurstone (1938) and those who followed him, argued that mental abilities were basically separate and independent from each other, although a general intelligence factor could be derived from these separate primary mental abilities. Such a hypothesis is consistent with the observation that those who do well in subjects like history or English, which depend on verbal reasoning ability, may or may not do well in accounting or engineering, subject areas involving reasoning with numbers.

Guilford (1959) points out that some 40 factors of mental ability have already been uncovered, and on theoretical grounds he expects more. Guilford has presented a comprehensive scheme for organizing the conception of multiple mental abilities. However, the conceptualization of the organization and hierarchy of intellectual skills is still an active problem, and attempts to resolve differences in viewpoints continue (Cattell, 1963; McNemar, 1964).

Despite the vigor of the factor analytic movement, most clinical and educational facilities continue to rely on a single mental age (M.A.) or I.Q. score as the measure of intellectual ability. The lag in adopting factorial concepts is not due entirely to professional inertia. While it is true that the underlying mathematical concepts are unfamiliar to many practitioners, it is also true that we do not know how to make effective use of the more detailed information obtained from factored tests. According to Vernon's review (1961), the use of factors has not yet yielded improved prediction to practical criteria. For example, using a factorially pure test of numerical reasoning and a factorially pure test of the

understanding of spatial relations has little advantage over using a test of verbal reasoning in predicting grades in high school chemistry. Factorially pure tests tapping one set of skills should predict one type of performance on the job, or in school, more effectively than would be true for other types of pure tests; but such differential effectiveness of prediction has not yet been shown.

The existence of tests of the various independent mental abilities should be of interest to those in clinical fields where there is a tendency to use the I.Q. alone as the measure of intelligence. A single I.Q. is a composite score, implying the existence of "g" or general mental ability. Clinical settings might find it useful to try factorial tests such as the Primary Mental Abilities Test or the California Mental Maturity Test. Similarly, individual testing, using the Wechsler Scales, might benefit from scoring according to the factors described by Cohen (1959). Understanding of individual cases might be considerably enhanced by using tests and test scores which offer a highly differentiated view of the individual's intellectual equipment.

Nonintellective Aspects of Intelligence

From Binet's time, psychologists were aware that much more could be observed in the testing situation than was summarized by the I.Q. score. However, all manifestations of the individual's personality were treated as unwanted intrusions into the testing situation. Intelligence meant innate intelligence, and it was not to be obscured by the subject's anxiety or his emotional distortions of the testing situation. With the development of the Wechsler-Bellevue test, Wechsler (1944) was able to state hypotheses about the diagnostic significance of patterns of intellectual performance. Patterns of intellectual performance could be correlated with some features of the personality of the subject. In the following pages, the relationships of intelligence to such variables as personality, psychopathology, and psychotherapy will be considered.

Primary and secondary process thinking. The historically important study of Rapaport, Gill, and Schafer (1946) accelerated the trend toward the diagnostic use of the intelligence test. More important than the discovery of differential diagnostic patterns, however, was the attempt to analyze the requirements of test performance in terms relevant to psychoanalytic ego psychology. The arithmetic and memory span for digits subtests were described as making demands upon the ego functions of attention and concentration. Conflicts which would absorb ego energy might be reflected in difficulties in attending and concentrating. Impairments in the information subtest might reflect a reliance on repression as

a defense, since the information subtest called upon memory. Withdrawal or impairment in reality testing might be seen in failures in answering questions dealing with social comprehension.

Rapaport and his colleagues were not simply saying that test patterns correlated with diagnoses on an empirical basis. They were trying to understand the requirements of each part of the Wechsler test in terms of a psychoanalytic theory of personality and thinking. In effect they were asking whether intelligence-test performance, and thus "intelligence," could be understood within the same theoretical context as thought processes, defenses, and feelings and wishes. To what extent can intellectual functioning and personality functioning be reduced to the same theoretical terms and understood in the same theoretical context?

Rapaport (1951) was interested in systematizing psychoanalytic theory to the point where it could be considered a theory of human behavior, and not only a theory of psychopathology and the psychoneuroses. Rapaport's particular interest had been in the development of a psychoanalytic theory of thinking which was organized around Freud's basic distinction between primary process and secondary process thought. Primary process thinking is said to be "drive organized." An aroused drive is said to seek immediate satisfaction. In consequence, the thought process is organized and dominated by the drive seeking discharge. The wish dominates thinking; considerations of logic, time, space or the social order are disregarded. Secondary process thinking derives from the individual's learning to draw a distinction between an object which will satisfy a need, and an object which will not. Rather than being a slave to the aroused need, secondary process thinking introduces a period of delay between aroused need and satisfaction. During this period of delay, the thought process may be used to determine whether or not a "real" drive-satisfying object is present and whether conditions are acceptable for discharge. Secondary process thinking is organized according to considerations of logic and the social order.

Rapaport's theory of thinking incorporates considerations of affect and drive with intellectual and cognitive processes in one systematic framework. Intelligence and personality are not separated and treated as distinctive issues; rather the emphasis is on a person dealing with inner states and with social reality. The idea that quantitative differences in intelligence can be based upon differences in the quality of the underlying thought process is a new and fruitful one which has only just begun to be translated into test terms or into adequate psychological experimentation. For example, Holt and Havel (1960) have provided a

technique for measuring primary process thought (see below), while Fromm, Hartmann, and Marschak (1954) have provided a theoretical analysis of the Stanford-Binet test in terms of a psychoanalytic ego psychology.

Impulsiveness and intelligence. Impulsiveness and a lack of perseverance toward goals may be considered traits or characteristics related to drive domination of thinking. Perseverance and considered judgment, in contrast to impulsiveness, may be considered "nonintellective" characteristics involved in the successful application of intelligence to problem solution. Studies showing relationships between measures of impulsiveness and other criteria of intelligence or intellectual accomplishment have provided some degree of support for a view of intellectual functioning which tries to relate affect, drive, and cognitive activity in the same theoretical system.

Impulsiveness has been defined in various ways in different studies, and it is not clear that all of the definitions are, indeed, equivalent. Nonetheless, adolescents characterized as impulsive because they were delinquent (Corotto, 1961), or because they were so rated by teachers and other supervisors (Spivack and Levine, 1963; Tallent, 1956), show some deficit in intelligence-test performance. Special measures of impulsivity (e.g., writing a phrase as slowly as possible; time sense; controlled associations) also correlate negatively with intelligence-test performance. A mean difference of 17 I.Q. points, in favor of those who did consistently well on tasks of self-control, was found in one of these studies (Levine *et al.*, 1959; Spivack, Levine, and Sprigle, 1959). While not all studies find a relationship between impulsivity and intelligence-test performance, Unger (1964) states that many studies in years past have shown a correlation between "brains and character." Most of the recent work relating impulsivity to intelligence, however, has used adolescent subjects and there is no evidence that the same relationships would hold at younger age levels. There is also some indication that the cognitive activities which support a delay of response may not become fully functional and organized until late adolescence (Litwin, 1957; Spivack *et al.*, 1959).

Why does the relationship between impulsivity and test performance deficit hold? If one examines test performance directly, it can be seen that errors are not simply the result of a failure to comprehend the question or of a lack of information. Higashimachi (1963) found that boys with weak superegos took less time to complete tests, and were less involved with their test performance. Lawrence (1957) interviewed children about why they had wrongly answered multiple-choice, group in-

telligence-test items. Most often he found that the children had not carefully thought their way through the problem. If a child did try it again more carefully, he often could come up with a better answer. Only 12 per cent of the failed items seemed to be related to a complete lack of information, or a complete failure to understand the problem. Lawrence's findings bring to mind a procedure suggested by Mahrer (1958) for estimating potential intelligence by requiring a subject to give further answers. A failure to persist in a problem-solving activity was one of the outstanding characteristics of low, in comparison to higher, I.Q. children (Klausmeier and Loughlin, 1961). Motivational factors can be seen to exert an influence on test performance directly. Further, a person's habitual ability and willingness to stop and to reflect before responding seem to have an important bearing on how well he will handle a test situation.

While the relationships are not strong, it appears that the greater the impulsiveness, as measured by various criteria, the poorer the intelligence-test performance tends to be. Do the same traits or characteristics relate to measures of social adaptation as well as to intelligence-test performance? The answer is clearly "yes," when dealing with male adolescents. An outstanding trait of Terman and Oden's (1947) underachieving superior individuals was a lack of persistence, evident since childhood. Davids and Sidman (1962) showed that bright (as measured by I.Q. tests) underachievers "were relatively more impulsive" on tests similar to those used by Spivack and Levine (1963) than successful students who were equally bright. The same tests of impulsivity tend to differentiate well-functioning normals from adolescents of above-average intelligence who had so failed to adapt that they had been referred to residential treatment (Spivack and Levine, 1963). The Porteus Maze test, said to measure foresight and planfulness, correlated with a measure of social adjustment among retardates (Dentler and Mackler, 1962). Not only does impulsiveness enter into intelligence-test performance then, but adaptive efforts also may be less adequate when impulsiveness is a factor.

Studies with younger children and with female subjects are insufficient to permit a general statement. However, the available results are consistent with the analysis of intelligence which stems from Rapaport's theoretical views. How various aspects of defenses or "controls" enter into test performance, or how these hinder or facilitate "intelligent" problem-solving and effective adaptation, are areas which remain for detailed study.

It seems perfectly clear, even at this early stage, that views of intelli-

gence which emphasize test-defined intellectual skills alone are inadequate. Moreover, if measures of intelligence are to predict the effectiveness of social adaptation, then clearly attention will have to be given to variables not now measured by standard I.Q. tests. Douvan (1956) and Hoffman, Mitsos, and Protz (1958) have shown that achievement motivation and improvement in performance is stimulated strongly by material reward in working-class adolescents. Material reward is less potent in determining the motives and performance of middle- and upper-class adolescents. Conditions of motivation, and the effect on intellectual efficiency of variations in degree and kind of motivation are not measured by standard testing procedures. Failure to measure pertinent motivational variables limits the value of the tests in helping the practitioner to understand how an individual arrives at an effective or ineffective social adaptation.

Text anxiety. The very idea of taking a test is enough to stimulate feelings which range from mild concern to paralyzing panic. Instances of bright students who "freeze" while taking a test are known to all teachers. The test-anxious person responds to being evaluated with feelings of fear and guilt. The dysphoric feelings are manifested in attention-occupying, self-derogatory attitudes; in the seeking of approval, direction, or support; and in the inhibition of spontaneity and creativity. It is quite clear from the studies originally reported by Sarason and his associates (1960), and from the large number of studies subsequently reviewed by Ruebush (1963), that low to moderate negative correlations are obtained between measures of test anxiety based on self-report questionnaires and intelligence-test scores. In general, as test anxiety increases, intelligent-test performance tends to decrease. Yet it is clear that not all who score well on intelligence tests are free of test anxiety, and not all who score poorly are suffering from high levels of test anxiety. Sarason and associates (1964) have reported a long-term follow-up study of over 700 children, for whom test-anxiety and intelligence-test scores were available continuously from the earliest grades until junior high school. The correlation of test anxiety with intelligence- and achievement-test performance is low in the lower grades; but as the grade levels increase, so do the magnitudes of the correlations. Comparisons of I.Q. scores in groups of high- and low-anxiety children reveal that the highly anxious children have I.Q. scores which are, on the average, 14 points lower. On academic achievement tests, low-anxiety children showed an average advantage of 19 months of grade level over highly anxious children.

How does test anxiety interfere with test performance? Experiments

have varied the test-like quality of the test. When the situation was more game-like, anxiety was elicited to a lesser degree. When the evaluative component was lessened, the highly test-anxious child proved to be less disadvantaged. Test-anxious children were also exposed to a number of problem-solving tasks. If the task required independence on the part of the child, the highly anxious child did poorly. On the other hand, if the task was such that a cautious approach was helpful in solving the problem, the same child performed more adequately. The results have been extended in other experiments (Ruebush, 1963), generally confirming that a situation which involves evaluation of adequacy is difficult for the test-anxious child.

Here is another instance in which some part of the final intelligence-test score seems to be determined by other than pure intellectual skills. It is clear that one cannot take the I.Q. score at its face value as a pure and uncontaminated measure of innate intelligence. From the point of view of the practitioner, there is no such thing as an isolated measure of pure intelligence. However, knowing that I.Q. scores also reflect anxiety, or impulsiveness, or the desire to achieve, does not permit one to change a given I.Q. score to account for these factors. In some situations, notably in predicting school grades, the I.Q. score as obtained is still the best single predictive index we have. If the only aim is to predict grades in school, the I.Q. score is helpful, if imperfect. Mass testing programs, however, are presumably for purposes of guiding students and teachers. Yet they rarely make provision for the evaluation of nonintellective factors and they rarely honor the concept that intellectual functioning should be evaluated in the context of the person as a whole.

I.Q. constancy and change. When we say the I.Q. score reflects anxiety, impulsiveness, or achievement motivation, there is an implication that I.Q. scores are changeable. If impulsiveness were curbed, if anxiety were lowered, if the desire to achieve were increased, the I.Q. score should also increase. To what degree is the I.Q. score stable, fixed, and unchanging? The concept of intelligence and the I.Q. were developed within an intellectual framework emphasizing biologically fixed intelligence. It was quickly established that a well-constructed test did produce stable scores over the short run. One can place considerable reliance on a score obtained under good conditions from a cooperative subject. However, studies of short-term reliability could not tell how stable the I.Q. would prove to be over longer periods of time. To get ahead of the story, once it was learned that I.Q. changes of some magnitude did take place, it became important to learn why and how I.Q. scores changed.

Thorndike (1940) reviewed the literature for the decade preceding 1940 and concluded that adult intelligence-test scores were fairly stable over a five- to ten-year period. School-age children also showed fairly good stability in I.Q. over a five-year period. Infant intelligence tests and preschool tests did not seem to provide a good basis for long-term prediction of intelligence. Higher I.Q. scores were shown to be more unstable than scores at other levels of intelligence, but even so, it was rare to see anyone who had tested in the upper one or two percentiles regress as low as the average range. Studies of severely retarded individuals showed a relatively great stability of I.Q., as Holowinsky's (1962) recent study confirmed.

Since 1940, several carefully conducted, long-term longitudinal studies have been reported in which children have been followed from birth onward, or from the earliest preschool years into adolescence and maturity (Bayley, 1949, 1955; Kagan and Moss, 1962; Skodak and Skeels, 1949; Sontag, Baker, and Nelson, 1958). While confirming the conclusions of Thorndike's review, the later studies have also extended the picture considerably.

Infant intelligence tests do not provide a good basis for predicting I.Q. scores at older ages, and I.Q. scores seem to fluctuate more during the infant and preschool periods than in later years. I.Q.'s derived from the Cattell and the Gesell tests taken before eight months of age and WISC I.Q.'s taken at approximately eight years showed absolutely no relationship to each other (Escalona and Moriarty, 1961). Escalona and Moriarty were able to find some degree of relationship between clinical judgments of the performance of infants older than twenty weeks and later WISC scores. However, the research method leaves the conclusions open to considerable question. We are not told the basis on which the clinical appraisals were made. The investigators do not report the reliability of the clinical judgments and they do not show their results are reproducible in a new sample.

Strenuous efforts by other investigators (Bayley, 1955) have failed to produce sets of items from infant tests which will predict later intelligence-test scores. Prediction begins to become possible at about age two, but the accuracy of prediction of later scores is quite poor. Bayley (1955) believes that infant and preschool tests have different compositions at different ages, and are different from the types of tests used to evaluate intelligence in later childhood. Her arguments are strengthened by Hofstaetter's (1954) factor analyses of her longitudinal data. Hofstaetter found three periods of relative consistency of performance. Tests used during the period of infancy comprised a factor he labeled

Sensory-Motor Alertness. The early preschool years provided the second factor—Persistence. The third period extended from the later preschool years. Hofstaetter considered the tests of this period as involving the Manipulation of Symbols. Within each of these periods, children tend to maintain their rank order fairly well, but a good or poor score in one period is no guarantee of a good or poor score in the next period.

Bradway and Thompson (1962) have reported modestly high correlations of preschool I.Q.'s with scores at maturity. In particular, verbal and memory items predicted adult I.Q.'s to a small degree. I.Q. tests at school age or at the adult level have heavy verbal components, and even the nonverbal portions of tests depend to some degree on the subject's ability to manipulate symbols mentally. However, the limited behavioral repertoire of infants does not include the precursors of later conceptual intelligence. Even the limited prediction which can be made in the preschool years to later childhood and adult intelligence depends largely on the use of tests having a large verbal component at the preschool level.

Beginning in the school years, intelligence test scores show greater stability over considerable time periods. The accompanying table presents a sampling of correlation coefficients between I.Q.'s taken in childhood and those taken considerably later. Terman and Oden (1947) followed 679 gifted children all tested with the Stanford-Binet before age thirteen, 1921 and 1922. The group was retested about twenty-five years later with a specially constructed Concept Mastery Test. The correlation between the Stanford-Binet I.Q. and the Concept Mastery Test scores was estimated to be .66. Thorndike (1948) developed norms for the Concept Mastery Test for the general population. He reported that the mean for the gifted group, as adults, was above the 95th percentile, with hardly any cases falling below the 75th percentile.

The Concept Mastery Test had also been administered to the same subjects in 1939–1940, when the average age of the group was twenty-nine and one-half. About 1951, when the average age of the group was forty-one and one-half, the same subjects took a second form of the Concept Mastery Test. For the two tests, taken twelve years apart, correlation coefficients for the gifted men and women and their respective spouses varied around .90. Over the thirty years since the first examination, the gifted group maintained its standing rather well. The correlations are all the more remarkable because they are based on such a restricted range of talent.

Another way of understanding long-term stability is to look at the significance of I.Q. change. Individual growth curves of intelligence show a great deal of variability, more so in the earlier than in the later years, according to Bayley's data (1955). Individuals show regular increments

CORRELATIONS BETWEEN EARLY AND LATER I.Q.'s

Study	Population	Tests ^a	Ages	<i>r</i> ^b
Albee <i>et al.</i> (1963)	Schizophrenics <i>N</i> = 98	1916 SB & WB	"5 to 8" and "under 45"	.50
	<i>N</i> = 32	KA & WB	2nd grade and "under 45"	.68
	<i>N</i> = 39	Cleveland Grp. Test & WB	6th grade and "under 45"	.55
Bayley (1949)	Berkeley Growth Study, <i>N</i> = 27	1916 SB & WB	7 and 18	.68
Bradway (1962)	1937 Stanford- Binet Standard- ization Sample, <i>N</i> = 111	1937 SB	5 and 30	.64
Skodak & Skeels (1949)	Adopted Children, <i>N</i> = 100	1916 SB	4 and 13	.58
Sontag, Baker, & Nelson (1958)	Fels Institute Longitudinal Sample, <i>N</i> = 50	1937 SB	6 and 12	.67
Terman & Oden (1947)	Gifted Men and Women, <i>N</i> = 679	1916 SB & CMT	13 and 34	.66
Bayley & Oden (1955)	Gifted Men and Women, and Spouses, <i>N</i> = 768	CMT	29 and 41	.88-.92

^a Test abbreviations: 1916 SB = Stanford Binet; 1937 SB = Revised Stanford Binet; WB = Wechsler Bellevue, Form I; WAIS = Wechsler Adult Intelligence Scale; KA = Kuhlman Anderson; CMT = Concept Mastery Test.

^b *r* is the symbol for the product moment correlation coefficient. *r* varies from -1.00 to +1.00. A correlation of .00 means the two variables under study vary completely independently of each other. The closer the coefficients approach -1.00 or +1.00, the greater the degree to which the two variables tend to change together.

in scores, plateaus, marked spurts, and sometimes even decrements. Intelligence seems to grow at different rates in different individuals. Sontag and his colleagues (1958) report similar individual growth patterns. Most children show a regularly ascending pattern, particularly after the school years have been reached, but the Fels group agrees with Bayley that individuals quite often show irregular patterns of growth.

What do these changes in I.Q. scores represent? Are such changes spontaneous variations in growth patterns, or are they systematically related to variations in the conditions of development? What is a meaningful change in I.Q.? To take the last question first, Pinneau (1961) is one of those who have pointed out that a direct comparison of I.Q. scores may be very misleading, depending upon the test used, and the ages at which the two tests were taken. Because of statistical characteris-

tics of the Stanford-Binet, a 15-point fluctuation in I.Q. sometimes *must* take place for an individual to maintain his relative standing in his group from year to year. Because of small variations in the mean I.Q. and the standard deviations at different age levels in the old Stanford-Binet, an I.Q. score did not have precisely the same meaning at every age level. Under some conditions of comparison, however, a 15-point fluctuation can represent a considerable change. It is rare that any studies of I.Q. change have used anything but the raw difference in I.Q., a score which may be quite misleading.

The latest revision of the Stanford Binet (Terman and Merrill, 1960) uses a score with statistical properties such that I.Q.'s derived from it are equivalent in significance at all age levels. The Wechsler Intelligence Scale for Children has always employed such a score, and so it is likely that the issue will not enter in future studies. However, Pinneau (1961) has prepared tables for the Stanford-Binet which show the distribution of I.Q. changes to be expected, given the age of first examination and the interval between tests. Anyone concerned with I.Q. change in any test would be well advised to consult Pinneau's tables.

Several studies have measured I.Q. change by comparing an individual's status on infant and preschool tests with his status on tests given during the school years or later. As pointed out above, infant and preschool scales tend to have very little in common with tests given in later years, so such comparisons are probably meaningless.

Sontag and associates (1958) have conducted one of the more extensive investigations of I.Q. change. They followed a sample of 140 children with I.Q. tests, home visits, and observations in school from ages two and one-half to twelve. Ratings were obtained from parents and from teachers on a variety of personality traits. Case files, containing raw observations as well as judgments of various sorts by different observers, provided the basis for a set of ratings of the characteristics of children who increased or decreased in I.Q.

How constant were the I.Q.'s? It depends on what criterion of I.Q. change was used. If one used as a criterion the highest and lowest scores obtained, irrespective of the ages at which the two scores were obtained, then 62 per cent of their children showed more than a 15-point I.Q. change at some time in their lives. However, year-to-year changes tend to be slight and decrease with increasing age. The median change between ages three and four was 4.2 I.Q. points, while between ages eleven and twelve it was only 1.8. The authors point out that, in general, patterns of I.Q. gains were more prevalent than patterns of loss, and that during the elementary school years, more boys than girls showed gains. Sontag and his colleagues suggest that the relatively gross changes

in I.Q. which take place during early childhood decrease the predictive value of early tests in predicting later I.Q. However, from about age six or seven, predictability to later years is much better. It is clear that one should take into account the age of the first examination, as well as the interval between testings when one is estimating I.Q. constancy.

Sontag and his colleagues found that a variety of personality traits were related to I.Q. change. Emotional dependence on parents related to a loss in I.Q. during the preschool years. In the school years, a cluster of personality traits, with the need for achievement as a common denominator, appeared to be related to accelerated mental growth patterns. Sarason and his co-workers (1964) arrived at a similar conclusion from their longitudinal studies of intelligence and test anxiety. Sontag and associates did not report the characteristics of children who did not change in I.Q. since they studied only groups who showed accelerating or decelerating patterns of mental growth. Parental attitude scales showed no relationship to I.Q. change in the preschool years; but during the school years parental attitudes stressing acceleration, and a type of disciplinary control involving verbal justification and explanation of policy, related to I.Q. acceleration. Kagan and Freeman (1963) report essentially confirmatory results. As Sontag and associates (1958) found, the pattern of variables relating to change for boys and for girls is not entirely the same. Haan (1963) also found sex differences in the correlates of I.Q. change in men and women. Much remains to be explored about how the intellectual development of boys and girls differs.

Several factors stand out in this group of studies. First, intellectual tendencies tend to become consolidated fairly well by elementary school age. Second, I.Q. changes may be related to the degree of independence and achievement motivation fostered by the early family environment. Third, the conditions related to I.Q. change may be quite different in males and females. As a fourth point, the longitudinal studies have all used a single measure of intellectual ability, and it is not clear that the same set of variables would be significant if one studied changes in mental abilities other than the kind tapped by the Stanford-Binet test.

Psychopathology, psychotherapy, and I.Q. change. Change in emotional status is one of the sources traditionally considered to contribute to change in I.Q. scores over time. Emotional disturbance is thought to interfere with the development of cognitive skills, or to interfere with the efficiency of intellectual functioning if the skills have already developed. Changes in emotional status, therefore, should be correlated with changes in intellectual functioning.

Reviews of intellectual functioning in emotionally disturbed and psychotic adults agree that a modest deficit, largely related to motivational

factors, is found in the functional disorders (Hunt and Cofer, 1944; Payne, 1961). Intellectual efficiency in disturbed children has been studied far less intensively; and whether the same conclusions hold is not clear. Clinicians (Richards, 1937) have reported selected cases in which the onset of emotional disturbance was accompanied by marked decreases in intelligence-test performance, but carefully studied series of children covering the major diagnostic groupings are lacking.

Among the psychotic categories, Pollack (1960) has shown that the diagnosis of childhood schizophrenia is accompanied by a very low I.Q., far more often than is true in adult schizophrenic populations. Clearly, not all schizophrenic children score in the mentally deficient range, but large numbers do. Lane and Albee (1963) have demonstrated that children who eventually became schizophrenic as adults, on the average, had dull normal I.Q.'s in elementary school. A large number of these children were in special classes; and, in general, the group showed a pattern of declining I.Q.'s from the second to the sixth grade. The decline in I.Q. occurred long before the acute symptoms of schizophrenia were present. However, a pattern of declining I.Q.'s is also typical of children in schools in many lower-class neighborhoods, minimizing the diagnostic usefulness of the sign (John, 1963).

Among the neurotic diagnoses, the evidence is much more scattered. Systematic studies of children with neurotic diagnoses have been reported only infrequently. Granick (1955) found that neurotic children tend to do poorly on some intellectual tasks. Weiner, Rider, and Oppel (1963) report that a pattern of declining I.Q. is associated with increased emotional disturbance—the nature of the disturbance unspecified—in preschool children. Sarason and his co-workers (1964) have shown that increase in score on a test-anxiety questionnaire is accompanied by a decrease in I.Q. score over time. However, it is not clear that a high score on a scale of test anxiety is related to the presence of a clinically diagnosable neurosis.

D. M. Levy (1943) has reported the intelligence levels of a small group of children of mothers characterized as overprotective and indulgent. The intelligence level of the children was rather high, a fact which Levy suggested was due to the close interaction of mother and child. However, the study lacked any adequate control group, and his tentative conclusions cannot be accepted at face value. Furthermore, Levy's hypothesis conflicts with the findings of the Fels group (Sontag *et al.*, 1958) to the effect that emotional dependence on parents was associated with I.Q. decrement in the preschool years.

Among the character disorders, Glueck and Glueck (1950) found that a large group of lower-class delinquent boys had a mean I.Q. sub-

stantially below average, even when compared with a nondelinquent control group of comparable socioeconomic status. Herskovitz, Levine, and Spivack (1959) found a mean I.Q. above average for both delinquent and neurotic adolescents who came from upper-income families, but the mean I.Q. in both groups was still somewhat below the level to be expected from a normal population at this high income level. As indicated above in the discussion of intelligence and impulsivity, delinquent adolescents tend to do poorly with verbally oriented intelligence-test items, and with test items which require concentration and frustration tolerance.

Usually the parent-child relationship is seen as part of the etiology of behavioral and emotional disturbances, with any intellectual deficit viewed as a secondary consequence of the personality disturbance. However, it may not be the disturbance which is contributing to the obtained intellectual picture, but rather that both the clinical disturbance and the intellectual picture have independently developed from the same matrix of parent-child interaction. One implication of such a hypothesis is that the intellectual deficit will *not* be corrected even if the emotional problem is alleviated. An intellectual deficit, if such exists, might have to be treated in its own terms and in its own right, not considered only a secondary consequence of a primary emotional disorder.

The literature on I.Q. change following psychotherapy should shed light on the issue of emotional disturbance and intellectual functioning. Unfortunately, the literature is small, scattered, and rather inadequate in quality. Well-controlled studies of the effect of psychotherapy upon intellectual functioning are almost completely lacking. In the older literature, occasional studies did report average increases of 10 to 20 I.Q. points following the kind of treatment we would characterize today as "supportive." These early studies (Gildea and Macoubrey, 1933; Hunsley, 1939) lack detail. The changes in I.Q. scores may well reflect changes in cooperativeness rather than anything else; and it is not clear that the judgments of clinical improvement were made independently of the knowledge of I.Q. increase. In a careful study of a small group of 13 children treated once weekly with play therapy, Dulsky (1942) found four children who showed a statistically significant increase in I.Q.; but change in I.Q. showed little relationship to therapists' independent judgments of clinical improvement. It should be emphasized that most of the studies in this area are poor methodologically. At best, all that is shown is that some children will show marked fluctuation in I.Q.'s. Whether the fluctuation is systematically related to a change in emotional state brought about by a psychotherapeutic procedure is not demonstrated by the available evidence.

A number of reports indicate that nonspecific, residential therapy can result in an increase in I.Q. Clarke and Clarke (1954) report that children institutionalized for mental deficiency, coming from exceptionally poor homes, show marked increases in I.Q. after a relatively short period of time. Hiler and Nesvig (1961) found increases in verbal I.Q. correlated with staff judgment of clinical improvement, with hospitalized, emotionally disturbed children. Petrie (1962) found a small, statistically significant increase in I.Q., which he attributed to a practice effect, in an emotionally disturbed group treated in residence. Another recent study (Craft, Stephenson, and Granger, 1964) found that authority-oriented residential therapy of delinquent adolescents resulted in a greater increase in I.Q. than was obtained with a more democratically oriented residential therapy emphasizing group discussions. The mean increases were generally quite small in both groups.

At the present time, however, the research literature does not support the view that psychotherapy can result in large, systematic increases in I.Q. Fluctuation in I.Q. takes place in disturbed as well as normal children and most studies have not considered the role of such fluctuation. The amount of change in I.Q., up or down, in problem children seems to be a function of the length of time between examinations (Gildea and Macoubrey, 1933), as it is in normal children. Moreover, Albee and associates (1963) have shown that the correlation between childhood and adult I.Q.'s over a twenty-five-year period is about the same for schizophrenics as it is for normals. Thus, the pattern of change or constancy of I.Q. may not be markedly different in disturbed and normal children and this pattern must be considered in evaluating the effects of therapy on I.Q.

In general, detailed studies of the influence or the relationship of emotional disturbance and characteriological deviations to intellectual development and functioning are lacking. Such studies should probably be carried out with due consideration for age, sex, and clinical diagnosis. Residential therapy seems to result in a modest average increase in I.Q. score, but why this is so is not at all clear. With regard to the questions of how much of an effect emotional disturbance has on intellectual functioning, and how much change psychotherapy or other therapies can bring about the answer is "we do not really know."

What Does the Intelligence Test Predict?

Intelligence tests continue in use because they tell us something we want to know. Intelligence tests predict school achievement moderately well in subjects calling upon verbal abilities, and they predict achievement in mathematics, but less well. I.Q. scores correlate poorly with

achievement in subjects calling upon manual and motor skills with normal children. I.Q. will not predict grades in art, handwriting, or neatness. However, even in those areas where I.Q. tests predict well, many students do not work up to expected ability, and students of lesser ability manage to do quite well in the classroom. Studies of test scores and school grades have yielded an academic performance factor which seems to reflect a combination of industriousness and interest—separate from measures of ability (Vernon, 1961). Since educational counseling depends upon predictions made from intelligence or scholastic aptitude tests, it is useful to look closely at their predictive power.

A major concern of parents in many social and economic groups is whether or not their child will acquire a college education. It is no surprise that between 84 and 100 per cent of students in the academically talented range (I.Q. above 115), coming from good suburban neighborhoods, go on to college. However, Conant (1961) reports that in one suburban community 56 per cent of the boys and 40 per cent of the girls with I.Q.'s between 90 and 104 also went on to college. In some communities students with I.Q.'s in the 75 to 89 range were admitted to college. We do not know how many completed college. It is clear that intellectual power alone, as measured by tests, is not the most important consideration in students seeking higher education.

Clark and Plotkin (1963) reported a follow-up study of 769 Negro students who attended integrated colleges. Although these Negro students scored below the national average on scholastic aptitude tests, the dropout rate among these 769 students was well below the national average for *all* students. The degree of relationship between the verbal portion of the College Entrance Examination Board test and college grades was quite low. High school I.Q.'s did not predict completion of college or college grades to any significant degree. While full information on the distribution of high school I.Q.'s is not presented, half of the students probably fell below the 70th percentile, a cutoff point commonly regarded by counselors as a minimum necessary to think of a student as "college material."

Another report casting doubt upon the efficiency of the predictive validity of intelligence measures comes from a study of the high school records of those obtaining Ph.D. and Ed.D. degrees in 1958 (Harmon, 1961). Harmon obtained test scores for 3,567 individuals from their high school records. Approximately 12 per cent of all those obtaining doctoral degrees had high school intelligence-test scores falling below the 70th percentile, and three per cent had scores below average. There were some differences between fields. Twenty-one per cent of those receiving degrees in education had high school I.Q.'s below the 70th per-

centile, but so did 17 per cent of those in the biological sciences, and seven per cent in the physical sciences including mathematics.

Clearly the average intellectual level of the 1958 doctorates was quite high in high school. The 12 per cent with relatively low scores represent a self-selected and infinitesimal proportion of those in the larger population with scores so low. However, these cases do clearly show that a low I.Q. test score in high school is not in itself an insurmountable barrier to graduate work. While such data should not be taken as a basis for recommending that all relatively low I.Q. students seek Ph.D.'s, it should give educational counselors pause for thought about how low scores are weighted and used when compared with motivation and industriousness. Such considerations are probably most important for those working with Negro youth who, by and large, may not score well on formal intelligence and scholastic aptitude tests.

Conant (1961) interprets his figures by arguing there is a college somewhere for almost everyone. He recommends that high school and elementary counselors should not think in terms of whether one should go to college, but about which college one should attend. It is only the highly competitive colleges, more and more becoming preprofessional schools, which accept only the top two or three percentiles in general mental ability. Clark and Plotkin suggest motivation for college work is of first importance in college success for Negro youth; and it is clear from Harmon's data that some individuals can catch hold and go on to attain higher degrees even if their level in high school was not promising. If test scores had not discouraged students or school counselors from advising students to seek admission to college, perhaps Harmon's data would have shown an even higher proportion of lower I.Q. (in high school) students among those who obtained doctoral degrees. It is clear that the choice of college, the choice of field, and motivation toward higher education should be heavily weighted in thinking about higher education. Parents and school counselors should be aware of a broad range of possibilities for higher education, and not be limited by stereotyped notions about what kind of test score makes "college material."

Some New Types of Tests

While intelligence tests purport to measure basic intellectual capacity, uninfluenced by training, it is clear that one cannot speak of intelligence isolated from a social and cultural context. Findings that lower socioeconomic groups do poorly on intelligence tests were interpreted by some as indicating differences in native ability, and by others as indicating cultural bias built into the tests. Do different groups differ in basic,

native, mental ability, or are differences in test performance a consequence of differences in life style which the tests simply do not assess?

Eels and his colleagues (1951) argue that the content of intelligence-test items is biased in favor of the middle and upper classes, and that technical methods of test construction tend to perpetuate a bias which has been built in since Binet's time. For example, the only experience some children have with checks is with those coming to their families, either as salary or as welfare payments. It does not seem meaningful to ask such a child why one should pay bills by check rather than cash, as the WISC scale asks.

In an effort to construct a test free of class bias, Davis and Eels (1953) developed a set of games based on a common-culture approach. The problems included in the tests were judged both common and equally prominent in all cultural groups, particularly those in urban environments. The tests are presented in a comic book format, as a set of games, in an effort to minimize the test-like quality thought to elicit poor motivation from lower-class children. Masland, Sarason, and Gladwin (1958) have critically reviewed the test, however, and have concluded that it has not succeeded in overcoming the social class factor.

In the absence of efforts made to overcome or to control attitudes toward testing generally, it is not clear that any test can be culture free. A recent review (Deutsch *et al.*, 1963) indicates that in contrast to the middle-class child, the lower-class child is

... less verbal, more fearful of strangers, less self-confident, less motivated toward scholastic and academic achievements, less competitive in the intellectual realm, more irritable, less conforming to middle-class norms of behavior and conduct, more apt to be bilingual, less exposed to intellectually stimulating materials in the home, less varied in recreational outlets, less knowledgeable about the world outside his immediate neighborhood, and more likely to attend inferior schools (p. 5).

Douvan (1956) found that achievement motivation was more strongly aroused in lower-class adolescents when a monetary incentive was employed than when it was not. Hoffman and his associates (1958) confirmed the finding by showing that lower-class students improved markedly in performance on a task when a material reward was introduced. These studies, along with others (Zigler and Kanzer, 1962), suggest the middle-class child will work to be correct and to know he is correct, but the lower-class child requires a different, more tangible type of reward to work effectively. Almost all tests assume motivation to answer correctly—an assumption which seems to be applicable to middle- and upper-class children and not to many from lower classes.

In view of the gross difficulties in isolating the sources of inability to perform intellectual tasks, it is very difficult to either accept or refute the proposition that average test scores for groups of people reflect differences in native intelligence. The culture-free tests have not been successful so far, and Deutsch and his associates (1963) point out that these tests, with content far removed from the kind of intellectual ability required in the classroom, may prove to be poor predictors of school performance. Both the Deutsch group and Masland and his associates (1958) suggest that direct observation of the ability to deal with problems which arise naturally in the everyday life situation may be a better way of assessing intelligence than tests.

These issues raise the question of the advisability of intelligence tests—particularly for culturally disadvantaged groups. The answer depends on the practical problems one is trying to solve. Tests which confirm a picture of the “intellectual inadequacy” of a culturally deprived child may be used as justification for the attitude “nothing can be done—the child is clearly incompetent.” On the other hand, one might view the nonresponsiveness of the child as due to the method of teaching. Thus one might raise the question of the limitations of the teaching method rather than the limitations in the ability of the learner. One would then consider the alternative strategy of seeking other methods of teaching or of motivating children who are not learning well under existing conditions.

In line with the earlier discussion on the validity of tests, we can see that with alternative teaching methods, the child's performance on the present intelligence tests might no longer indicate his school performance—just as they do not now indicate his out-of-school competence. The tests predict to a criterion measure taken under one set of conditions, that is, performance in school with current methods. If the conditions of measurement of the criterion change (performance in school with new methods), then the test may no longer prove to be an accurate predictor.

Developmental stages of intellectual development. Another kind of new test derives from a developmental theory of cognitive maturation. Developmental theories argue that the nature of thought changes in an orderly sequence through various stages. As Hunt (1961) points out, if one could measure the various stages of thought, it would be possible to have a scale of the maturity of the thought process. Rather than have a measure of intellectual growth comparing an individual to age norms, one would be able to say where an individual stood on a scale of intellectual development.

Laurandean and Pinard (1962) have undertaken to cast Piaget's concepts of development into a standardized test. They use Piaget's ques-

tions about dreams, life, the origin of night, the movement of clouds, and the floating and sinking of objects to obtain information on precausal thought, one of the early stages. Precausal explanations are all forms of responses which precede those depending on physical and objective connections. An object is alive when it moves; an object has a name as part of it, which man discovers; night comes because man goes to sleep. The foregoing are all examples of precausal modes of thought. Questions have been put into a standardized form, with a standard inquiry, and carefully described criteria for scoring the responses into the modes of precausal thinking.

Laurandean and Pinard's test was standardized on a sample of Montreal school children, 50 at each age from four to twelve. The sample was selected to match census distributions for parents' occupational levels. A proportionately exact number of precocious, retarded, and normal children were included at each age level.

The categories of precausality can be scored reliably. In general, pre-causal responses decrease as chronological age increases. The relationships of the measure of precausal thinking to other criteria of intelligence have not as yet been explored, and the usefulness of the test in clinical examination has not as yet been assessed. However, the existence of an appropriate instrument should stimulate considerable work. Laurandean and Pinard indicate they will be constructing additional tests to measure Piaget's developmental stages, and the publication of these will be eagerly awaited.

PROJECTIVE TECHNIQUES AND OTHER APPROACHES

Projective Techniques

The main focus of this chapter is on intelligence tests, as indicated earlier. In this section, however, we shall turn to the projective tests—first considering some general clinical problems and then discussing some of the recent developments and special adaptations of these measures. The group-administered personality tests will be considered only briefly, as will two techniques often used in research but rarely in practical evaluations—systematic observations and ratings by informants.

Thirty years ago, when the Rorschach inkblots and the Thematic Apperception Test (TAT) were introduced into clinical work, there were high hopes these new devices would provide ultimate answers. Paper and pencil inventories were known to be relatively inadequate. The attempt to quantify personality by means of "yes" or "no" answers to direct questions seemed to violate all clinical knowledge of how people actually functioned. The projective techniques held out the hope of see-

ing into the private world of the other person, and of revealing unconscious fantasies. Extravagant claims were made for the usefulness of projective devices, and the projective tests grew and spread. After World War II, the sudden increase in graduate programs in clinical psychology was accompanied by a rise in formal studies of projective-test hypotheses. Much of the work was methodologically naïve, but it became apparent that many hypotheses could not be supported at all. Even when a hypothesis was supported, the degree of relationship between a test variable and a criterion measure was frequently so small as to be relatively useless from a practical viewpoint, despite the statistical significance of the finding. Extensive critical reviews of some of the major projective techniques find meager evidence for the validity of the procedures. Such was the conclusion of Swenson's (1957) review of research with figure drawings, and Tolor and Schulberg's (1963) review of research with the Bender Gestalt test. Reviews of the Rorschach procedures show some evidence that some variables do relate to external criteria, but by and large the relationships are of a low order (Rickers-Ovsiankina, 1960).

Some have argued that the apparent success of tests in clinical use is based upon spurious considerations. In a clinic dealing with delinquent adolescents, a report might read: "This is an impulsive youngster with poor controls, who has little conscious anxiety. He suffers from a dependency-independency conflict which he tries to resolve by adopting a super-masculine pose. He has antagonistic attitudes toward adult authority which cover up a desire to be dependent and to have controls imposed from without." Such a report might be written without ever seeing the test protocol simply from a knowledge of age, sex, and presenting complaint, because such statements tend to be true of delinquent adolescents. This phenomenon—in which descriptions from tests fit particular patients because the descriptions are true of the clinic population generally—has been termed the "Barnum effect" (Marks and Seeman, 1962).

Clinicians argue, with some persuasiveness, that projective test research has been ill-conceived and irrelevant to the clinical use of the procedures. In clinical use, projective devices are rarely used as tests in a quantitative, psychometric sense. When one obtains an I.Q., its meaning is given by its percentile value in the normative group. An I.Q. of 75 has no meaning in itself, except that we know less than five per cent of children of a certain age will attain a score that low. With projective tests, the examiner is not very concerned about the quantitative significance of various scores, except as the individual's different scores relate

to each other. The examiner is concerned with deriving a picture of the functioning of the person, as a whole being, and he is less directly concerned with describing him in comparison to other people. Most validity studies have been conducted in a normative frame of reference with single variables, and few have emphasized the unique patterning of individual characteristics which is considered the essence of personality.

The method of interpretation in common use involves a great deal more than simply making direct statements from some set of formally derived scores. Examiners infer a great deal from the content of responses directly. Projective test interpreters make a great deal of use of the interpersonal characteristics a subject reveals during the examination. Much attention is given to the subject's way of relating to the examiner, and his techniques for handling the anxiety the situation elicits. Such essentially qualitative data are not usually treated in research studies, and for this reason, some clinicians feel the research studies do not deal with tests in the same way the practicing clinician does. Projective testing, as it is presently conducted, is a personal art for the most part, and the enterprise shares all the merits and deficiencies of an art. The consumer of projective-test interpretations needs to know the psychologist well to appreciate the particular psychologist's skills, biases, and limitations.

The field of projective testing is extremely broad. While various tests have been used with just about every conceivable population, and at every age level from preschool to old age, actually a relatively small proportion of projective-test research is conducted with children or adolescents. It is not clear that one can readily generalize findings obtained with adults to populations of children. However, in many instances the methodological considerations are identical and when studies with adults run into certain problems, there is every reason to believe studies with children will involve the same issues. The problem of identifying emotionally disturbed individuals or of predicting response to life situations may be taken as a case in point. Holtzman and Sells (1954) obtained projective test protocols from Air Force men as they entered training. The tests included a Rorschach and a sentence completion form among others. Some of the men were discharged for neuropsychiatric reasons before they completed training and others completed training successfully.

The test protocols, taken before training began, were given to 20 eminent clinicians for study. The clinicians were to sort the protocols into successful cases and cases who had been discharged. No clinician did better than chance in this test, and even when clinicians agreed on

the placement of the protocols, the protocols still were not sorted at better than chance accuracy.

This kind of spectacular failure of projective testing is found repeatedly in the literature, and the problems typically are the same. While clinicians may agree fairly well on the signs of adjustment to be observed in the test protocol, they usually have little knowledge or appreciation of the details of the situation in which the individual typically functions.

In the Air Force study, a man may have been discharged because he became acutely psychotic, because he was a sociopathic personality or an inadequate personality, because of anxiety and neurotic symptoms, or because of disabling psychosomatic symptoms. Men with similar personality characteristics may not have been discharged because service pressures or supports were such that their particular problems were obscured. An anxious and dependent individual may do very well with a supportive officer, but he may do poorly with a very harsh and demanding officer. An inadequate personality may be uncovered and discharged from one unit, but he may be tolerated and carried along in a unit with a different social structure. The death of a parent, or a homosexual encounter, may sometimes be sufficient to precipitate disabling symptoms, but such events will not occur to everyone.

Most psychological testing is done under conditions which preclude the examiner from having even a cursory, much less an intimate, knowledge of the conditions under which a child actually lives and works. The use of tests involves an assumption that individuals have relatively fixed characteristics which will be manifested irrespective of the situation to which the individual is exposed. Given this assumption of the supremacy of intrapsychic events, psychologists are influenced away from a close examination of the living situation.

Projective tests are also used as tools in the study of personality. The test result may be used as a dependent variable, not only as a basis for predicting individual behavior. For example, groups classified differently by one variable may be compared for their responses to projective devices. Do children from lower socioeconomic groups show more or less achievement-oriented fantasy than children from middle- and upper-class groups? It would be satisfying if the measure of achievement in fantasy actually predicted other achievement-oriented behavior, but such a relationship is not necessary to answer a question about the achievement *fantasies* of children from different social classes. In a study of achievement fantasies, the projective test protocols are of interest in their own right as indicators of fantasies which may not otherwise be open to direct observation. Problems in the clinical use of projective tests should

not detract from efforts to use projective tools in the study of personality, intelligence, perceptual and cognitive styles, and other phenomena of interest to both clinician and researcher.

Developments with inkblot procedures. There is a need for a closer tie between the research with projective tests and theory. Normative studies with the Rorschach test have tended to describe developmental changes as they have been found empirically (Ames *et al.*, 1952, 1959; Ledwith, 1959). Aside from showing there are consistent age-related changes, such studies do not attempt any systematic interpretation of the findings. The norms are helpful to the practicing clinician, but the findings are not incorporated into any systematic framework. The normative studies by and large accept the Rorschach scoring categories as given; they do not attempt to select or to develop scoring categories which are directly related to the terms of a broader theory.

There are, however, some new approaches to scoring which do stem from psychological theory. An example is found in a developmental maturity score for the Rorschach test which is derived directly from Heinz Werner's viewpoint on development. Werner (1957) describes a number of attributes that characterize less mature forms of thought, perceptual response, emotional reaction, and motor organization. He argues that development proceeds from a state of relative undifferentiation through a state of individuation of parts to a state in which the individuated parts are hierarchically integrated. This developmental concept is given an operational definition in terms of the properties of Rorschach responses. An undifferentiated response is one like "mud" or "black paint" in which there are few differentiated features. A response such as "bat" is considered to be at a higher level of development because it has definite form. A response which integrates separate details on a blot which has many separate details is considered to be still better developed. The most mature types of percepts are those in which the subject breaks a solid blot down into parts, and then relates the parts to each other in a meaningful whole. The first card is an unbroken blot typically seen as a "bat" or "butterfly." However, a response to this card of "two witches flying, carrying a girl between them" would be considered superior developmentally. The response reveals a process in which the larger whole is broken into several separate, distinct parts. The separate parts are then integrated into a meaningful relationship to each other.

The developmental maturity score has been shown to have age-related changes, it differentiates different levels of mental deficiency, and it relates to a clinically ordered continuum of maturity in adult patients.

The scoring system seems to have broad utility, although not all studies reveal expected findings. A review of research with this scoring system is found in Hemminger (1960).

Another theoretically derived scoring system for Rorschach records is designed to measure the psychoanalytic concept of primary process thought (Holt and Havel, 1960). Primary process, as discussed earlier, refers to the tendency for an aroused drive to seek immediate discharge without regard for time, place, circumstances, or even the presence of a relevant drive-satisfying object. The hallmarks of the primary process are the domination of thought content by drive-related symbols, the presence of "errors" of logic, and the disregard of contingencies in the real or the social world. Secondary process serves the function of delaying the expression of drive while the environment is "searched" for the presence of a drive-satisfying object. The search includes an evaluation of the social and physical characteristics of the environment, and it may lead to the conclusion that the environment must be changed in some ways before drive-satisfying discharge can be permitted.

Holt and Havel have operationally defined the concept of primary process to evaluate Rorschach responses. Primary process thought is said to be expressed in responses which have blatant libidinal or aggressive content. Thus, responses such as a "baby sucking on a bottle" or "a bloody mess in a man who was shot" would be scored as revealing primary process thought. A response such as "a knife and fork" or "a target pistol" would also be scored as containing drive-relevant material, but at a lesser degree of intensity. Responses which do not contain drive-relevant content, but which reflect logical inconsistencies or disregard of contingencies in the social or physical environment are also taken to reflect the primary process; for example, responses such as "a lady with bat's wings" or "an X ray, and here is the man's bow tie."

A highly detailed and complex manual has been developed for this scoring system. The scoring system is demanding in its requirements for sensitivity on the part of the scorer to all sorts of nuances in the percept and in its expression, and in terms of the time necessary to score records fully. Adequately trained scorers can achieve acceptable levels of scorer agreement. However, no data are reported on the retest reliability of primary process scores or on the stability of the score in relation to variations in examiners, instructions, and similar variables known to influence Rorschach scores.

The scoring system was developed for use with adult records, and no material is available on the use of the primary process score with children's records. However, the psychoanalytic concept of primary and

secondary process specifically hypothesizes change in the direction of increasing dominance of secondary process continuing through adolescence into maturity (Freud, 1938). The relative amounts of primary and secondary process scores in a given record should show continuous change from the earliest years through to maturity. In view of the clear-cut developmental hypothesis implied in the theory of primary and secondary process, the relevant studies should be forthcoming.

Although not as strictly derived from psychoanalytic theory, the Rorschach Index of Repressive Style (RIRS) is an attempt to measure aspects of repression. The measure is based on an evaluation of the language with which the free associations to the inkblots are given. Each response is scored for the specificity of the central noun (e.g., person-man-George Washington), for the amount and quality of the adjectives used to elaborate the response, for the inclusion of verbs in the response proper, and for the inclusion of impulse-related content. In addition, the degree to which separate responses are related to each other is scored. The scoring system takes into account both the flow and the richness of the language. The final score for each record is the mean of all the separate scores. The index is an inverse measure of the degree of repressive style; the higher the score, the less the degree of repression. Scorer and retest reliability have been studied extensively and have proved to be adequate. The scoring system may be used with any Rorschach-type record (group, individual, different inkblots) administered in accordance with standard instructions calling for a free verbal response to the inkblots (Levine and Spivack, 1964).

RIRS has been applied to children's records. A systematic increase in score with increasing age has been obtained in three samples of children (i.e., older children show less of a repressive style), but a fourth sample showed no age-related trend. Correlations of subjects' scores over ten-year periods have shown that though the scores increase with age, individuals maintain their rank orders rather well. Low correlations have been found between RIRS and measures of intelligence and achievement. On a clinical level, the RIRS score has been shown to differentiate normal from impulsive adolescents (Spivack and Levine, 1963).

The Holtzman Inkblot test (Holtzman *et al.*, 1961) was developed in an attempt to correct technical psychometric deficiencies which are now known to be present in the original Rorschach procedure. The Holtzman is a much longer test. It restricts responses to one per card, and it has a standardized inquiry. It retains many of the scoring features of the original Rorschach procedure and adds some new scores as well. The Holtzman content scores (e.g., hostility, anxiety, barrier) and for-

mal scores (e.g., pathognomic verbalization, integration, balance, form definiteness) are an attempt to reflect the clinician's actual use of the Rorschach test.

The Holtzman test has been used with children and some norms are available for several groups of school children. Holtzman and his co-workers feel that the test may not be used with children under five. Among the children older than five, several of the Holtzman scores show meaningful age-related changes. Until now, relatively little clinical or research experience has accumulated with the new test, but the availability of an inkblot procedure with dependable psychometric properties should encourage relevant work.

Thematic projectives. While inkblot-type tests are designed to reveal structural characteristics of personality, projective instruments making use of storytelling methods are designed to reveal the contents of fantasies. Storytelling methods depend on the assumption that dominant motives and feelings direct fantasy content. By now there are a sizable number of projective instruments relying on storytelling. Currently in use in clinical work or in research are instruments such as the Thematic Apperception Test (TAT), the Children's Apperception Test, the Michigan Picture Test, the Blacky Test, and others. Additional related techniques are the Despert Fables (Peixotto, 1961), and doll-play techniques (Levin and Wardwell, 1962). A review and evaluation of the major techniques in use with children may be found in Rabin and Harworth (1960). In principle, the problems associated with storytelling methods are no different from those associated with other projective devices. How to understand the stories, and how to translate the data from the stories into meaningful constructs which will have validity in a variety of situations, are issues which are poorly understood.

What are the sources of stories? Can one assume that all content has equal personal relevance irrespective of the source of the story? Does it make any difference if one uses human figures, cartoon figures, or animals as the stimuli? Does it make any difference when the hero of a story is like the person telling the story or different from him in age, sex, or other characteristics? Does the content reflect unconscious fantasies or do the fantasies represent only those things a person could tell us about himself anyway? Does the appearance of a certain kind of content, say aggression, imply the subject is inhibited with respect to the expression of aggression or is he very likely to express aggression?

Research and theoretical efforts have been directed to these and many other issues, without any conclusive answers (Murstein, 1963). It is not clear that all content has personal relevance, but it is clear that the stimu-

lus picture is an exceedingly important consideration in what is produced. In fact, there is a distinct trend toward structuring thematic stimuli to enhance the production of stories bearing on matters of particular interest.

Motives which are aroused in various ways appear in stories taken after an attempt at arousal. Research has shown this to be true for diverse motives including hostility (Berkowitz, 1962), achievement, sex, power, and affiliation (Atkinson, 1958).

The knowledge that an aroused motive appears in fantasy content does not, of course, tell whether or how a particular motive might be expressed behaviorally. This is an important problem to the practicing clinician, however, and a complex one. One viewpoint argues it is necessary to know the inhibitory forces which would provide restraints against open expression. Lesser (1957) has shown that fantasy aggression scores correlate positively with peer ratings of aggressiveness when the boys' mothers tended to approve of the expression of aggression. The same measures correlated negatively in a group of boys whose mothers tended to discourage the expression of aggression. The fantasy had different significance in different contexts. It is obviously very important for the personality tester to know the empirical findings and theoretical views in any particular area of study.

Interest in thematic methods as a means of measuring motivational strength has been renewed, following work demonstrating that achievement needs aroused by experimental manipulation may be measured in the content of stories (McClelland *et al.*, 1953). Working with college students, McClelland and his associates found that need for achievement, defined as competition with a standard of excellence, constituted a workable construct which permitted prediction to a variety of achievement-related situations. Production on experimental tasks, grades, and similar measures were shown to be predictable to some extent from a knowledge of need-achievement scores in male college students. Apparently the same phenomena were not found with women.

By now an extensive literature has grown up around the need for achievement. Achievement motivation has been found to be related to maternal child-rearing attitudes (Atkinson, 1958), and middle-class adolescents tend to show more achievement motivation than lower-class adolescents (Rosen, 1958). There are also sex differences in the correlates of achievement motive scores, and social-class differences in the nature of incentives which will elicit achievement motives and promote performance (Douván, 1956; Hoffman *et al.*, 1958). An excellent review of research in achievement motivation with children is found in

Crandall (1963). The work of Feather (1962), which indicates that persistence at a task is a function of need for achievement, fear of failure, and the subjective probability of succeeding at a task, shows how complex an issue it is to proceed from the expression of a need in fantasy to the prediction of performance in some specific situation. Knowledge of the presence of a motive in fantasy is not enough in itself for most practical purposes.

Clearly there are important problems in the use of tests. Clinicians feel that the regular use of projective procedures confirm their utility for contributing to a greater understanding of another person. They argue that most research designs have been ill-conceived and generally irrelevant to the clinical use of the procedures, and they point out that some studies of test variables have yielded positive results. On the other hand, those who are more oriented to formal research findings argue that projective tests have frequently failed to demonstrate any usefulness at all. Even where there have been positive results, the degree of relationship of test to external criterion has generally been small. Nevertheless, it is a safe guess that present testing procedures will continue to be used until superior methods of examination are produced.

Group Administered Personality Tests

There are a large number of paper and pencil personality tests designed to measure just about every conceivable personality characteristic ranging from adjustment, anxiety, and delinquency to sociability and introversion. As the child's reading level increases, the range of tests available also increases. By and large, paper and pencil tests do not seem to have had any important impact on clinical testing procedures. A recent text, *The School Psychologist* (White and Harris, 1961), dismissed these tests for use with children. The National Society for the Study of Education Yearbook devoted to testing procedures in the schools (Findley, 1963) dismisses the paper and pencil tests as "unvalidated" and suggests their use be limited to competent counselors aware of the limitations of such procedures.

On the other hand, the anxiety scales, discussed above, seem to have validity and may represent an exception to the general opinion that self-report inventories are useless. Often, self-report instruments have face validity, and sometimes they represent a means whereby an individual may say something about himself he cannot say in any other way.

Self-report scales generally have adequate reliability as measuring instruments, and with increasing sophistication in test construction, it is possible to detect various forms of lying, defensiveness, or other ways

of manipulating the test. In specific situations, it may be possible to develop self-report devices which have considerable merit, even for younger children. The self-report device should not be dismissed because of clinical snobbishness or prejudice. *Buros' Mental Measurements Yearbooks* (1938-1965) provide a good source to explore for leads to appropriate testing devices.

Observational Techniques

Tests work with the assumption that the test situation will elicit an adequate sample of the behavior of the individual. However, the test situation is likely to be very different, in a number of important respects, from the situation in which the individual usually functions. Inferences and observations about a child made in a test situation where the child relates to one adult may or may not have pertinence for the classroom where a child relates to a teacher and a class, or to the home where the child relates to two or more adults and to siblings.

Because of the importance of the setting in which the individual functions, techniques have been developing for the observation, the recording, and the quantification of behavior observed in the natural setting. In many observational studies, as illustrated in a recent volume by Barker (1963), an effort is made to obtain continuous and detailed records of what the subject did and said, and what others did and said to the subject. Events are recorded in nontechnical language, and the observer does not try to influence the course of the action. Various methods of reducing the observations to quantitative form are possible.

The observational methods can provide a richly differentiated picture, but these methods are time-consuming and ill-adapted to the needs of large-scale studies. Where circumstances warrant, direct observational procedures might be substituted for some testing procedures. For example, an intensive, individual psychological examination may absorb eight hours or more including the preparation of a report. It might be worth considering whether some testing time can be spent equally productively in direct observation in the classroom, in the play yard, or in the home.

Ratings by Informants

An alternative to the use of direct observation by the professional person is found in techniques which use informants who have had extensive experience with the individual. The Vineland Social Maturity Scale is a device for the quantitative estimation of personal and social maturation, or social competence, from an interview with a parent. A review of

findings and suggestions for the use of the scale are found in the summary volume by Doll (1953).

Techniques have been developing recently which show promise for contributing to a more reliable diagnosis or classification of the behavior of disturbed children. The merits, inadequacies, and deficiencies of the standard nomenclature of the American Psychiatric Association have been pointed out (Zigler and Phillips, 1961). A reliable, quantified method for the description of behavior of children might serve as the basis for a more useful diagnostic scheme, for a study of the natural history of symptoms, and as a baseline measure to assess changes.

Based on interviews with residential treatment center personnel, and a perusal of the literature on atypical, retarded, brain-damaged, and psychotic children, a set of 68 rating scales was developed by Spivack and Levine (1964). These rating scales refer to readily observed symptoms in the areas of self-care, language and communication, emotional responsiveness, physical development and coordination, socialization, and to actions said to be specific to certain diagnostic categories (e.g., confuses pronouns; speech and play highly repetitive). Each item is rated in terms of the frequency of occurrence of the particular behavior, or the degree to which the item described behavior typical of the child.

The form was completed for 140 children, between the ages of five and twelve, enrolled at the Devereux Schools. The children carried primary diagnoses of schizophrenic reaction, personality disorder or adjustment reaction of childhood, chronic brain syndrome with various subclassifications, and a variety of miscellaneous diagnoses. Median I.Q.'s in the various diagnostic groups ranged from 45 to 105. Each form was completed by both the unit supervisor and a houseparent, working independently. Reliability of the factor scores proved to be reasonably adequate.

Fifteen factors emerged from this analysis, and subsequent study showed complex relationships between the factor scores and psychiatric diagnoses, and intelligence test scores. A profile showing the child's relative standing on each of the 15 factors may be derived from the completed forms, and these profiles may eventually provide the basis for a classificatory system. Further studies with a modified form have been completed at the Devereux Schools. The original results were replicated and extended in the subsequent study (Spivack and Spotts, 1965). The revised rating scale, a manual for its use, and some normative data are available from the Devereux Schools.

Similar approaches have been reported by Dreger and associates (1964) for a variety of children's problems; by Burdock and Hardesty

(1964) for severely disturbed children; by Wright, Loomis, and Meyer (1963) for disturbed preschool children; and by Brewer (1962) for outpatients. Rimland (1962) describes a diagnostic checklist which has potential for differentiating autistic and schizophrenic children. Many of the scales developed so far can be used with parents or other nonprofessional observers, because they are written in everyday language to direct the observer to report readily observable events. They can be relatively efficient. The 68-item scale used by Spivack and Levine was completed in less than half an hour by most raters. In addition to the diagnostic usefulness such scales may have, they help the observer develop a systematic and comprehensive picture of the child. However, rating techniques currently in use depend upon the observer's averaging the behavior of the child, and thus do not yield a good picture of the variability in his behavior. Also, such scales assume more or less fixed traits and they do not help to clarify the conditions under which the behavior patterns are observed to occur. Nonetheless, systematic ratings provide an additional method of study and evaluation.

PROFESSIONAL ISSUES

Psychology is a profession, active in many areas of human relations. As a relatively new profession and as a profession applying a rapidly developing and changing basic science, precedents are either not available or not relevant to the new situations which constantly arise. What psychologists do, and how they do it, changes rapidly. Changes in role and in practice have come to be of concern to both the members of the profession and members of the society the profession serves.

Role of the Psychologist

With the first intelligence test, the basic instrument was thought to be the test; the psychologist was simply the administrator and scorer of the test. The psychologist was to adhere to standard conditions rigidly, and the test result was an objective score with a precise statistical meaning. Today, with the advent of batteries of tests, including projective techniques, the situation is very different. The main product of a psychological examination is no longer a set of test scores: but it is a set of opinions, descriptions, and recommendations in the form of a narrative report. The psychologist is no longer a giver of tests, reporting a set of objective results. He is a psychological expert, accepted by the law (Hoch and Darley, 1962), who conducts a clinical examination and obtains information from which he draws conclusions.

The psychologist relies on a process of interpretation in which the observables in the test situation are related to a theory of personality or of brain function. The psychologist then uses his theory in arriving at his final assessment and recommendations. The process of test interpretation itself is a complex one that has recently come in for considerable study. The important point is that a psychologist's conclusions represent more than an objective translation of test findings to common language. The psychologist goes considerably beyond firmly established territory in much of what he does.

When the psychologist functions as an expert, he uses whatever source of information he can to arrive at his conclusions. In current practice, assessment begins from the moment the psychologist receives the referral and continues until the psychologist discharges his responsibility for the individual. All that transpires, including the psychologist's subjective reactions to his subject, constitute relevant data for assessment purposes. Moreover, the psychologist may deliberately depart from standard test procedure, and he may deliberately manipulate the relationship with the subject, or the test materials to test hypotheses he develops about his subject. As an expert examiner, the psychologist sometimes deviates considerably from the role of a neutral test administrator.

When the psychologist deliberately introduces variations in the testing procedure, and in his response to the subject, the interpersonal and the emotional aspects of the situation come to the fore. Some psychologists (Shore, 1962; Towbin, 1964) advocate procedures in diagnostic testing which are indistinguishable from therapeutic procedures. These include exploring deviant responses in relation to the problem the subject presents, discussing attitudes expressed toward the examiner or toward the self during testing, and exploring or clarifying areas of fantasy. For example, a child examined as part of a prehearing workup in a juvenile court may express considerable discomfort when asked, "Why are criminals locked up?" — a standard question in the intelligence test. The psychologist would note and inquire about his feeling of discomfort, whether he feels he is a criminal, and about the nature of his concern about what might happen to him. In another instance, a child's provocative and teasing behavior was reflected to him and the examiner entered into a discussion of the child's feelings about being forced by his parents to come to the clinic. As a third example, the psychologist noted a child's hesitancy and concern about taking time to think. The psychologist interrupted the examination, discussed this problem with the child, and discovered it was a frequent problem to him in school. The psychologist helped the child to practice saying, "Please let me think a moment," a

phrase the child continued to use throughout the rest of the testing, and one he began to use successfully in the classroom as well. In these instances the interactions departed quite markedly from the distant, standardized role of the tester. Blatt (1963) points out the continuity of testing and therapy, indicating that both involve a sharing of intimacy. He describes a number of examples in which a testing interaction shades into a therapeutic interaction.

It is clear from current trends in diagnostic testing that a description of the psychologist as a neutral technician, precisely administering a standard procedure to arrive at a wholly objective result, is very misleading when compared to how diagnostic testing is frequently conducted.

Interpretation of Findings

As part of the professional role of expert, the psychologist does not communicate test findings directly, but he interprets his findings. Psychologists are leery about permitting test findings to be used in any raw form by nonpsychologists. Test findings can be easily misunderstood, misused, or miscommunicated by those who do not fully appreciate the basis for the findings, their limitations, or their significance. In clinical situations, few problems arise around the communication of findings. But in school and other nonclinical settings, problems in interpretation are prominent. In principle, test results should be communicated to those who have direct responsibility for a child—but how to do this in a way consistent with good practice and in a way which safeguards a child's interests is a problem.

When communication is limited to a written report, the content and language will vary depending upon the audience. A report going to a fully qualified psychotherapist may contain I.Q. scores, probable diagnoses, or descriptions of deep fantasies. A report going to a school record file or to an untrained probation officer may be written in much simpler and innocuous terms. Permanent records follow people, and it is difficult to know when a clinically oriented description of an unconscious fantasy might be taken as a literal truth. Unfortunately, watered-down reports may do the client a real disservice.

In school settings, policies vary about communicating intelligence and achievement test scores to parents. In principle, parents should have all appropriate information that will give them some knowledge about their children and how they function, but it is questionable whether numerical scores are the most appropriate bits of information to communicate. It is not clear that numerical scores will be meaningful to many parents. On the other hand, interpretation of test scores by individuals

who are themselves relatively unsophisticated about tests is probably no better. Here, as in many situations, a sophisticated counselor will not usually run into difficulty, while inadequately prepared people will garble communication.

There are arguments sometimes about whether teachers should have access to test scores and test reports. Practices vary and teachers vary in how they use test scores. Some pay no attention at all; some use test scores appropriately; and some use them defensively to justify a child's not doing well. Test scores in a situation in which a teacher has little freedom or little inclination to program individually for children are probably useless. It would be enlightening to study just how test scores are used by schools and by teachers in modifying programs. A child's placement in a special class for slow learners, or in a "fast" section, may be determined by test scores. However, in situations where homogeneous grouping is not practiced, it would be enlightening to know to what extent specific programs were modified to take individual differences into account.

Intelligence and achievement test scores sometimes serve needs other than educational and, in fact, the distribution of test scores is one of the symbols of competitive advantage one principal in a school system may use with another. In one remarkable case a principal had a class that scored low reexamined with a test he knew to be easier. The second time the scores were higher and his reputation and that of the school were maintained.

At the junior high and the high school level, the student may get some feedback about his performance on tests. Frequently students score and interpret their own interest inventories. It is hard to know what students retain or gain from such a practice. In any more formal counseling, the adequacy of the counselor is probably the most important consideration. At the elementary school level, children do not generally get information about their test scores, although experience with individual cases suggests children can profitably absorb test information which is appropriately presented.

As long as tests are used, information will be communicated in one form or another. As in so many other areas, tact and good sense are probably much more important than specific rules in determining the success of the communications.

CONCLUDING REMARKS

The past twenty years have seen considerable change in testing practice. There has been a shift from a testing orientation to a clinical orien-

tation in which the psychologist uses himself more actively to explore hypotheses as he develops them, and in which aspects of the test relationship shade into a counseling or therapeutic relationship. Projective testing has moved from a period of uncritical acceptance to a point where there is general agreement that projective tests do not provide final, absolute, and definitive diagnostic formulations. Intelligence testing has moved from an emphasis on an I.Q. as a fixed quantity to a much more dynamic viewpoint in which intellectual functioning is viewed as part of the adaptive equipment of the individual, subject to considerable variability depending upon circumstances. A certain disenchantment with testing procedures is leading toward more direct observation in the situation in which an individual functions. It is also clear that attacks on testing on scientific and on political and social grounds will combine to force some rethinking of testing practices. The next twenty years may see an acceleration of the trend toward change. At the end of that time we may see substantially less extensive but more selective and meaningful use of tests.

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The Development of Intergroup Attitudes¹

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TO NO SMALL DEGREE, the interest in research on intergroup attitudes has stemmed from the fact that it represents one significant avenue of attack on a major social problem—*intergroup conflict*. For the same reason, social and developmental psychologists have given major attention to the genesis of negative intergroup attitudes, or “prejudice.”² And within this focus, we find an even more specialized interest generated by the greater social urgency of some kinds of prejudice as compared to others. Investigators have thus tended to pay greater attention to the development of *ethnic prejudice*; that is, to the negative attitudes directed toward members of social groups who are perceived by themselves and others in terms of racial, religious, national, or cultural-linguistic attributes.

Systematic inquiry into the development of ethnic prejudice is by no means a new research endeavor. The first investigations were undertaken some thirty years ago (e.g., Horowitz, 1936) and, indeed, a number of the studies to be discussed here were undertaken in the 1930's and 1940's. Of particular interest is the fact that such investigations have assumed an even greater significance during the last decade—a decade remarkable for an upsurge in the concern for the realization of American democratic ideals.

¹ The writer is grateful to Carlos Goldberg and Ronald Barazani for their assistance in searching the more recent research literature on the development of intergroup attitudes.

² Most theorists define “prejudice” as an intergroup attitude in which the members of a group are placed at an advantage or disadvantage by virtue of distortions in the individual's perceptions of, and beliefs about, that group and its members (Allport, 1954). Prejudice, therefore, may be either positive or negative since cognitive distortions can occur in either direction. However, in both theory and research the emphasis has been on negative rather than positive prejudice. Hence, as used in the present context, the term prejudice refers to an intergroup attitude in which the reaction tendencies are primarily negative.

At the root of this concern has been the "American dilemma" of inter-group conflict in which—in contradiction to the value on equality—one ethnic group has more status, power, and prestige than the other. What marked this last decade was not merely the sharpened awareness of the dilemma but, more importantly, the unique and direct response to it. A grass roots civil rights movement was and continues to be sustained on the domestic scene by increasing urbanization and industrialization and by the growing emphasis in the international arena on the concept of self-determination for all peoples. A sustained challenge to the status quo invariably is met with greater resistance to the attempts at such change. Yet out of the resulting intensification of conflict in local and broader community settings, there have emerged fundamental changes in national policy and in public attitudes and concerns which have influenced inter-group relations.

However desirable, social change inevitably creates new problems in the process of providing solutions to old ones. Where initial attempts to end school segregation, for example, have been successful, educational practitioners are now faced with the task of achieving *integration* between Negro and white students in the classroom. Similar difficulties confront practitioners in other settings, e.g., social welfare and employment. At the heart of the matter lies the fact that new social controls, which may foster new and more desirable behavior patterns in the interactions between ethnic group members, do not necessarily insure the development of more favorable intergroup attitudes (Bettelheim and Janowitz, 1964). Indeed, without appropriate changes in attitudes, these new-found interaction patterns may lead to more intense inter-ethnic conflict. Thus, practitioners in many settings are now under considerable pressure to evaluate and modify longstanding patterns of ethnic attitudes. Research findings concerning how such attitudes develop and how they may be changed must, therefore, take on considerable importance for them.

Investigations into the development of ethnic attitudes will be the main order of business in the discussions that follow. Studies of the genesis of other types of intergroup attitudes (e.g., economic or political), though relatively small in number, tend to reveal similar underlying processes and determining factors in their development.³ Therefore, we shall not at-

³ Early studies of political socialization in the child are reviewed by Hyman (1959). More recent investigations are reported by Greenstein (1960), Hess and Easton (1960), and *The Annals* (1965), which also includes a provocative analysis by Sigel (1965) of the basic assumptions made about the learning of political values. Political socialization in adolescence is treated in the chapter by Douvan and Gold in this volume. Studies of the development of economic attitudes are rare (Haire and Morrison, 1957), though several have been reported which deal with children's attitudes toward occupational groups and social classes (Grunes, 1956, 1957; Neugarten, 1946).

tempt to review these studies in the present chapter but, rather, simply cite those that either clarify or extend our understanding of the development of intergroup attitudes. Thus, in the discussions that follow, the terms "intergroup" and "ethnic" will be used interchangeably unless otherwise indicated.

The reader should be forewarned, nevertheless, that the far more extensive research literature on the development of ethnic prejudice is itself somewhat restricted in breadth. By far the majority of investigations of this problem have been undertaken with native-born American children. Notwithstanding this restricted focus, there is good reason to believe that the revealed causes and underlying processes in the development of minority-group prejudice in the United States are applicable to other types of intergroup attitudes and other cultural settings (Allport, 1954; Murphy, 1953).

The presentation of research findings in this chapter is organized in three major sections. The section immediately following considers those studies that shed light on the *developmental processes* involved in the child's acquisition of attitudes toward members of other ethnic groups. Within that context, the specific psychological dimensions which are commonly accepted for the analysis and description of these attitudes are noted briefly. The relatively few studies on the development of intergroup *behavior* in the child are also reviewed. In the second major section, the fundamental issue of the *determinants* of intergroup attitudes provides the nexus for organizing and discussing other research findings. Investigators differ as to which determinants or class of determinants they believe should be emphasized in explaining the development of prejudice. Thus, attention is given to some of the major theories of prejudice. The final section deals with the significant problem of *attitude change*. Here again systematic research reflects the influence of particular theoretical orientations to prejudice, although such orientations are more often implicit in the research than explicitly stated.

INTERGROUP ATTITUDES: DEVELOPMENTAL PROCESSES

An intergroup attitude is a cluster of tendencies to respond consistently to others in an evaluative fashion because of perceived group membership. Individuals vary in the direction and strength of these evaluative tendencies; that is, they are either for or against members of other ethnic groups in varying degrees. This attitudinal dimension, however, is expressed by the substantive content of the ethnic attitude, which must be known before the processes involved in its development can be ascer-

tained. Such content is represented by what the individual feels, believes, and is ready to do about members of other groups.

Seen in this light, it should be evident that ethnic attitudes do not emerge full-blown in the child. It is generally assumed that such attitudes are learned, and that their acquisition is a gradual and complex process. Although their development is continuous throughout childhood, three *overlapping* stages are suggested by existing research findings (Goodman, 1964): ethnic awareness, ethnic orientation, and ethnic attitude. The discussion that follows is organized in terms of these stages. It should be emphasized, however, that these stages are only rough approximations. The existing data are far from complete and, in most instances, have been derived from comparisons of samples of children at different age levels rather than from long-range longitudinal investigations.

Ethnic Awareness

Ethnic attitudes begin to take shape during the nursery school years, that is, at three or four years of age. During this period and as part of the larger process of establishing a sense of self, the child develops an awareness of his own ethnic identity by virtue of the reciprocal and simultaneous process of taking cognizance of the ethnic identities of others. Thus, at the very beginning the child becomes aware that ethnic group distinctions are made and that he as well as others are clustered into such groups.

Goodman (1952) studied 57 Negro and 46 white nursery school children between the ages of three and five and one-half in three racially mixed nursery schools in a large urban northeastern community. Employing a variety of observational procedures and play-interview techniques (e.g., pictures and dolls), she found that 85 per cent of both the Negro and white children had some awareness of racial characteristics. It was also found that racial awareness *increased with age*. High awareness did not appear before the age of four years and three months, while low awareness did not occur in the sample after four years eleven months. However, even among the children with low awareness there was usually some idea of color distinctions as applied to people.

In a far more extensive study involving 253 Negro children between the ages of three and seven attending either interracial or segregated schools, Clark and Clark (1947) found not only that racial awareness occurred early and increased with age, but that the kind of school attended by the Negro child had no appreciable effect on the extent to which he was racially aware. Findings for both Negro and white children consistent with those presented by Goodman (1952) and the Clarks

(1947) have been reported with considerable frequency (Ammons, 1950; Horowitz and Horowitz, 1938; Landreth and Johnson, 1953; Morland, 1958; Stevenson and Stevenson, 1960; Stevenson and Stewart, 1958; Vaughn, 1964).

One generalization emerges quite clearly from these investigations. Racial awareness in both Negro and white children appears at roughly the age of three, increases rapidly in the next few years, and is more or less firmly established by the time they enter grade school.

The development of racial awareness in these very young children undoubtedly is aided by the visibility factor inherent in skin color distinctions. Although little research has been done on awareness of other types of ethnic distinctions among children in this age range, there is evidence that the development of such awareness roughly parallels that found for racial distinctions. Awareness of religious and national groups also emerges relatively early in the life of the child—although probably later than racial awareness—and also shows an increase with age (Hartley, Rosenbaum, and Schwartz, 1948; Radke, Trager, and Davis, 1949).

The role of minority group membership is highlighted by Hartley *et al.* (1948) in a study of racial, religious, and national group identifications among New York City school children between the ages of three and ten. These investigators found membership in an ethnic minority to be a predisposing factor in the early development of ethnic awareness. Not unrelated are the findings by Radke *et al.* (1949) that Jewish children between the ages of five and nine were more aware of their group membership and more strongly identified with their own ethnic group than Catholic or Protestant children. Consistent with the results in both these studies is Goodman's finding that in the North, Negro children are "racially" aware at an earlier age than white children (1952)—which is also borne out by Porter's (1963) observations of Negro and white children in a northern community.

Findings reported by Morland (1958) and Stevenson and Stewart (1958), on the other hand, suggest that white rather than Negro children may achieve racial awareness earlier. These two investigations, however, were carried out in southern communities. Thus, it may well be that white children in the South as compared to those in the North are more sensitive to racial differences by virtue of the explicitly normative character of Negro-white relationships. It is also possible that Negro children in the South are less willing to verbalize their racial awareness than northern Negro children. In addition to these explanations, Goodman (1964) emphasizes that the method of assessing the level of racial awareness was far less probing in the two southern studies than in her own, in

which she based her judgment on an intensive case study of each child over time. What may have been measured in these other researches, therefore, is not the Negro child's level of racial awareness but rather his tendency to deny his own racial identity by "refusing" to discriminate (rather than being unable to) between white and Negro persons. That such a tendency exists is well supported by a group of investigations which will be reviewed below. Everything considered, it seems reasonable to conclude that the minority-group child is somewhat more susceptible to the early development of ethnic awareness than his more fortunate counterpart.

Ethnic Orientation

The difference between an ethnic orientation and an ethnic attitude is essentially one of degree and not kind. An ethnic orientation—or "incipient attitude" as Goodman (1964) also designates it—refers to the *rudimentary* ethnic attitudes which characterize the child roughly between the ages of four and seven or eight. Early in this period the child is not only ethnically aware but he has already learned some of his ethnic ABC's, that is, the words, concepts, and phrases used to describe members of other groups. The task that confronts him is the critical one of matching his level of understanding with his verbal facility. What still eludes him is not merely the full meaning of these ethnic terms and, therefore, their consistently correct use, but more importantly the *conceptual* nature of the ethnic labels or categories he has at his command. The reality of other ethnic groups tends to be a succession of situation-specific events in which the concepts of "Negro," "Jew," and "Italian" refer to specific people in familiar contexts. In no sense, however, are we suggesting that grasping ethnic concepts and generalizing appropriately is an all-or-none affair. The child learns gradually and at various ages is capable of various levels of generalization.

In what sense, then, can we even speak of an inchoate ethnic attitude? Even in the midst of all this learning the preschool child is not only ethnically aware and speaks in ethnic-group terms, but he shows clear preferences for some groups whereas others are rejected. An important ingredient of the intergroup attitude is present: an evaluative orientation that is expressed in in-group versus out-group terms. By the same token, it is important to stress that these initial preferences and rejections cannot be equated simply with ethnic prejudice or its absence in the older child or adult. As indicated above, it is only when the child can truly grasp the categorical or class character of ethnic labels or terms that the essential nature of an ethnic attitude has been fully realized.

In considering the questions of ethnic awareness and ethnic preference and rejection, Kenneth Clark (1955) points out that "the child cannot learn what racial group he belongs to without being involved in a larger pattern of emotions, conflicts, and desires which are part of his growing knowledge of what society thinks about his race" (p. 23). Ostensibly, both the Negro and white child learn the truth in this respect early and well. Whether asked to select playmates, identify themselves, or tell whom they like by means of doll-play techniques, picture tests, and the like, various studies have produced consistent results.

Goodman (1952) found that very large proportions of her Negro, as well as her white, nursery school children preferred *white* dolls and storybook characters; and, as the comments of her subjects indicated, these preferences applied to real people as well. In addition 84 per cent of the Negro children expressed some positive friendliness toward persons of the opposite color, whereas this was true for only 56 per cent of the white children. In a more recent study by Morland (1962) of 407 very young southern children, using a picture technique to obtain measures of racial acceptance-rejection and preference, it was found that a greater proportion of Negro children were attracted to whites than whites to Negroes. In the case of the preference measure, approximately 60 per cent of the Negro children and only about 10 per cent of the white children preferred to play with children of the other race; the corresponding figures for preference for one's own racial group were 18 per cent and 72 per cent, respectively. Studies by Clark and Clark (1947), Landreth and Johnson (1953), Morland (1958), Radke *et al.* (1949), and Stevenson and Stewart (1958) reveal similar findings.

Other data suggest that the young Negro child does more than simply identify with the white society which surrounds him. He is ambivalent about, if not hostile toward, his own racial group. In the study by Goodman (1952) only nine per cent of the Negro children expressed hostility toward whites compared to 24 per cent who directed it at members of their own racial group. For the white children, 33 per cent showed hostility toward Negroes whereas none of them was antagonistic toward his own racial group. Among the three- to seven-year-old Texas children investigated by Stevenson and Stewart (1958), the Negroes often exhibited not only preference for the white group but disparagement or rejection of members of their own racial group.

Quite dramatic is the finding reported by the Clarks (1947) in which three- to seven-year-old Negro subjects were asked to select the doll which was a "nice doll." Of their 253 subjects, 59 per cent selected the white doll and only 38 per cent chose the Negro doll. To the question of

which of the two dolls "looks bad," the corresponding percentages were 17 and 59. The investigations by Landreth and Johnson (1953), Morland (1958), and Radke and Trager (1950) provide additional evidence for the tendency of the Negro child to deprecate his own racial group. These same studies as well as others also demonstrate quite clearly that the young white child, by contrast, not only identifies with his own racial group but tends to withdraw from, if not reject, individuals from the other racial group.

The position of the young Negro child is difficult, to say the least. For him to identify with the white majority and reject his own racial group carries with it the implications of self-doubt, if not self-rejection, not to mention the dilemma of social reality itself. The fact is he is still a Negro and will be treated as such by those very persons he desires to be. It is, therefore, understandable why in the studies by the Clarks (1947) and Goodman (1952) some of the Negro children were disturbed by the investigation, especially when they were required to make self-identifications. And Morland (1958) found that many of his preschool Negro subjects who identified with their own racial group did so with reluctance and emotional strain.

Rejection of one's own ethnic group is likely to be accompanied not only by self-rejection but also by insecurity, anxiety, and a sense of helplessness. In this respect Goodman (1952) observed that greater racial awareness and out-group orientation in the Negro child (moving toward whites and away from Negroes) typically carried with it increased emotionality, a sense of personal threat, and insecurity with respect to racial status. Some of the other studies of preschool children noted above reveal very similar findings (e.g., Clark and Clark, 1947; Morland, 1958; Stevenson and Stewart, 1958).

Among older Negro children the picture is by no means different. Mussen (1953) studied white and Negro lower-class boys between the ages of nine and fourteen, and found that the Negro boys tend to perceive the world as hostile and threatening; the white boys on the whole see it as a warm and friendly place. Palermo (1959) reports greater anxiety among Negro as compared to white children in the fourth to sixth grades. The greater insecurity of elementary Negro school children, according to Boyd (1952), results in their defensively aspiring for higher-level occupations than their white classmates. In a more extensive study of lower-class Negro and white children in the fourth to sixth grades, Deutsch (1960) finds significant evidence of differences in their self-concepts. In general, far more negative self-conceptions were found among the Negro children than among the white ones. The personality

consequences of their lower self-esteem were also revealed by the Negro children; that is, they were more passive, more morose, and more fearful than the white children. Of considerable interest is the fact that when the Negro child did express aggressiveness, it was usually done in a covert form. The covert expression of aggression has also been shown by Myrdal (1944) to be quite common among Negro adults.

The studies by the Clarks (1947), Radke and Trager (1950), and Morland (1962) provide suggestive evidence that the preference of Negro children for the white group decreases with age. The Clarks, for example, found that although the majority of their Negro subjects at all age levels selected the white doll as "nice" and the colored doll as "looking bad," "nice" was applied decreasingly and "looking bad" increasingly to the white doll with an increase in age from four to seven years. More certain is the change which occurs with age in the own-group preference of the white preschool child. Morland (1962) found white children between the ages of three and five to express a clear-cut and steady increase in preference for a white playmate. Similar findings are reported by Landreth and Johnson (1953), and Stevenson and Stewart (1958). Finally, a positive relationship between increasing age and extent of rejection or hostility toward Negroes among young white children is indicated in studies by Horowitz (1936), Morland (1962), and Radke *et al.* (1949).

Of the various studies considered above, only the one by Radke *et al.* (1949) sheds any light on the acceptance or rejection by very young children of members of other kinds of ethnic groups—for example, those based on religion or nationality rather than on race. Three equivalent groups of white Catholic, Jewish, and white and Negro Protestant children between the ages of five and eight were interviewed with respect to what was happening and what they thought about other children pictorially represented in school, play, and street situations (e.g., leaving a church or synagogue). One or more of the children in the pictures were identified either by symbols in the picture or by the interviewer as being Catholic, Protestant, or Jewish. Taking the responses given to the various pictures as a whole, a number of findings emerge clearly. There is a far greater tendency among those children who respond to the pictures in explicit group terms to reject children identified in the pictures as Jewish than when they are identified as Catholic or Protestant. There is also evidence that the children identified as Protestant are least likely to be rejected. It was also found that the age-group, and to a lesser extent the religious group, membership of the child was related to the extent of his expressed hostility toward other religious groups. Such hostility

clearly increased with age. There was also a somewhat greater tendency of Protestant as compared with Catholic children to reject Jews. Differences between Protestant and Jewish children, and Jewish and Catholic children, in their rejection of Catholics and Protestants, respectively, were negligible.

Earlier we pointed out that many children in the ethnic-orientation stage had the "verbal fluency" but not the conceptual grasp of ethnic labels, stereotypes, and values. Thus, in Goodman's low and medium ethnic awareness groups, both Negro and white children used racial terms to describe and label others but not always accurately. Even for her older, high-awareness subjects who were apparently able to generalize race distinctions (four-five years), it was unclear whether they fully grasped the class nature of the racial concepts in the sense of extending beyond the nursery school itself. In a study by Vaughn (1963) of the development of racial concepts (ability to categorize or generalize in abstract terms) in white New Zealand children, he found that the actual attainment of racial concepts (categorization) first appears at seven years of age and only after the child has learned first to identify and then discriminate among members of different racial groups. In light of the difference between the cultural settings and the methods of assessing conceptual grasp, a comparison of Vaughn's findings with Goodman's is difficult. Yet, Goodman (1964) herself points out that from age five on awareness can be expected and ethnic orientations are likely; and ethnic attitudes may appear by age seven.

Ostensibly, for the child to grasp and apply nationality and religious group concepts should be an even more difficult task for him than applying racial concepts. Thus, in the study by Hartley *et al.* (1948), their young subjects were asked what it means and what it takes to be "American," "Jewish," "Catholic," and so on. It was found for their six- to ten-year-old subjects, as well as the younger ones, that the definitions given were "so 'inaccurate' and 'insufficient' to make impossible their classification in terms of an adult logical system." To many of the children at all levels it appeared possible to be simultaneously "Jewish and Catholic" or "American and German," but not "Jewish and American" or "Negro and Protestant." The lack of clarity of religious group concepts in children between the ages of five and eight was similarly revealed in the study by Radke and her associates (1949).

From the evidence reviewed above it seems reasonable to conclude that children roughly between the ages of four and seven-eight: (a) become increasingly aware of racial and other kinds of ethnic-group differences; (b) exhibit a growing susceptibility to describe others as well as

themselves in racial if not ethnic terms; and (c) show a persistent although changing tendency to accept and reject individuals on ethnic grounds.

Ethnic Attitudes

If ethnic attitudes (in contrast to ethnic orientations) finally emerge during the early grade-school years, then, it should be asked, what, if anything, is involved in their development from this point on.⁴ Allport (1954) cogently points out that, "A bigoted personality may be well underway by the age of six, but by no means fully fashioned" (p. 297). In general, investigators assume that such attitudes become fully fashioned by the addition and organization of new details, that is, through the processes of *differentiation* and *integration*. What are differentiated and integrated are the child's beliefs, feelings, and behavioral tendencies regarding the members of different ethnic groups—or what researchers have conceptualized as the *cognitive*, *affective*, and *behavioral* components of ethnic attitudes (Chein, 1951; Harding *et al.*, 1954; Kramer, 1949).

Our concern here, then, is with the differentiation and integration of these components during the grammar and high school years. It should be pointed out, however, that differentiation and integration are no less involved in ethnic-attitude formation during the preschool years. Even at three and four years of age the child—whether he fully comprehends or not—is beginning to learn what groups are like, how they should be treated, and indeed how one ought to feel about them.⁵

As it turns out, actual research into the differentiation and integration of the various types of ethnic-attitude components after the nursery school years (or during) is quite meager. Investigations of ethnic prejudice in American youth have for the most part focused on describing the group toward whom it is directed, its underlying causes, and the degree of intolerance involved. These descriptive studies—some of which have a bearing on differentiation and integration—were undertaken in the 1930's and 1940's, and a goodly portion of them have lost their relevance

⁴ Although specifying exact ages or age ranges which are characterized by the various phases in the development of ethnic attitudes has been avoided, it is still important to stress at this point that the appearance and duration of these stages undoubtedly varies as a function of such factors as intelligence of the child, the nature of his social context, the kind of ethnic attitude being considered, and other factors as well.

⁵ The affective component of attitudes, that is, how the individual feels about other ethnic groups, is to be distinguished from the person's overall evaluative response toward them as reflected in scores of the favorable-unfavorable dimension of most techniques of attitude measurement. This score may be based on cognitive, affective, or behavioral items, or some combination of these.

in the light of subsequent changes in American society. These studies will be briefly reviewed here to the extent that more recent data are available for comparative purposes. A more detailed and comprehensive account of this early research can be found in Harding *et al.* (1954).

Differentiation. Most, if not, all investigators are ready to assume that the three types of attitude components become increasingly differentiated with age. Support for this assumption, however, is restricted to only a few studies of the cognitive and behavioral components.

Cognitive components of intergroup attitudes are the familiar negative and positive beliefs or stereotypes (as well as identifying percepts, e.g., skin color) that are applied to the various ethnic groups in American society. Thus, in a study of the development of stereotypes in southern white children in grades four through eleven, Blake and Dennis (1943) found that the children at all levels were strongly anti-Negro; those in the lower grades, however, attributed only negative traits to the Negro, whereas the upper-grade children attributed some favorable traits to him as well as many unfavorable ones. Radke and Sutherland (1949) also found an increasing differentiation of stereotypes of the Negro (also the Jew), except that its direction was reversed; rather than changing from primarily negative to (some) positive traits, as Blake and Dennis found, they report more completely positive statements among the younger children than the older ones.

However, Radke and Sutherland's study involved 275 white children in grades five to twelve in a small midwestern community in which there were no Negroes. It therefore seems likely that Negro prejudice was not a salient norm in the community, and that learning negative stereotypes of the Negro was consequently delayed compared with the southern child. Of course, in the case of a positively valued group, one would expect the evaluations of younger children to be uncritically favorable and then to become somewhat less favorable and realistic with increasing age. This indeed is what Radke and Sutherland found when "Americans" were described by their young subjects. Similar findings are reported by Greenstein (1960) in the evaluations of political leaders by fourth to eighth grade children.

Studies of prejudice have employed techniques designed to tap not only the cognitive components of intergroup attitudes (stereotypes), but also behavioral and affective components. In the now classic study by Horowitz (1936), three different pictorial tests were used to measure attitudes toward the Negro in several groups of northern and southern school children at each age level from five through fourteen. The "Ranks" test focused more directly on affective components, the child

being required to arrange a group of 12 portraits of Negro and white children in the order in which they were liked.⁶ The other two tests more closely approximated measures of behavioral components of ethnic attitudes—that is, tendencies in the individual to approach or avoid other group members, or to reward or punish them.

In the "Show Me" test the child was asked to select from among Negro and white portraits as many of them as he desired as companions for various activities (e.g., eating with or riding with). Horowitz found an increase with age in the frequency with which white rather than Negro boys were selected for the various hypothetical activities. Thus, the white child as he grows older increasingly learns those situations in which the Negro is to be rejected. In other words, he increasingly learns to differentiate those situations in which Negroes are to be accepted from those in which they are to be excluded. In the "Social Situations" test which also measured behavioral tendencies, the child was required to indicate whether or not he wanted to participate in a pictorially presented situation (e.g., playing marbles or visiting a museum). Each social situation was presented twice, one picture with all white children being shown and the other with a mixed group of white and Negro children. Here again it was found that the frequency with which the white child excluded his Negro peer from a variety of social situations increased with age.

Integration. Integration of intergroup attitude components refers to the extent to which either components of the same type (e.g., various stereotypes) or different types (stereotypes, feelings, and behavior tendencies) "fit" with each other in terms of some criterion of consistency. The few relevant studies reported have focused primarily on evaluative consistency which bears on whether the individual's potential actions or beliefs are primarily unfavorable, or both favorable and unfavorable; and whether negative beliefs necessarily entail negative feelings and action tendencies. The studies by Blake and Dennis (1943) and Radke and Sutherland (1949), cited above, both indicate that some mixture of positive and negative beliefs is likely to occur as the child grows older. It is also true that adult stereotypes often reveal not only evaluative inconsistencies, but also inconsistencies in meaning such that terms which seem to be mutually exclusive may be employed to describe the members

⁶ It should be noted that the "Ranks" test is not a direct measure of the affective component, that is, of whether the child fears, hates, or distrusts Negroes. It can be assumed, however, that the child's responses, indicating which of the faces he likes and dislikes, are determined primarily by his feelings toward them. Horowitz's other two tests focused more on behavioral tendencies. Thus, the child could distrust Negroes but still be willing to eat with them; or he could sympathize with them but be unwilling to play with them.

of a group. Adorno and his associates (1950) found, for example, that persons who believed Jews were seclusive also accused them of being intrusive.

There is some evidence that behavioral tendencies of intergroup attitudes tend to become consistent or integrated as the child grows older. Radke, Sutherland, and Rosenberg (1950) studied the racial attitudes of Negro and white elementary school children by means of their sociometric choices of actual children in the school and the neighborhood, and unknown children in a series of photographs. They found that both the younger and older Negro and white children tended to prefer members of their own racial group as friends, when they had to choose them from children in the school who were not their classmates. On the other hand, when they had to make friendship choices from among their classmates, such ethnocentrism was far more evident among the older children than among the younger ones. In effect, there was an increase with age in the racial consistency of the friendship choices made by the Negro and white children across the two choice settings.

Only the study by Horowitz (1936) provides any data on the development of evaluative consistency among different types of attitudinal components. It will be recalled that the "Show Me" and "Social Situations" tests focused on behavioral tendencies, while the "Ranks" test approximated a measure of affective orientation. It was found that the intercorrelations among the three tests, computed separately for each age group, increased with advancing age. Although the correlations at all ages are small, the study does suggest greater consistency among intergroup attitudinal components with increasing age. In an unpublished study of the relationships among intra-attitudinal components in the ethnic attitudes of high school and college students, D. T. Campbell (1947) found a high degree of consistency among the components. Other studies of adults, high school, and college youth have reported moderate to high consistency in this respect (Bettelheim and Janowitz, 1950; Katz and Braly, 1933; Langner, 1953; MacKenzie, 1948; Smith, 1947).

Ethnic prejudice in youth. Studies of the relationship between age and ethnic preference or rejection during the nursery school years are paralleled by investigations of ethnic prejudice in grammar and high school youth. The most extensive and perhaps earliest study of prejudice during the high school years was reported by Minard (1931). Approximately 1,300 Iowa school children were given a questionnaire describing 32 behavioral situations involving Jews, Negroes, Mexicans, and other ethnic groups. One situation, for example, described the presence of a Mexican boy on a basketball team; another, a Jewish family moving into the Gen-

tile section of town. The child was asked a great many questions about what was the right thing to do, and how he himself would feel or what he would be likely to do in most situations. By the first criterion there was a small decrease in prejudice from the seventh to the tenth grades, and no change from the tenth to the twelfth grades. By the second criterion there was a steady *increase* in prejudice from the seventh through twelfth grades. This second criterion more closely approximates the student's actual behavioral tendencies, in contrast to the first which involves to a greater extent his verbalizing the espoused ideals of American society.

In the previously noted study by Horowitz (1936), each of the three tests employed by him was used as a measure of prejudice. He found an average increase in Negro prejudice from ages five to twelve on his "Show Me" and "Social Situations" tests, both of which focus on the behavioral tendencies of the child. Interestingly enough, the "Ranks" test, which measured affective orientations toward Negroes without reference to any behavioral situation, showed no relationship to age in the groups studied. Generalized preference for whites as compared to Negroes was well established by age five, and continued thereafter without any noticeable alteration. This finding for a generalized preference measure is consistent with those found for white nursery school children. The preference of the white child for his own group increases with age during the preschool period. However, by the time the child begins grade school this preference is practically at a maximum (Goodman, 1952; Morland, 1962).

Radke and her associates (1950) also employed a technique focused on the behavior orientations of the white child (sociometric choices) toward the Negro, and like Horowitz found increasing prejudice with age in children between the ages of seven and thirteen. Radke and Sutherland (1949), using the child's beliefs as a measure of prejudice, found the same relationship in a midwestern sample of children in the fifth to twelfth grades in a small community in which there were no Negroes. On the other hand, Blake and Dennis (1943), who also made use of a stereotype measure, report that the general level of hostility toward Negroes remained approximately the same among their southern subjects from the fourth through the eleventh grade. It may well be, as suggested earlier, that in the South where ethnic prejudice is salient as a normative phenomenon negative stereotypes are learned early and well. This reasoning may not apply to behavioral tendencies, however, as suggested by the findings reported by Boyton and Mayo (1942) and Mayo and Kinzer (1950). These investigators used behavioral tendencies as a measure of Negro prejudice and found, like Radke *et al.* in the North, that prejudice increased with age.

Of interest is a recent study of the relationship between ethnic prejudice and age in another cultural setting. Vaughn and Thompson (1961) studied the attitudes of 120 New Zealand children of eight, twelve, and sixteen years of age toward the Maoris (a Polynesian native group) by means of two sets of TAT pictures depicting themes of play, school, and so on. The two sets of pictures were identical except that in one the crucial figure was a Maori and in the other it was a white person. An increase in unfavorable attitudes occurred between the ages of eight and twelve, but no difference was found between the twelve- and sixteen-year-old groups. The first finding is consistent with those obtained in most of the studies of American children in this age range, as cited above. However, unlike the studies of American high school students, there seems to be a relatively early leveling off in the development of racial attitudes in the New Zealand setting.

A recent study by Wilson (1963) tested the hypothesis that ethnic attitudes for different age groups become stable with increased age in adolescence. He studied male students in the Boston area between the ages of thirteen and eighteen by means of questionnaire items pertaining to Negroes, Jews, and southerners. Wilson's findings only partially confirmed his hypothesis. On a social distance measure the level of prejudice toward Negroes was stabilized in late adolescence. However, generalized scales in which Negroes and Jews were evaluated directly revealed attitude stability much earlier.

Some studies of the ethnic attitudes of youth who are members of American minority groups have also been reported. Unfortunately, comparable data on the relationship of age to degree of prejudice are not readily available. Of some importance, however, is a comparison of the *order of preference* for different ethnic groups by majority and minority group youth. In this regard it is important to note that studies of the ethnic order of preference of adults have produced remarkably similar findings (Harding *et al.*, 1954). Furthermore, comparisons of the ethnic preferences among school children at various age levels have shown that by age eleven these preferences have become fairly well stabilized; and that the rank ordering for different ethnic groups is essentially the same as that found among adults (Meltzer, 1939a,b; Zelig, 1938, 1948; Zelig and Hendrickson, 1933, 1934).

A number of investigators have compared the order of preference for ethnic groups in minority and majority group youth. Zelig and Hendrickson (1933, 1934) found that when 39 ethnic groups were ranked in order of preference, Jewish and non-Jewish children made similar rank orderings. Other investigations have consistently found high degrees of similarity between the rankings of minority and majority group high

school and college youth (Gray and Thompson, 1953; Horowitz, 1944; Katz and Braly, 1933; Meltzer, 1939a). The only notable exceptions occur when group members rank their own group, and this is due to the tendency of each group to rank itself as the most preferable.

A final word is in order concerning the development of integration or evaluative consistency among different ethnic attitudes. Frenkel-Brunswick and Havel (1953) interviewed 81 white American Gentile children between the ages ten and fifteen about their attitudes toward Negroes, Jews, and other minority groups. Ethnic prejudice was found to be both frequent and generalized, that is, directed at several minority groups. Prejudice, however, toward the Negroes was greater than toward the Jews, Mexicans, Japanese, and Chinese. The generalized nature of ethnic prejudice, as well as its greater intensity for Negroes as compared with other minority groups, is also evident in the study by Galtung (1960) of high school youth in 21 communities and in Trager and Yarrow's investigation of young children in kindergarten through the second grade (1952).

Although research on the development of ethnic attitudes during the primary and secondary school years is by no means extensive, some tentative generalizations do emerge. There is evidence that the cognitive and behavioral components of such attitudes become more differentiated as the child matures. Evidence of increasing evaluative consistency with age for the same types of components and among the three different kinds of components has also been reported, but complete integration in this respect is by no means the case. Finally, it seems pretty clear that prejudice among American youth increases with age, and that such prejudice is directed at a number of minority groups. Insofar as the rank order of preference of various ethnic groups is concerned, minority and majority group children do not differ from each other in this respect except that the children in both groups tend to rank their own ethnic group as preferable.

Development of Intergroup Behavior

The use of actual behavior indices in developmental studies of inter-ethnic behavior is rare, not to mention attempts to measure both ethnic attitudes and behavior so that one can compare the developmental relationships between them. While some investigations have included incidental observation of actual inter-ethnic behavior, it has not been systematically investigated except with reference to studies of the voluntary self-segregation or self-selection of actual classmates among children—and even here the data are generally of a quasi-behavioral sort, i.e., sociometric preferences.

Studies of very young children clearly suggest that there is little rela-

tionship between their ethnic behavior and their ethnic orientations; or between what they say and do publicly with other children or adults and what they indicate in private or reveal on doll or picture tests. Goodman (1952) found that nursery school children who gave evidence in private of racial awareness and racial preferences were quite free of racialism in their public behavior. Stevenson and Stevenson (1960) found that while most of their Negro and white nursery school children were very racially aware and to a lesser degree racially oriented, there were no differences between them "in the frequency or types of intra-racial and inter-racial behavior" (p. 60).

It is also important to note Goodman's (1952) finding that racial and religious epithets were often coupled with friendly interaction between white and Negro nursery school children. Of course, this may not be inconsistent behavior if the child who uses such epithets does not perceive them as capable of hurting the other child, or if he regards using them as a form of play because of their strong affective and taboo nature. The emotionally laden character of such terms as "nigger," "goy," "dago," and "kike" for the child is well illustrated in the observations of very young children reported by Lasker (1929) and Radke and Trager (1950), as well as Goodman. As "powerful" words, racial epithets are able to express the inner excitement experienced by the child.

The studies discussed earlier have established that prejudice begins to manifest itself in children by about the third or fourth year. Several studies of prejudiced behavior in the form of racial or religious cleavage, however, indicate beginnings at a much later age. In a study of New York City children in the first to eighth grades, Moreno (1934) found by means of the sociometric technique that racial cleavage does not occur to any great extent before the third grade and reaches its peak by the fifth grade or around the age of ten. Criswell (1937) studied similar children by means of this technique and also found racial cleavage most pronounced in the fifth grade; although in this study such self-segregation was truer of Negroes than whites, and for both groups racial cleavage was not as potent as sex cleavage. It should be pointed out that in this study 75 per cent of the children were Negroes. In a subsequent investigation, however, Criswell (1939) obtained similar results where the Negro proportion was considerably smaller. There appeared to be little cleavage before the third grade, but by the fifth grade it had reached its maximum. Further support for this finding is also provided in a later study by Radke *et al.* (1950).

One interpretation of these findings is that while at first the child selects playmates and school chums on the basis of personal experiences and

specific pleasant or unpleasant situations, as he grows older his attraction or repulsion with respect to members of a given group becomes dependent upon the prior formation of generalized attitudes toward that group. There is, in other words, an increasing integration of ethnic attitudes and behavior as the child grows older.

Lambert and Taguchi (1956) have challenged the generalization that racial cleavage only begins to appear between the ages of eight and ten years. They suggest that such cleavage exists in preschool children, but is not revealed in the kinds of choices required by the standard sociometric techniques. In their own study of six Oriental and seven Occidental children in a Montreal preschool, therefore, the subjects were asked to make choices believed to be more meaningful to them, e.g., choosing a child to whom to give candy. It was found that the measure elicited ethnocentric choices among the Oriental children, but that a similar trend among the Occidental children was not statistically significant.

A more recent study by McCandless and Hoyt (1961) provides further evidence for Lambert and Taguchi's argument that racial cleavage occurs early. These investigators made time-sampling observations of 33 Oriental children and 25 Caucasian children at the University of Hawaii Preschools over a three and one-half month period. Clear evidence of ethnic cleavage was obtained. Oriental children played more with other Oriental children, and Caucasian children more with other Caucasian children—despite the fact that the social mixing of races was commonplace in the broader social setting. Just when racial cleavage begins—that is, in preschool or only after the child reaches the third or fourth grade—still remains an open question. The differences in measurement techniques, social settings, and racial groups studied between the earlier and later studies cited preclude any firm conclusion with respect to this issue.

Investigations of ethnic cleavage among high school youth have been reported, though not always with a concern for the problem of its development. Loomis (1943) employed a modified sociometric technique to study cleavage in two high schools in the Southwest. He found that American and Spanish-American students reported much greater association with members of their own group. A smaller group, the minority group in a particular school or classroom, whether American or Spanish-American, showed a greater tendency toward in-group selection and exclusion of the out-group than the majority group. This pattern tends to be very different with respect to religious ethnocentrism, at least insofar as children from upper-class homes are concerned. Goodnow and Tagiuri (1952) studied the sociometric preferences of Jewish, Catholic,

and Protestant students in a private high school and found evidence of ethnocentrism among all three groups. However, Jews chose Catholics and Protestants more than the members of those groups chose Jews. Greater ethnocentrism among non-Jewish students between the ages of eight and twelve from upper-class homes has also been reported by Harris and Watson (1946). In an extensive study involving over 1,000 high school students between the ages of thirteen and twenty and varying in racial and religious background, Lundberg and Dickson (1952) found that, in general, every ethnic group in the sample showed a preference for its own members in four sociometric choice situations, e.g., selecting a leader, work-partner, friend, and dating companion. Among non-Jewish white students ethnocentrism was also found to increase with age.

DETERMINANTS OF INTERGROUP ATTITUDES

Notwithstanding the differences among investigators in the determinants they emphasize to explain ethnic prejudice, there are at least three broad assumptions upon which most of them are agreed: (a) intergroup attitudes are learned; (b) they are multicausally determined; and (c) they are functional or need-satisfying in character for the individual.

As Allport (1954) notes, most theories of prejudice "are advanced by their authors to call attention to some important causal factor, without implying that no other factors are operating" (p. 207). Thus, the various theoretical conceptions are complementary and overlapping rather than mutually exclusive, and it is generally recognized that intergroup attitudes are rooted in both the social environment that defines the person's existence and the psychological processes that initiate and direct his behavior in this environment (Allport, 1954; Harding *et al.*, 1954). Hence, for purposes of analysis and systematic study, investigators have distinguished between sociocultural and psychological factors in the formation of intergroup attitudes.

Most investigations of attitude determinants have employed adult subjects (usually college students) rather than children. Of course, theories of developmental processes can be tested on adults as well as children. The age of the subjects does not necessarily determine the age about which we gain knowledge or about which our theories are concerned. We will accordingly include studies of adults in our review, particularly where gaps exist or there is a paucity of research with children.

Sociocultural Determinants of Intergroup Attitudes

The sociocultural determinants of intergroup attitudes take the form of significant and relevant individuals, situations, practices, and events

which are immediately and directly experienced by the child. More particularly, researchers have focused on such factors as parental attitudes, normative practices in the family and community, intergroup contacts, ethnic composition of the school and neighborhood, religious background and training, and others. These are the kinds of determinants which will concern us here.

Cultural and group norms. The inexorable influence of the broader sociocultural properties of our society (e.g., social structure, economic and political traditions) is reflected in the normative character of intergroup attitudes among Americans. This has led some theorists to view ethnic prejudice as a problem rooted primarily in the organization and practices of the society rather than in the problems of pathologies of individuals (Clark, 1955; Sherif *et al.*, 1961).

Perhaps the best evidence for the normative character of ethnic attitudes in the United States lies in the previously considered studies: most notably the findings that similar attitudes toward Negroes were shown in 1936 by white children in New York City, urban Tennessee, and urban and rural Georgia; and some two decades later by children in two north-eastern urban communities (Goodman, 1952; Trager and Yarrow, 1952), in Texas (Stevenson and Stewart, 1958), and in Virginia (Morland, 1958, 1962). The studies demonstrating a relatively enduring and uniform hierarchy of ethnic group preferences in America also give testimony to the normative character of intergroup attitudes.

Although ethnic prejudice in the United States tends to be normative at the national level, there are also regional and other subcultural norms for such attitudes. Perhaps the most obvious example is the culturally prescribed attitude toward Negroes in the South. And in the Negro subculture itself, attitudes toward whites are patterned in terms of other normative influences. McDaniel and Babchuk (1960) found that lower-class Negroes hold more unfavorable attitudes toward whites than middle- and upper-class Negroes, especially in the North. The attitudes of middle- and upper-class northern Negroes were also far more favorable than the corresponding groups in the South. On the other hand, all groups held the same stereotyped conception of whites. And Noel (1964) reports that the level of education and occupation of Negroes is positively related to favorable attitudes toward whites.

From the point of view of the developing child, the normative character of ethnic prejudice involves far more than the fact that these attitudes are shared by members of the majority group. Each member is *expected* to hold such attitudes, and for those who fail to conform various types of pressures are brought to bear (e.g., loss of status, verbal condemnation, group rejection). Therefore, what the child experiences in a variety of

socialization contexts are not only ethnic group norms as reflected in the attitudes and behavior of his parents, neighbors, teachers, and minister, but also the "demands" of these individuals that he think about and act toward members of various ethnic groups in ways that are consonant with these adult attitudes. These pressures toward conformity are often subtle but they are very real (Goodman, 1952; Radke and Trager, 1950). They become far less subtle in the experience of the child when he deviates in what he says or does from the established ethnic norms of his own group.

As noted earlier, Horowitz (1936) found that neither section of the country (North versus South) nor type of community (rural versus urban) made any difference in the extent of anti-Negro prejudice in white school children. Nor was there any such difference between New York City children in a mixed racial school and those in an all-white school. A striking difference, however, was found between the children living in a cooperative housing project under the aegis of a Communist organization and all other groups. Those living in the project revealed far more favorable attitudes toward the Negro. A significant aspect of the Communist ideology during the 1930's, when the study was conducted, was a belief in the equality of the races. It is apparent, then, that the children of Communist parents must have learned this belief from their parents and other adults and peers in the housing project. In terms of the role of group norms in the development of prejudice, Horowitz concludes that emerging attitudes toward Negroes are "chiefly determined not by contact with Negroes but by contact with the prevalent attitude toward Negroes" (p. 35).

The importance of social norms in the development of ethnic prejudice is well illustrated in two studies reported by Pettigrew (1958). In an investigation of 600 white South African university students he obtained measures of the degree to which they were anti-Negro, authoritarian in personality, and exhibited conformity to social norms independently of prejudice. It was found that more prejudiced students as compared to those of greater tolerance not only tended to conform more generally, but were also more authoritarian in personality. While this suggested that the conformers were more anti-Negro because they were more authoritarian, Pettigrew was also able to demonstrate that the individual's tendencies toward social conformity independently influenced the extent to which he was prejudiced. That is, although native South African students were more anti-Negro than those who were not born there, they did not differ in authoritarianism. These findings are consistent with what Pettigrew found in a study of adults from four southern and four north-

ern communities in the United States. Here, too, despite the difference in anti-Negro prejudice the two populations did not differ in authoritarianism. We may conclude that conformity to norms legitimizing prejudice is a factor in intergroup attitudes.

The growing child experiences the norms for intergroup attitudes by way of the behavior of others who are significant to him in a variety of social settings. Legalized or *de facto* segregation of particular groups in housing, schools, churches, recreation, and other institutional contexts gives witness to the child of the inferiority of these groups in comparison to his own. If he needs reasons for the observed segregation of these groups, then the perceived effects of both segregation and discrimination create a social reality for the child which indeed lends support to the view that "they are not like us and therefore they must be kept separate." Certain objective qualities of some minority groups are, in fact, consistent with this kind of interpretation. In the case of Negroes, for example, the child in many instances can observe that they are less educated, work in menial occupations, live in substandard housing, dress poorly, and so on.

For the majority-group child who does not have direct contact with members of other groups and the conditions of their existence, the world of the mass media provides an adequate substitute. Both real and fictitious minority-group members are presented to him in these media and here, too, the norms for prejudice are often represented (Berelson and Salter, 1946).

Parental influences. Parents are the primary agents of socialization. On their shoulders falls the major responsibility for the transmission of cultural norms for intergroup attitudes. When the parents' attitudes deviate from the norms of the group, however, it is usually their own which they try to transmit to their children. In such instances, it is appropriate to speak of "family norms" for intergroup attitudes, and it is those norms to which the child must conform to avoid parental disapproval.

Existing research findings reveal and emphasize the crucial role which parents play in the formation of ethnic attitudes. Horowitz and Horowitz (1938), in a study of southern grade school children, found that parents were the primary source of the children's racial attitudes. The younger children were aware that their own attitudes stemmed from their parents, but the older children were likely to forget the source and rationalize their attitudes in various ways. Notwithstanding the latter finding, a majority of college students have been found by Allport and Kramer (1946) to declare that they were influenced by their parents' ethnic attitudes; it was also found that more prejudiced than unprejudiced students

reported taking over their parents' attitudes directly. These findings are consistent with others reported by Frenkel-Brunswik and Sanford (1945) and Rosenblith (1949).

Bird, Monachesi, and Burdick (1952) studied 152 white third-, fourth-, and fifth-graders, and their parents, in a midwestern city and found significant relationships between their attitudes toward Negroes. The earlier mentioned studies by Goodman (1952) and Radke and Trager (1950) also provide evidence of the influence of parents on the development of ethnic attitudes in their children. On the other hand, it should be noted that although such influence is undoubtedly important, its effects are by no means unlimited. In the study by Bird and his associates, the obtained correlations were not only low (+.21) but parents resembled each other more than they did their children in attitudes toward the Negro. Frenkel-Brunswik and Havel (1953) also report only low positive correlations between children's ethnic prejudices and those of their parents.

Granted that parents are a significant influence, the next question is how this influence is accomplished. In the above-mentioned study by Horowitz and Horowitz (1938), it was found that the Tennessee child is taught Negro prejudice by a method which is both direct and harsh. He learns to regard the Negro as a loathsome person by means of insistent exhortation and reprimands accompanied by physical punishment. ("I play with colored children sometimes and Mama whips me.") In other cultural settings, the learning of ethnic prejudice may be just as direct but more "refined" in its approach. The child may be told that Negroes or Jews are not "nice," or "not to be seen with," and the actual or threatened punishment may be psychological rather than physical, e.g., loss of love.

It is evident, however, from the studies of Goodman (1952) and Yarrow, Trager, and Miller (1952) that in community settings where the norms for prejudice are more implicit than explicit, and where parents have conflicts over their ethnic antipathies and the ideals of democracy, that children may learn such attitudes in a more *indirect* fashion. In the latter study about half of the Negro and three-quarters of the white families believed that their own children should be taught to recognize differences between groups, but only about four per cent *directly* attempted to instill prejudice. Nevertheless, about one-third of Protestant and Catholic parents made use of hostile descriptions and stereotypes in explaining racial and religious differences to their children.

A significant finding emerges from both the studies by Goodman (1952) and Yarrow and her associates (1952). In both instances very young children (either nursery school or first- and second-graders) from

lower middle-class and upper lower-class homes were sampled. In each case, generally speaking, ethnic prejudice seemed to be learned in the home. Trager and Yarrow (1952) conclude: "Parents' teaching of intergroup attitudes is frequently unconscious and is rarely direct or planned" (p. 349). These parents were relatively uninformed about the beliefs, practices, and values of other ethnic groups, and they were filled with uncertainty about what little knowledge they had in these respects. At least one conclusion seems warranted. Considering the many other environmental sources for acquiring ethnic prejudice, the development of positive ethnic attitudes in the child requires not only the absence of such prejudice in the home, but also the directed attempts of the parents to inculcate positive ethnic orientations in their children.

Intergroup contacts. Of considerable appeal to the layman is the so-called "well-earned reputation" theory of prejudice, that views prejudice as rooted primarily in the objective characteristics of ethnic group members which are observed in personal contact or learned from others who have had such contact (Zawadzki, 1948). Unlike the group norm approach, the well-earned reputation theory does not square well with the results of empirical research (Harding *et al.*, 1954). There is, for example, little correspondence between the common stereotypes of ethnic groups and the actual characteristics of these groups insofar as the latter are known through systematic research (Humphrey, 1945; Klineberg, 1950). Furthermore, these stereotypes are not only in many instances incompatible with each other (Levinson and Sanford, 1944); they often change without any known changes in the actual behavior of the group in question (Shrieke, 1936). Perhaps what indicts the theory even more is that well-developed prejudice has been found to exist in children and college students in the absence of personal contact with out-group members or any association with people who had such contact (Hartley, 1946; Horowitz, 1936; Radke and Sutherland, 1949; Rosenblith, 1949).

What role, then, does personal contact play in the development of ethnic attitudes? There is no simple answer to this question.

Where conflict or competition between ethnic groups exists, and more particularly where the social distinctions between their members are rigidly structured into superordinate and subordinate relationships, then frequent inter-ethnic contact is likely to maintain prejudice if not increase it. Under these circumstances such contacts are in most instances casual and superficial, and thereby merely serve to accentuate and reinforce the already existing bias of the individuals in the dominant group.

On the other hand, inter-ethnic contacts are likely to lead to the devel-

opment of positive ethnic attitudes (or the reduction of prejudice), if the members of different ethnic groups are cooperatively engaged in the pursuit of common objectives under equal-status conditions or as functional equals (Allport, 1954; Harding *et al.*, 1954; Williams, 1947). This topic will be taken up in more detail in the section on attitude change.

Other sociocultural factors. There can be no doubt that whether the child learns intergroup attitudes directly or indirectly, the facts of out-group life are taught to him by many people besides his parents: neighbors, school teachers, peers, siblings, and so on. However, systematic research focused on the nature of the influence exerted by these other socialization agents is minimal. Far more attention has been given to those broader sociocultural forces which are thought to weld these more direct influences on the child into a more or less consistent framework of intergroup orientation. Inasmuch as these broader factors are of less concern to us here and because they have been extensively reviewed elsewhere, we shall not consider them in the present context (Allport, 1954; Simpson and Yinger, 1958; Tumin, 1961).

Psychological Determinants of Intergroup Attitudes

Sociologists and anthropologists tend to formulate the problem of the genesis of prejudice at the level of the collective; and, as such, the properties of the social context are emphasized, e.g., group norms, intergroup contacts, social structure. For the psychologist the locus of analysis is the individual, and in this respect—as the subsequent discussion will illustrate—he is more likely to give greater weight to the psychological mechanisms and the underlying need-states that initiate and maintain ethnic attitudes; or to what is generally described as the “functional basis of attitudes” (Katz, 1960; Katz and Stotland, 1959). Such attitudes are a means of achieving rewards, reducing frustration or tension, gaining understanding, expressing values, resolving conflicts, and so on. Normative influences create similarities in the attitudes of the members of the same group or society, but these attitudes may be held for very different reasons. In most of the studies of psychological determinants, however, the focus has been on identifying the psychological characteristics held in common by those who share a particular attitude. Those holding extreme attitudes have been the focus of attention, on the assumption that ethnic prejudice both expresses and reflects the unique and fundamental personality dispositions of the person.

Frustration and the displacement of hostility. Psychoanalytically oriented theorists tend to emphasize displaced hostility (the scapegoat or frustration-aggression theory) as a basis for explaining ethnic prejudice

(Bettelheim and Janowitz, 1950, 1964; Brown, 1942; Dollard *et al.*, 1939). The theory assumes that the person high in prejudice has a certain degree of hostility or aggression as a result of frustration of his goal-directed activities; that he has not been successful in directing or reducing these feelings against the original source of the frustration or object of aggression; and finally, that he reduces his hostility by displacing it on to the more or less vulnerable members of minority groups in the form of ethnic prejudice.

There are a variety of correlational studies which have provided evidence consistent with this theoretical formulation. A. A. Campbell (1947) found anti-Semitism far stronger in people who were dissatisfied with their jobs than those who were contented. Bettelheim and Janowitz (1950) found anti-Semitic and anti-Negro attitudes most frequent among World War II veterans whose economic status had declined from its prewar position. And in a recent reconsideration of this study, they cite seven other investigations involving a wider sampling of respondents which confirm this finding (Bettelheim and Janowitz, 1964). Other investigations have demonstrated positive relationships between economic deprivation in the South and hostility expressed toward Negroes (Cantril, 1941; Hovland and Sears, 1940; Pettigrew and Cramer, 1959; Raper, 1933).

The earliest *experimental* demonstration of displaced hostility was reported by Miller and Bugelski (1948) in a study of boys eighteen to twenty years of age attending a summer camp. The attitudes of the boys toward Japanese and Mexicans were measured before and after a severe frustration imposed by the camp management: they were prevented from attending the very attractive bank night at the local movie house by requiring them to take a series of long, difficult, and boring tests. It was found that following such frustration they attributed a smaller number of positive traits to Japanese and Mexicans, and to a lesser extent, they also attributed more undesirable qualities to the two nationalities. Stagner and Congdon (1955) replicated the essentials of this earlier study with male and female college students, who first completed a series of social attitude scales and then were given four performance tasks. Some of them were severely frustrated by being made to fail all four tests; others were moderately frustrated in that they failed only two of the four tests; and finally, control subjects were passed on all four of the tests. No differences in attitude-change scores among the three groups were found, thereby bringing these findings into direct conflict with those reported by Miller and Bugelski. On the other hand, in a more recent study by Cowan, Landes, and Schaet (1959)—in which the combined essential features of

the two earlier studies were deliberately incorporated—clear evidence of an increase in anti-Negro feelings followed the induction of the experimental frustration.

The scapegoat formulation as stated earlier (frustration-aggression terms) is inadequate to account for these findings. This fact, as well as the limited nature of the original formulation, has led other theorists (Adorno *et al.*, 1950; Fenichel, 1946; Lindzey, 1950) to add more detail to it by deriving and testing some of its implications with respect to consistent psychological differences to be expected between those high in prejudice and those low in it. In these newer conceptions, the focus is on those psychological properties of the person that are necessary but not sufficient to explain his ethnic prejudice in frustration-aggression or scapegoating terms, in particular a generalized tendency to displace hostility. It is assumed that certain ethnic groups become the target because they are visible, of low status, and socially sanctioned as targets of aggression (Williams, 1947).

One implication of the scapegoat theory is that prejudiced individuals have a greater tendency to displace hostility following frustration than those who are relatively unprejudiced. The earliest test of this derivation was reported by Lindzey (1950). Twenty college students, half of whom were known to be high and the other half low in minority-group prejudice, were individually subjected to severe frustration in a small-group cooperative task situation. No difference in displaced hostility as revealed in two projective tests (TAT and Rosenzweig Picture Frustration Test) was found between the two groups, notwithstanding that the prejudiced subjects appeared to be more intensely frustrated by the experimental manipulation than the more tolerant ones. Berkowitz (1962) attempts to explain these results in terms of the inadequacy of the target figure in the TAT test.

The more recent studies in this vein provide consistent support for the hypothesis that prejudiced people tend to displace hostility when frustrated. Berkowitz (1959) found that highly anti-Semitic college girls subjected to annoyance and frustration by the experimenter, tended to increase in hostility toward another student who acted as an "innocent victim." Given the same frustration, the more tolerant subjects became somewhat friendlier to the other girl. Weatherley (1961) carried out a similar study, except that his high and low anti-Semitic college groups responded to a fantasy test involving Jewish and non-Jewish figures. It was found that the more anti-Semitic subjects after frustration directed more aggressive responses to the Jewish characters in their stories than the less anti-Semitic subjects; and the groups did not differ when non-

Jewish characters were involved. This study is important in that what was established was a specific rather than a generalized tendency to aggression in the prejudiced person. Other studies by Berkowitz (1961) and Berkowitz and Green (1962) provide additional evidence in support of the scapegoat theory. More importantly, they also demonstrate the significance of selected qualities of the scapegoat in determining the specific target for displaced hostility.

Another implication of the scapegoat theory is that prejudiced individuals are more susceptible to frustration than individuals who are more tolerant toward other ethnic groups. As already noted, Lindzey (1950) found his prejudiced subjects to experience more high frustration when experimentally aroused. Berkowitz (1959), however, found no such tendency in his study of anti-Semitic women. There are a number of correlational studies, however, which support Lindzey's finding. Of particular interest is the finding by Bettelheim and Janowitz (1950) that prejudiced war veterans experienced more frustration during their army service than tolerant ones, although there were no apparent differences in the objective conditions to which the two groups were exposed. In a study of high school students in a midwestern community, Gough (1951) reports that the prejudiced children are "less able to overlook and ignore minor irritations." Similar relationships between prejudice and feelings of frustration are suggested by the findings of Morse (1947), Allport and Kramer (1946), and Rosenblith (1949).

Worthy of particular note is Lesser's (1958) study of the relationship between anti-Semitism and extra-punitiveness, as measured by Rosenzweig's Picture Frustration Test, in Jewish and non-Jewish boys between ten and thirteen years of age. In both groups of boys, greater anti-Semitism was associated with more extra-punitive reactions to frustration. Thus, it may well be that displacement of hostility occurs in the more prejudiced individual because, along with other factors already noted, he cannot assume responsibility for the frustrations he experiences and thus must condemn others. Some support for this interpretation is revealed in the study by Berkowitz (1959) described earlier.

Viewed in its entirety, there can be little doubt from the evidence reviewed above that the displacement of hostility plays some part in the development of ethnic prejudice in particular individuals, and in the variations in prejudice displayed by the same individuals over time.

Cognitive processes. In recent years considerable research has been spurred by the assumption that individuals perceive, think, and attribute meaning in characteristic ways. In particular, a series of studies has been based on the hypothesis that the development of ethnic prejudice (and

conservative economic and political attitudes) is facilitated by general tendencies toward premature categorization, overgeneralization, and rigidity of thought. Such intellectual factors are not considered sufficient for the formation of these attitudes, nor is it asserted that these patterns are completely consistent except in the most extreme groups. Frenkel-Brunswick (1948), in an investigation of 120 children between the ages of eleven and sixteen who were found to be either very high or very low in ethnic prejudice, found different cognitive factors associated with each of these extreme groups. Children high in prejudice exhibited tendencies to be "intolerant of ambiguity" (becoming anxious about or resisting facts or situations that were not clearly structured), dichotomous in their thinking about sex roles, and to regard position in the family in terms of hierarchical roles. Those low in prejudice were found to be tolerant of ambiguity, to have egalitarian views toward the opposite sex, and to think in terms of individualized and equal-treatment roles in the family.

On the basis of this initial study, other investigations have sought to verify and establish more definitively the cognitive characteristics of prejudiced persons. Intolerance of ambiguity, for example, should lead intolerant individuals to create situational or stimulus structure where little or none exists. A variety of investigations have tested this hypothesis, but have failed to produce consistent findings (Block and Block, 1951; Davids, 1955; Fisher, 1951; Millon, 1957).

Rokeach (1951a,b,c), on the basis of his earlier research, hypothesizes that bigoted individuals will exhibit "concreteness" and "narrow-mindedness" in their thinking, whereas the low in prejudice will show a more abstract and less narrow-minded cognitive orientation. What was being suggested in these hypotheses was that prejudiced persons would be more rigid in their thinking, that is, less able to change because of their inability to see broader relationships or to conceive of specific groups in other than the concrete characteristics used to distinguish them. These predictions were largely confirmed. Nonetheless, in one of his studies, Rokeach (1951a) found that his low-prejudiced subjects tended to show a *greater* tendency to personify or concretize abstract ideas ("reification"), a finding which he related to the dogmatism often ascribed to the extremely unprejudiced (Dombrose and Levinson, 1950). What he assumed was that rigidity or dogmatism in thinking expressed itself, on the one hand, in the concreteness and narrow-mindedness of the bigot and, on the other, in the tendency to reify abstractions in those who were highly tolerant. Dogmatism in cognitive function, in other words, transcends the specific substantive content or direction of ethnic, political, and economic attitudes. In a series of subsequent studies, Rokeach and

his associates provide considerable evidence to support this view (Rokeach, 1960).

Of special interest is Kutner's (1958) comprehensive investigation of cognitive processes involving 60 seven-year-olds who were rated high or low in ethnic prejudice. When these children were administered abstract reasoning, concept formation, and deductive logic tests, it was found that the ethnocentric children were more intolerant of ambiguity (in this case, an inability to face uncertainty in solving problems) than the less-prejudiced children. The more-prejudiced children also exhibited a lower level of abstract reasoning, although the two groups did not differ in intelligence. Similar findings are reported by O'Connor (1952) in a study of tolerant and intolerant undergraduate college students. Ethnocentric attitudes were also found by Kutner to relate negatively to the child's ability in concept formation and deductive logic, where intelligence was not a significant variable. These findings were confirmed in a more recent study by Klein (1961), although unlike Kutner he did not find any relationship between ethnocentrism and abstract reasoning.

Kutner and Gordon (1964) were able to restudy 33 of the original 60 children first studied by Kutner (1958) some nine years earlier. In the follow-up investigation, the subjects who were now sixteen years old were tested once again for level of ethnic prejudice and in their abilities with respect to abstract reasoning, concept formation, and deductive logic. While again the tolerant subjects generally exhibited greater ability to reason logically than those high in prejudice, the differences could now be explained by the fact that levels of prejudice and intelligence were found to be negatively related to each other. However, with intelligence controlled, it was found that among the relatively lower I.Q. subjects poorer cognitive ability was related to higher prejudice scores.

It is of interest to note that Rokeach (1951a) also reported a negative relationship between prejudice and intelligence, thereby indicating that differences in the latter may be the significant factor accounting for the differences in cognitive function between those high and low in ethnic prejudice. Yet, as in the case of the Kutner and Gordon study, Rokeach was able to show that social bigotry was related to concreteness and narrow-mindedness apart from differences in intelligence. That a relationship between ethnic prejudice and cognitive function indeed pertains is perhaps best demonstrated by Kutner and Gordon's analysis of the changes in cognitive function and prejudice that occurred in their young subjects during the nine-year period. Generally stated, those whose ethnic attitude shifted over time, revealed a corresponding shift in cognitive performance. For example, those subjects who were more preju-

diced once but who were less so nine years later, manifested a superiority in cognitive ability over those who did not change their more prejudiced attitudes.

In recent years another type of cognitive factor has been proposed as contributing to the development of ethnic prejudice: dissimilarity in belief. Rokeach (1960), for example, suggests that dissimilarity in belief is more important than ethnic membership in determining prejudice. Regardless of which is more important, this view suggests that the assumption that members of other ethnic groups hold beliefs different from one's own, may be one factor in the development of prejudice. A study by Byrne and Wong (1962) demonstrates that bigoted subjects do make such assumptions with respect to Negroes, whereas nonprejudiced subjects do not.

That the prejudiced person perceives and thinks in characteristic ways seems reasonably well established by the studies discussed above. Intolerance of ambiguity, rigidity of thought, and a generally poorer cognitive ability (apart from differences in intelligence) have been revealed in these investigations. Subsequent research by Rokeach and his associates (1960), however, clearly suggests that these cognitive attributes may characterize all individuals holding extreme ethnic attitudes regardless of their direction. Whether such characteristics actually facilitate the development of prejudice or extreme tolerance, or whether these attitudes and their associated cognitive attributes are both determined by more fundamental personality dispositions, is a question that is yet to be answered.

Personality and prejudice. Many investigators have taken a broad approach to the problem of psychological determinants of intergroup attitudes—rather than focusing attention on any specific need. Starting with the assumption that intergroup attitudes are but one facet of individual personality organization, they have studied the role of social attitudes in the economy of the total individual (Ackerman and Jahoda, 1950; Adorno *et al.*, 1950; Bettelheim and Janowitz, 1950; Gough, 1951; Hartley, 1946; Rokeach, 1960). Thus, the need to displace hostility, which we considered earlier, is viewed as only one of many characteristic response tendencies embedded in personality structures that are likely to contribute to the development of ethnic prejudice.

In the now classic study of *The Authoritarian Personality*, Adorno and his associates (1950) studied both college students and noncollege adults and initially demonstrated the generality of the individual's ethnic attitudes. High correlations were obtained between scores on an anti-Semitism scale (*A* scale) and a more general ethnocentrism scale (*E*

scale); and the latter, in turn, correlated highly with the *F* scale which was designed to measure the ways of thinking and feeling assumed to characterize those with a readiness to accept an anti-democratic ideology. The critical part of the study, however, involved an intensive clinical interview of 45 subjects who were highly anti-Semitic and of another 35 subjects who were low in anti-Semitism. The interview covered a wide range of topics—e.g., work attitudes, parent-child relationships, religious attitudes, and behavior. The interview protocols were then rated on a variety of factual, attitudinal, and personality dimensions by judges who neither interviewed the subjects nor knew their prejudice scores.

Comparisons of the mean ratings of the two groups on the various dimensions revealed many significant personality differences. In brief, the highly prejudiced subjects, in comparison with those who were more tolerant, showed a more rigid personality organization, greater conventionality in their values, more difficulty in accepting socially deviant impulses as part of the self, a greater tendency to externalize these impulses by means of projection, and were more likely to be status and power oriented in their personal relationships. These personality attributes as well as others (e.g., overidealizing parents, impersonal and punitive aggression, dichotomous thinking) represented the defining features of the authoritarian personality. These attributes were, in turn, found to relate to (a) early childhood experiences characterized by harsh and threatening parental discipline, conditional parental love, a hierarchical family structure, and a concern for family status; (b) unconscious conflict involving fear of and dependency on the parents on the one hand, and strong hatred and suspicion of them on the other. The repressed hostility that results from these experiences is, according to the investigators, expressed toward members of socially sanctioned out-groups.

Because of the scope and dramatic nature of its findings, the study *The Authoritarian Personality* has had immense repercussions by way of generating both heated controversy and new research (Christie and Jahoda, 1954; Titus and Hollander, 1957). Within the limits of the present discussion we can consider only some of the more significant studies and issues.

Smith and Rosen (1958) compared groups of college students who were at the extremes in "world-mindedness" (nationalist versus internationalist) in terms of variables and procedures not unlike those employed in the California study (*The Authoritarian Personality*). The subjects were interviewed, given the *F* scale, and tested with respect to 12 personality variables, e.g., independence, compliance, and so on. World-mindedness turned out to be closely and inversely related to authoritar-

ianism as measured by the *F* scale; more importantly, many of the same differences in personality traits and parent-child variables reported in the earlier study were found here. Internationally oriented students—or those low in authoritarianism—for example, were significantly more independent and less obedient in their relations with their parents than the “nationalist” students.

It should be noted that beginning with an early study by Murphy and Likert (1938), a host of others have revealed medium to high correlations between prejudice against minority groups and such other factors as political and economic conservatism, a traditional (authoritarian) family ideology, and nationalistic political attitudes (Kerr, 1944; Lentz, 1939; Levinson and Sanford, 1944). We have already provided some evidence in the previous section that a *consistent* ethnic orientation only begins to take shape during adolescence. On the basis of his review of studies in political development, Hyman (1959) comes to the same conclusion regarding the emergence of a consistent political orientation. What the authoritarian investigation assumed was that both of these orientations also become integrated or consistent with each other and with the individual's outlook on international affairs, family life, and how to bring up children. In addition to the evidence provided by the original study to support this assumption, subsequent investigations have also tended to confirm it (Christiansen, 1965; Levinson and Huffman, 1955; McClosky, 1958).

Authoritarianism is not confined to members of majority groups. Jews who score high on the *F* scale not only exhibit prejudice toward other groups but are also more anti-Semitic (Yarrow and Lande, 1953). Like other authoritarians, they are less analytical and give more categorical reactions on group issues. Negro authoritarians are similar in their attitudes. They are more likely to defend segregation, dislike the NAACP, and display more ethnocentric group pride while being more susceptible to self- and own-group hatred (Grossack, 1957).

Are prejudiced children the product of a disciplined, status-oriented, and harsh family setting, as indicated by the California study (Adorno *et al.*, 1950)? If this question is assumed to ask simply whether prejudice in children is correlated with the harsh, disciplined, and status-oriented family setting, then the answer is certainly, yes. Gough and his associates (1950), in a questionnaire study of 240 fourth-, fifth-, and sixth-grade children that employed variants of the California techniques, arrived at generally similar findings. They then sent questionnaires to the mothers of these children eliciting their views on specific practices in child training (Harris, Gough, and Martin, 1950). A comparison of the completed

questionnaires of mothers of children extremely high and extremely low in prejudice revealed that a scale of authoritarian practices and attitudes differentiated between the two groups. In comparison with the mothers of the tolerant children, for example, the mothers of highly prejudiced children believed, among other things, that obedience is the most important thing a child can learn; that children should never be allowed to set their will against that of parents; that a quiet child is preferable to one that is noisy; and that sex play in the child should be punished. Subsequent studies by Lyle and Levitt (1955), Kates and Diab (1955), Hart (1957), Weatherley (1963), and Siegman (1957) are in general agreement with these findings.

Notwithstanding these consistent findings, a problem remains as to how they are to be interpreted. For the investigators of the authoritarian personality, their meaning is clear enough. Authoritarian child-rearing practices produce children with low frustration tolerance, repressed hostility, and other personality factors that make them susceptible to ethnic intolerance. Yet, because of specific methodological limitations in the original California study (and many of those that followed it), it is just this interpretation which is least tenable. Of importance is the fact that both intelligence and educational level have been found to be negatively related to authoritarian personality tendencies (and prejudice), and indeed in the California study (as well as others) differences in education (and/or intelligence) between the high- and low-prejudiced subjects and their respective parents were not controlled (Hyman and Sheatsley, 1954; Martin and Westie, 1959).

It should be evident, therefore, that the relationship between parental authoritarianism and child ethnocentrism may result from the common dependence of both on intelligence and/or education. A better educated parent, for example, would be less authoritarian in his treatment of the child, and because he tends to provide his children with as much as or more education than himself, his children would therefore turn out to be less ethnocentric. On the other hand, even if education and intelligence were controlled, a problem in causal interpretation would still remain. If, as we must assume on the basis of the theory, the parents themselves are ethnocentric by virtue of their authoritarian tendencies, then the possibility remains that the child's learning from or identification with a prejudiced parent rather than treatment of the child is responsible for the development of negative ethnic attitudes. A study in which parental groups radically differing in the treatment of their children but equated for matched ethnic attitudes, and other factors, is suggested by Harding *et al.* (1954). Such a study has yet to be reported.

Despite these methodological difficulties, the empirical case for the authoritarianism-ethnocentrism conception is far from lost. It remains an important and viable theoretical formulation by virtue of the empirical support it receives from investigations in which at least some, if not all, of the methodological limitations noted above were not operative, though these studies deal with specific aspects of the larger problem and thus lack the scope of the original. In the study by Smith and Rosen (1958), for example, differences in education and intelligence were controlled and findings very similar to those of Adorno *et al.* (1950) were reported. McClosky (1958) found a positive relationship between conservatism and authoritarian characteristics of personality, even when differences in education and status were controlled. Still other studies can be cited in which these methodological limitations (and others) do not pertain (Allport and Kramer, 1946; Gough, 1951; Gough *et al.*, 1950).

Taking all the evidence into consideration, the following conclusions seem warranted. On both theoretical and empirical grounds a fairly strong case can be made for the view that intergroup attitudes are at least to some extent expressions of fundamental personality dispositions. Furthermore, in many instances the revealed personality correlates of these attitudes, as well as the data bearing on the child-rearing practices associated with variations in ethnocentrism, are consistent with the assumptions involved in the formulation of the authoritarian personality structure advanced by Adorno and his associates (1950). However, the proposed *causal links* between child training, authoritarianism, and the development of ethnocentrism do not rest as yet on a firm empirical foundation.

CHANGING INTERGROUP ATTITUDES

Intergroup attitudes are neither simple nor ephemeral response tendencies. They are learned early and well, and as the previous discussion demonstrates, their persistence is rooted in their instrumental importance for the individual and their normative significance for the society. Most of the research on attitude change has been concerned with the effects of specific change-inducing procedures (e.g., education, propaganda, intergroup contact) on the *direction* of the attitude, that is, on its favorable-unfavorable dimension. Far less frequent are investigations in which the effects on the different components of attitudes are examined separately; or in which attitude change is considered in terms of specific psychological processes (e.g., underlying needs) rather than particular stimulus settings.

Psychological Processes in Attitude Change

During the last decade several studies relevant to understanding the psychological processes involved in ethnic attitude change have appeared. One approach focuses on the relationships among attitudinal components and the extent to which changes in one type of component affect the others. Rosenberg (1960a, b), for example, has proposed a theory of attitude change which assumes that consistency between the affective and cognitive components represents a stable psychological state in the individual. If either component shifts markedly, the resulting inconsistency produces a drive or force toward changing the other until consistency is restored.⁷ Employing hypnosis in a laboratory setting to shift affect in college students, Rosenberg has demonstrated striking changes in associated cognitions (1960b), although not with respect to ethnic attitudes per se.⁸

A study by Mann (1960) investigated whether changes in one type of ethnic attitude component induced changes in the others. He measured the cognitive, affective, and behavioral components of racial attitudes in six-person interracial groups formed as part of a graduate course in education. These measures were obtained twice—after the third and eleventh group meetings. It was found that the beliefs of the students regarding the other race became more favorable but that corresponding changes did not occur for the affective and behavioral components. Studies by Merz and Pearlin (1957) and by Deutsch and Collins (1951) also suggest that the cognitive components of intergroup attitudes may change without inducing corresponding changes in feelings.

These findings would seem to contradict Rosenberg's cognitive-affective consistency conception of attitude change. It should be pointed out, however, that Rosenberg specifies particular conditions under which such change would be expected to occur (e.g., the discrepancy between feel-

⁷ Rosenberg's theory is but one version of the contemporary emphasis on self-consistency or "balance" in attitude change theory. Whereas he stresses intra-attitudinal consistency, other theorists have emphasized the individual's need for interattitudinal consistency or consistency between the person's attitudes and overt behavior. These and related views are discussed by Katz and Stotland (1959) and Zajonc (1960).

⁸ It should be noted that Rosenberg defined affect as the individual's position on an attitude scale. However, the scale procedure involved the individual checking how strongly he felt or approved (or disapproved) of the attitude issue, which closely approximates the concept of affective component as we defined it here. Cognitive components were limited by Rosenberg to the person's beliefs about the potentialities of the attitude object (e.g., whether Negroes should be allowed to move into white neighborhoods) for attaining or blocking the realization of valued states (e.g., "all human beings having equal rights"). Thus, shifts obtained in the direction of the individual's feeling about the attitude object by means of hypnosis resulted in corresponding changes in these kinds of beliefs.

ings and beliefs must exceed the person's tolerance level for such inconsistency), and there is no way of knowing whether these conditions were met in the studies cited above. Perhaps the most reasonable conclusion at this point is that different methods may be effective for changing different ethnic attitude components (Katz and Stotland, 1959).

Functional basis of attitude change. Katz and his associates have stressed the functional character of social attitudes as a basic approach to the problem of attitude change (Katz, 1960; Katz and Stotland, 1959). According to this view, four major functions can be performed by attitudes for the person: they can provide knowledge about his external world; maximize his rewards and minimize punishments; express his underlying values and self-concepts; and finally, they can protect him from unconscious impulses or self-concepts that threaten his psychological integrity.

In one study attempting to change the racial attitudes of white college students, Katz, Sarnoff, and McClintock (1956) compared the effectiveness of presenting relevant factual information about Negroes with the effectiveness of a self-insight or interpretive approach. The latter involved the use of a case history to highlight and explain the self-defensive nature of ethnic prejudice. It was found that unfavorable attitudes toward Negroes were modified to a significantly greater extent by the self-insight procedure than the informational or factual appeal. However, the insight method was relatively ineffective with subjects who were highly self-defensive. This was interpreted as due to resistance; that is, the defensive person is threatened by, and therefore rejects, rational appeals that might eliminate his ethnic prejudices. He needs these prejudices to bolster a continually faltering self-esteem.

These investigators interpreted the positive effects of their self-insight method as being due to an actual personality change (a reduction in self-defensiveness) as evidenced, for example, by the fact that the effects of the self-insight method were delayed in time as compared with the effects of other approaches. Subsequent studies by Stotland, Katz, and Patchen (1959), however, suggest that the change may have been due to the person's realization that he lacked self-consistency—the specific prejudice did not fit in with his conception of himself—rather than a change in or realization of the ego-defensive nature of his bias.

It is generally recognized that social attitudes may be instrumental in the satisfaction of the individual's values or general goals in life, e.g., good standard of living, moral integrity (Katz and Stotland, 1959). Ethnic prejudice, for example, may develop because it provides satisfaction for the high value placed by the person on power over others or on pri-

vate property and its protection. On the other hand, to the extent that he can be made to perceive that his ethnic prejudice blocks the attainment of other more significant value satisfactions, or that a more tolerant attitude will lead to such satisfactions, attitude change should occur.

Carlson (1956) tested this hypothesis by having college students provide arguments favoring Negro-white integration in housing as a means of attaining significant value satisfactions, e.g., American prestige in other countries; being experienced, broad-minded, and worldly wise; and so on. In comparison with a control group, a significant proportion of the experimental subjects changed toward seeing the instrumental value of Negro housing integration for the realization of such values. More to the point, their attitudes toward racially integrated housing became significantly more favorable. However, subjects whose initial attitudes were moderate changed more than those at either extreme. Of particular interest is the fact that attitude change appeared to generalize toward other ethnic groups.

Other research has focused on the person's position on a particular ethnic issue, e.g., desegregated housing, and his acceptance of new information bearing on that issue. Peak and Morrison (1958) had college students present arguments for and against segregated housing, after their attitudes toward the issue had been previously measured. Following their presentation of arguments the subjects were asked to take the attitude measure again, list the good and bad consequences of desegregation in housing, and indicate their own position on this list. It was found that new information compatible with the subject's own attitude on desegregation was more readily accepted and approved than information that contradicted it. However, compatibility between information and attitude did not influence the amount of knowledge the subject gained. Similar findings are reported by Ford (1956).

The research cited above suggests that self-consistency may be an important ingredient in attempts to change ethnic attitudes. A study by Culbertson (1957) points not only to the significance of self-consistency in attitude change but to the importance of strong personal involvement as well. Culbertson measured the attitudes of Junior College students toward Negroes generally and toward Negro-white housing integration specifically, before and after role-playing sessions. The subjects had to advocate a theme favorable to residential integration in situations involving a new influx of Negroes into a community. The role-playing was conducted in groups of six subjects each, with half of them acting as performers and the other half as observers. In comparison with control subjects, far more of the experimental subjects became more favorable to-

ward Negroes and toward racial integration in housing; this was true for both the role-players and the observers but more so for the role-players.

The Effects of Knowledge and Information

Most investigations reveal that Americans with a high level of formal education are less prejudiced than those who have little such education (Bettelheim and Janowitz, 1964; Samelson, 1945). Yet it is true that such differences in prejudice cannot be attributed to the effects of education per se, since the subjects also differ in intelligence, intellectual interest, and social environment. Even studies that partially control for these factors, by comparing students at different grade levels within the same institution, are marred by other uncontrolled factors, such as age and extra-school experiences.

The best estimates of the effects of education on intergroup attitudes are those derived by evaluating the same students at various points in their careers. A small number of studies of this type have been reported, one among white high school students dealing with ethnic groups (McNeill, 1960), and the others among white college students dealing with attitudes toward Negroes or desegregation (Barkley, 1940; Eddy, 1964; Jones, 1938a, b; Murphy and Likert, 1938). McNeill (1960) re-tested 50 twelfth-grade students with a sentence completion test, two years after they had been initially tested. He found an increase in prejudice toward various ethnic groups. As for the studies on college students, the findings are equivocal. As Harding *et al.* (1954) note, "College education may or may not have a liberalizing effect upon the nature of intergroup attitudes of students, depending on the nature of the students and the nature of the education" (p. 1047).

Studies of the effects of specific school courses reveal a similar situation. In these studies, however, significant favorable changes in attitudes are reported about twice as often as no changes. It is also true that these studies are so unrelated to each other in approach that it is difficult to determine what factors are responsible for the variation in results. A number of summaries of the relevant literature are available (Rose, 1948; Stember, 1961).

School courses often attempt to reduce intergroup prejudice by modifying the individual's ethnic beliefs, and this objective, of course, depends primarily on the transmission of information about specific groups. Of importance, therefore, is the fact that most investigations have reported that persons with considerable information about a specific group tend to have more favorable attitudes toward that group (Murphy and Likert, 1938; Nettler, 1946; Reckless and Bringen, 1933; G. B. Watson, 1929).

There is no way of knowing, however, to what extent favorableness of attitude resulted from increased information, or increased information from favorable attitudes, or to what extent both resulted from personality or social situation factors of the persons involved. The probable importance of these "other factors" is revealed in the finding by Closson (1930) of a correlation of .59 between general tolerance toward ethnic groups and general information among 840 Iowa high school students. This finding suggests that some underlying personality factor (e.g., open-mindedness) or property of the child's social setting (e.g., family atmosphere) fosters both a desire for knowledge and the acceptance of others regardless of ethnic background. If Closson had *not* found a significant relationship between general tolerance and general information, then the fact that favorable knowledge about a *specific* ethnic group is associated with considerable information about that group would more readily suggest that one of these factors is the cause of the other.

It has been suggested that courses in intergroup relations will be effective in modifying the ethnic attitudes of students if (a) favorable information about the ethnic group is presented; (b) the instructor communicates that his own attitude toward the ethnic group is more favorable than that of the students; and finally, (c) a positive relationship between instructor and students exists to the point that they will accept his feelings and action orientations toward the group as well as the information he presents (Harding *et al.*, 1954). If any of these conditions is missing, a school course on intergroup relations may very well not produce any significant changes in ethnic attitudes. Thus, in a study by Greenberg, Pierson, and Sherman (1957), neither a formal debate on the desegregation decision of 1954, nor a lecture on the dynamics of prejudice, nor a single class discussion on the latter topic led to changes in the ethnocentrism scores of Texas college students upon retesting in the next class period. A one-shot affair of this order clearly cannot meet all of the conditions cited above.

In sharp contrast are the findings reported for the more prolonged and intimate approach of the workshop or seminar. Levinson and Schermerhorn (1951) and Levinson (1954) studied the effects of a six-week intergroup relations workshop on the attitudes of school teachers. Notwithstanding the low level of prejudice in the group to begin with, there was a significant decrease in the average level of prejudice by the time the workshop was over. How much of a change in ethnic prejudice will occur in the classroom, or in a seminar or workshop setting, also depends on the specific approach taken. Hayes and Conklin (1953) used one of three methods with eighth-grade students: direct experience with minority

group members; academic instruction on the problem of prejudice; and a "vicarious experience" approach in which the subjects read, acted, and listened to the experiences of minority group members. The latter approach proved to be the most effective. Working with Christian high school students in church-sponsored seminars on the Psalms presented in three different ways, Kagan (1952) found significant reductions in prejudice only when anti-Semitism was directly discussed either in class or in private meetings after class. Where the experimenter adhered closely to the announced subject matter of the course, no changes in the student's attitudes toward Jews occurred—notwithstanding the fact that the positive contribution of the Jews to the development of Christianity was stressed.

Propaganda and attitude change. As with school courses, the effects of specific propaganda techniques show a wide range of results that correspond only roughly with variations in the stimulus situation. The use of motion pictures as a propaganda technique for altering ethnic attitudes has received some attention from investigators, beginning with the early study by Peterson and Thurstone (1933). By the use of films they were able to produce large pro-German, anti-Negro, and pro-Chinese shifts in attitude among high school students; and some of these attitude changes persisted over long periods of time, e.g., nineteen months for the pro-Chinese attitude. Yet, in the now classic study (Hovland, Lumsdaine, and Sheffield, 1949) of the effects of the film "The Battle of Britain" on the attitudes of American soldiers toward the British, the amount of change in these attitudes was far less compared to the Peterson and Thurstone findings. One suspects that the difference is not due primarily to any intrinsic lack of persuasive power in the former, but rather to the greater sophistication and resistance to propaganda of soldiers as compared to high school students.

Subsequent research on the effects of motion pictures on ethnic attitudes has been sporadic but some important findings have emerged. Rosen (1948) found a large and significant reduction in anti-Semitism among a group of 50 Gentile college students who saw the film "Gentleman's Agreement." Employing an army film ("Don't Be a Sucker"), Cooper and Dinerman (1951) report success in altering the beliefs of New York City Catholic and Protestant high school students regarding the influence of the Nazi regime on their own religious groups. A second theme in the movie, that Americans should be on their guard against Nazism in the United States, had no demonstrable effect. Goldberg (1956) compared the effects of two types of films dealing with prejudice

which were shown to Detroit fraternal groups. One "general" or abstract film on prejudice had no effect on the groups who saw it, whereas another, which involved a realistic enactment of a social situation, produced a significant reduction in prejudice in four of the seven groups exposed to it. Finally, Kraus (1960) compared various racial versions of a movie in an attempt to change the attitudes of eleventh-grade white children toward the Negro. The films dealt with the efforts of two high school teachers to get a Negro student into college, the only difference in the versions being whether the teachers were both white, both Negro, or white and Negro. Significantly, shifts toward more favorable attitudes toward Negroes were obtained only in the biracial version of the film.

The effects of other propaganda techniques such as lectures, broadcasts, and stories on attitude change have been studied but not in recent years, and rarely with reference to ethnic groups. For this reason we need only summarize some of these findings here. There is some evidence that the propaganda lecture is effective in changing ethnic attitudes but with much less durability than Peterson and Thurstone (1933) reported for motion pictures (Chen, 1933, 1936). Face-to-face speeches are usually found to be more effective than radio presentation of the same material, and the latter usually more effective than written or pictorial presentations (Cantril and Allport, 1935; Knower, 1935, 1936; Wilke, 1934). Comparisons of television with the other media have not been reported. Studies of the effects of stories and mail propaganda on ethnic attitudes are very small in number, and no firm conclusions can be drawn (Bettelheim and Janowitz, 1950; Hall, 1938; Peregrine, 1936; Remmers and Morgan, 1936).

Intergroup Contact

Contact between ethnic groups may lead to an increase or decrease in intergroup prejudice. As we noted earlier, attaining more favorable ethnic attitudes depends on conditions of interaction in which the members of different groups are cooperatively engaged in the pursuit of common objectives under equal-status conditions or as functional equals. Sherif (1958) found that intense conflict between two groups of boys at a summer camp was most successfully reduced when they were confronted with a common and compelling problem which could only be solved by cooperative action on the part of members of both groups. On the other hand, it is also true that studies of inter-ethnic contact in the same kind of setting (e.g., school) do not always demonstrate a reduction in prejudice under these circumstances. Equal-status contact and cooperative re-

lations among different ethnic group members are necessary but by no means sufficient conditions for the development of more favorable ethnic attitudes.⁹

School setting and desegregation. In his original study, Horowitz (1936) compared the attitudes toward Negroes of 11 white sixth-grade boys in a mixed New York City school with those of a much larger group of New York City boys of the same age attending two all-white schools. On the "Ranks" and "Show Me" tests the two groups of boys displayed the same attitude. But the boys from the mixed school showed a slight preference for interracial social situations as compared with all-white ones, while the latter showed a substantial preference for all-white situations.

In the New Zealand study by Vaughn and Thompson (1961) cited earlier, it was found that among the sixteen-year-olds greater inter-ethnic contact with their Maori classmates was associated with more favorable attitudes toward the latter. This relationship, however, was not evident among the eight- and twelve-year-old students. It is of interest to note that according to these investigators, Maori and white children attending the same school work, play, and mingle together without apparent discrimination. Why these conditions led to more favorable attitudes in the older children and not in the younger ones is not explained. It may well be that it is only in the older, somewhat more autonomous adolescent that inter-ethnic, equal-status experiences can counteract the influences of parental or family attitudes toward minority groups.

Still another possibility is that equal-status contacts in the school setting cannot exist in limbo. Its efficacy in the development of favorable ethnic attitudes may depend on the directed attempts of teachers and administrators to foster an atmosphere in which genuine cooperative relations between members of different ethnic groups indeed occur (Trager and Yarrow, 1952). School desegregation by legal fiat does not by any means insure social integration between racial groups in this genuine sense. And even under conditions of true racial or ethnic integration in the school setting, there are critical extra-school factors that may either reinforce or counteract the possible reduction in prejudice, e.g., family attitudes, community atmosphere, and so on.

Support for the role of these other factors comes from a recent unpublished study by Singer (1964) who compared the racial attitudes of

⁹ Studies of the effects of inter-ethnic contacts on attitude change have in most instances employed *ex post facto* experimental designs, with data being collected from experimental and control groups only *after* the inter-ethnic contact. Studies of this type in which the assumption of initial similarity between experimental and control groups is seriously open to question were not considered in our review.

two fifth-grade classes, each from a neighboring suburb of New York City. One group attended a school in a community that had ended segregation thirteen years earlier, and in which school integration was established with a great deal of care, e.g., proper ratio of Negro to white students in each class and explicit emphasis on interracial cooperation. The second group attended an all-white school in a community that was comparable, except that it had virtually no Negro residents.

Children in the integrated school showed significantly more positive and fewer negative stereotypes about Negroes than those in the all-white school; indicated a greater desire for personal contact with Negroes; and finally, exhibited more familiarity with and greater positive affect toward Negro celebrities. However, the children in the integrated school still manifested prejudice by ranking Negroes eighth on a social distance scale involving 12 ethnic groups (compared with a ranking of eleventh by children in the all-white school). As suggested above, cooperative interracial contact does not always lead to a reduction in prejudice; nor, as in this case, can we expect it automatically to eliminate all aspects of prejudice. As Singer points out, "At the personal contact level the school integration removes the fear and threat of Negroes, but the influence of parents' attitudes and their fears and threats still shape children's attitudes" (p. 30).

In several studies the effect of desegregation on racial prejudice has been studied more directly. In one of the earliest reported studies of this kind, Whitmore (1957) measured the Negro attitudes of comparable groups of white eighth-, tenth-, and twelfth-graders before and five months after their school was desegregated. He found that the eighth-grade students and two tenth-grade groups became significantly less prejudiced. This change, however, was unrelated to opportunity for classroom contact, which suggests that the change was primarily a response to the new adult norms for Negro-white relations in the school and was due less to changing conceptions and feelings engendered by the resulting equal-status contacts.

E. Q. Campbell (1958) gave a Negro-attitude questionnaire to a large number of white high school students just before and six months after school integration. In this study, unlike that by Whitmore, a change toward more favorable Negro attitudes was positively related to the amount of classroom contact and friendship with Negroes. Also of interest is Campbell's finding that the direction of attitude change (less prejudiced or more prejudiced) was related to how his subjects perceived the racial attitudes of their parents and friends. This supports the point made earlier that parental attitudes, community atmosphere, and the like can

either reinforce or negate the positive effects of equal-status and co-operative racial contacts.

Two studies on the effects of desegregation did not have the positive results obtained by Whitmore and Campbell. Lombardi (1962) reports no general change in Negro attitudes among ninth- and tenth-grade white students in a Maryland high school who were tested before and seven months after integration. However, a change toward more favorable attitudes toward Negroes was found to be related to the mother's educational level. Webster (1961) studied attitude change among both white and Negro students in an integrated junior high school in California. Both groups were tested by means of a social acceptance scale and a sociometric test, first in their separate schools and then in the integrated school six months later. It was found that white students accepted Negroes less, following integration. Negro attitudes moved toward the extremes but with more changing in the favorable than in the unfavorable direction.

We can draw one conclusion from the desegregation studies. Cooperative and equal-status interracial contacts in the school setting can, but will not necessarily, reduce ethnic prejudice. How much of a reduction will occur, how generalized it will be, and indeed whether it will occur at all very likely depends on a host of factors internal to the school (e.g., attitudes of teachers, racial distribution in the classroom), as well as external to it (e.g., community atmosphere, parental attitudes).

Recreational settings. Studies of the effects of interracial contact in recreational settings have similarly not produced consistent evidence of a reduction in prejudice. Mussen (1950) and Hogrefe, Evans, and Chein (1947) report no change in the overall direction of attitudes toward Negroes among white boys in an interracial camp and an interracial play center, respectively. In the camp study, in which white and Negro boys spent four weeks living and playing together, significant changes in attitude were found in many of the boys, but unfavorable changes were as frequent as favorable ones. Yarrow, Campbell, and Yarrow (1958) studied eight-to-thirteen-year-old white and Negro boys and girls from low-income homes during a two-week stay at summer camp under conditions of racial integration and racial segregation. Detailed observations, sociometric choices, interviews, and other techniques were employed to measure attitudinal components and overt behavior relevant to the relations between the two racial groups in each camp setting. Although radical shifts in longstanding interracial orientations did not occur, it was found that the social distance between the two groups was generally reduced, and race as a criterion of friendship exerted less influence at the

end of the two-week period. Not unlike the Singer study (1964), a major factor which determined the new standards of conduct and feeling was the consistent expectation of equality that characterized the behavior of the counselors toward the children and that was reflected in the integrated culture of Negro and white counselors.

Cooperative, equal-status contacts may be ineffective in changing attitudes or behavior unless supported by expectations of equality by the authority figures present. And even when they are effective their effects on attitudes may be minimal if the time involved is as short as a three-to four-week stay at a summer camp (Mussen, 1950), or a once-a-week visit to an interracial center (Hogrefe, Evans, and Chein, 1947).

If cooperative interracial contact can lead to a reduction in ethnic prejudice, as the research above indicates, then it is important to ask to what extent these changes are generalized to interactions with minority-group members in other situations beyond the school and camp settings. In a more detailed account of their camp study, Campbell and Yarrow (1958) indicate that friendships in the integrated camp occurred largely with Negro cabinmates, and the positive interactions were largely confined to the cabin. In broader settings (e.g., swimming, games, and so on) small segregated groups appeared more frequently. What this suggests is a role-specific attitude change, that is, a positive attitude toward the Negro child as a cabinmate but not as a recreation participant. In the investigation by Singer (1964) there was clear evidence that though the white children in the integrated school were quite willing to have Negro children as best friends, this did not include having them "home for dinner" or wanting them to live on the same block. Of course, whether this indeed reflects the specificity of their attitudes or the fear of inviting their Negro friends home because of parental disapproval, remains an open question. However, the studies of attitude change in adults resulting from equal-status contacts in occupational settings also indicate that these changes are not usually generalized to other contexts (Brophy, 1946; Harding and Hogrefe, 1952; Minard, 1952; Star, Williams, and Stouffer, 1965).

Residential and occupational contacts. Studies of residential contact between different ethnic groups in noncompetitive, equal-status situations have shown substantial, favorable changes in attitude resulting from such contact. To the extent that parents in these settings develop more positive ethnic attitudes toward their neighbors, we can expect their children to reflect corresponding reductions in prejudice. In the now classic study of segregated and integrated housing, Deutsch and Collins (1951) found that white housewives in the integrated projects were more willing to accept Negroes as fellow workers on jobs, as fellow members of an in-

formal social club, and as schoolmates for their children. Similar findings involving comparisons of integrated and segregated residential contacts in four public housing projects were reported by Wilner, Wakely, and Cook (1952) but the differences between the integrated and segregated white housewives in this instance were less pronounced. The investigators attribute this difference in effects to the reduced range of variation in opportunities for contact with Negroes among their subjects as compared with those of Deutsch and Collins (1951). Irish (1952) found that Caucasian residents of Boulder, Colorado, who had Japanese-American neighbors during World War II, were significantly more favorable toward Japanese-Americans several years later than were similar residents who had not had such neighbors.

In our discussion of attitude change in recreational and school settings, we cited evidence that more favorable attitudes toward Negroes tended to be situation-specific rather than generalized to other settings. This finding also seems to hold for attitude changes in residential settings. As indicated above, Deutsch and Collins (1951) found that the favorable attitudes of the white housewives toward the Negro generalized somewhat beyond the housing project, but the changes were far greater for Negroes in the project than Negroes in general. In the studies by Wilner, Wakely, and Cook (1952) and Irish (1952), there was even less evidence of generalized changes in attitudes toward the racial group involved.

Intergroup contact in a work situation seems to be considerably less effective than contact in a residential situation in reducing prejudice (Harding *et al.*, 1954). On the other hand, where different ethnic groups live *and* work together in circumstances requiring a high degree of mutual cooperation, e.g., army units in combat, the most dramatic changes in attitude occur. For example, a far greater proportion of white soldiers in racially mixed combat units were found to favor this policy than those in segregated combat units (Information and Education Division, 1947). Foreman (1955) points out that white soldiers who had fought with Negroes in combat in World War II were more favorable toward the Army's policy of integration ten years after the war than those who had not fought with them; white soldiers in unintegrated units serving near large Negro units were least favorable.

Of special interest is Roberts' (1953) finding based on the autobiographical material supplied by 219 Negro veterans following World War II. Approximately 75 per cent of the group were unfavorable to whites prior to military service. After the war 51 per cent said they were less antagonistic to whites, 29 per cent were unchanged, and 20 per cent re-

ported they were more hostile. Of course, as the author suggests, these changes may have been a function of a variety of factors in their military experience, e.g., unsegregated facilities, formation of friendships and contact with European whites, and so on.

Group Membership and Attitude Change

Group norms appear to play almost as significant a role in modifying ethnic attitudes as they do in the initial development of such attitudes. When the individual finds himself in a group whose ethnic norms vary markedly from those of his previous group membership, there is a strong tendency for his attitudes to change. In an early study by Sims and Patrick (1936), it was found that in comparison with northern-reared white students who went to northern colleges, corresponding groups of northern students who went to southern colleges became less favorable toward Negroes. Further, while the difference was slight at the freshman level, by the time the northern-reared students were seniors their prejudice toward Negroes almost approximated those of their southern-reared classmates. In a recent investigation by Eddy (1964) southern-born whites on a northern campus were found to change positively in their attitudes toward Negroes—primarily with regard to the integrated use of public facilities—as they progressed from their freshman to senior year.

A unique study by J. Watson (1950) investigated 45 New York City residents who reported a marked shift in their attitudes toward Negroes or Jews (positively or negatively) at some time in their lives. Intensive interviews with these individuals revealed that half of them had changed after their entry into a group setting whose ethnic standards varied from those of the previous groups to which they belonged, e.g., one's first job, going to college, entering the armed services, and so on. Other respondents associated their changes in attitude with a change in geographical residence which, of course, resulted in a variety of new group memberships.

It is important to stress, however, that a change in group setting in itself is not sufficient to modify ethnic attitudes. Pearlin (1954), in a questionnaire study, found that the attitudes of southern college students toward Negroes do not change merely as the result of attending an integrated college. The change depends upon strong identification with college values and a corresponding reduction of identification with the values of parents. Furthermore, such a shift in identification may or may not take place, depending on the nature of the individual's experience in the new group setting.

Some group settings, for example, are characterized by actual inter-

ethnic contacts, such that the adoption of the prevailing ethnic norms by the new group member may depend on the nature and extent of his particular inter-ethnic experiences. And these experiences may be influenced by, as well as exert influence on, relationships with members of his own ethnic group. In a study of changes in the racial attitudes of Negro veterans as a function of their previous experiences with white persons (e.g., white servicemen, civilians, European whites) during military service, Roberts (1953) found that such changes depended on the quality of their relationships with the latter (e.g., degree of intimacy, difference in status, and so on) and not just on contact alone. In the study by Eddy (1964) cited earlier, attitudes toward Negroes of southern students on northern campuses shifted positively in relation to the degree of extra-curricular contact they had with Negroes and the regional origin of their close (white) friends.

The importance of the nature of inter-ethnic contact in conditioning the adoption of ethnic norms for a new group member is, in part, suggested by the study by J. Watson (1950) cited above. Most of the individuals she interviewed shifted in their attitudes toward Negroes and Jews after they had moved into the new institutionalized group setting. In addition, four-fifths of them reported that the change was associated with some new personal contact with the members of the group toward whom their attitudes had changed. Of the 23 respondents who had had new contacts with Negroes or Jews of at least equal status to their own, 21 had changed their attitudes in a favorable direction. And of the 14 respondents who had interacted with members of these ethnic groups in lower-status positions, only four became more favorable. Here again we see the essential importance of equal-status interactions as one condition in intergroup contact designed to reduce ethnic prejudice.

PERSPECTIVES FOR RESEARCH AND PRACTICE

The many research findings reviewed here do not by any means fit together into a tidy bundle of empirical and conceptual knowledge. Indeed, if our knowledge of the nature and genesis of intergroup attitudes were at a higher level of scientific maturity, then general hypotheses and specific predictions about the conditions of attitude change could be formulated and tested in more precise terms. We would have a far clearer idea about what to do to change the ethnic attitudes of given groups of individuals in given settings under given circumstances.

A greater understanding of the genesis of intergroup attitudes will depend on more than just the research endeavors of psychologists and so-

ciologists. The formation of ethnic attitudes is at root a problem in the socialization of the child. To the extent that we can understand the role of learning, perception, and motivation in his development, to this extent will we be able to describe and understand better the formation of social attitudes. Yet the socialization of the child in terms of these processes is inextricably tied to his experiences with individuals who have defined social relationships with him in a variety of social contexts. And these relationships and contexts are, in turn, conditioned by increasing levels of social organization that circumscribe the members of a society.

Our review makes evident the gaps in research on the development of ethnic attitudes, as well as the need for replication of existing studies. The need for investigations of the development of ethnic attitudinal components and their relationships, the functional bases of ethnic attitudes, and other kinds of intergroup attitudes (e.g., political) has been indicated earlier. Other kinds of research needs can be cited, but two are of special importance.

There is the need for systematic research on the process of school desegregation, its effects on both the attitudes of whites and Negroes, and how it may be employed to establish harmonious intergroup relations between these groups (Cook, 1957). The present writer was able to uncover only a handful of such studies.

That researchers know little about the nature and genesis of positive or favorable ethnic attitudes is no less important. There is an absence of both theory and data, paralleling what for a long time was the state of affairs in personality research in which the nexus of concern was the psychologically deviant individual. To reduce ethnic prejudice and prevent its recurrence in the future requires an understanding of the development of what, in a democratic society, logically must be considered a healthy ethnic attitude. On the one hand, it involves a willingness to accept and sustain cultural plurality on the American scene; on the other, to ignore such distinctions in judging other individuals and establishing relationships with them.

Those engaged in social practice cannot wait upon research promises of the future. The seriousness and urgency of the problems of intergroup conflict exist here and now. What then does the existing research have to offer the practitioner? His most serious concern at this point is undoubtedly one of assessing and modifying ethnic attitudes, as a basis of establishing harmonious intergroup relationships. In this respect, the practical value of the research on attitude change is far less in providing specific predictions and recommendations for immediate action, and far more in establishing basic perspectives and general orientations.

Let us state the obvious first. Attempts at attitude change must be preceded by an assessment: Which attitudes, in what individuals, and in what social contexts? Yet, even with this information, it is unlikely that any single method of attitude change will assume a first order of significance above all others. The complexity of ethnic attitudes and the variety of factors underlying their development and continuance immediately suggest that more than one technique will be required to effect a significant reduction in prejudice.

And even where many techniques are employed simultaneously, they may result in attitude changes in many people in a given setting but by no means in all. Extreme attitudes rooted in unconscious conflicts and low self-esteem are likely to stand their ground under most circumstances.

Other considerations pertain to the generally regarded panacea of intercultural education, information campaigns, and the like. Whatever effectiveness such techniques have depends not merely on what information, but how it is presented, by whom, and under what circumstances. Even if all the necessary conditions are met, these efforts are most likely to change beliefs without necessarily altering the affective and behavioral orientations in those who are more than slightly biased. The multidimensional character of intergroup attitudes is perhaps the most important consideration to keep in mind in any attempt to bring about attitude change.

Under the conditions noted earlier, intergroup contacts may be quite effective in modifying ethnic attitudes. But it is also true that such changes tend to be confined to the particular contexts in which they occur, rather than being generalized to a variety of settings. Successful school integration may lead to more positive attitudes toward Negro schoolmates, yet not toward Negroes in general.

Finally, the practitioner must be aware of one other aspect of attitude change that we did not consider in the previous discussion, because of the dearth of investigations. What few studies exist on producing and measuring changes in intergroup behavior indicate that such modifications may occur without any discernible changes in attitudes (Harding and Hogrefe, 1952; Hogrefe and Harding, 1946). At the level of the individual, changes in intergroup behavior and intergroup attitudes occur without much relationship to each other. This has to be expected, for intergroup behavior is determined by more than the person's intergroup attitudes alone. It is also determined by other motives in the individual, interacting with the circumstances in which he finds himself. The implications of this fact for the ongoing programs of desegregation in schools, housing, and employment are self-evident.

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Development of Occupational Motives and Roles

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FEW WOULD SERIOUSLY DENY the importance of occupation in the cultural history of man. Comparative analyses of civilizations frequently center on the simplicity or complexity of economic systems and on the characteristics of jobs and workers within such systems. Roe (1964) has even speculated that true speech in primordial man may have evolved in response to the need to communicate about the simple division of labor.

For the individual, the significance of work is often epitomized in such expressions as "a way of life." Work, for the majority of men, provides major links by which they are continually drawn into social communion with others and with reality itself. Because of the formal time allocations that typify institutionalized work, men's jobs establish the frame within which their daily rounds are arranged. The influence of occupation upon a man's thinking, values, and activities naturally extends to his nonworking hours. His mode of dress, friends, leisure-time preferences and practices, manner of speech, customary topics of conversation, even some of his political and ideological convictions, are apt to be work-related. To a much greater degree than would be true of feudalistic and aristocratic systems, social status in democratic societies is a function of occupation. When we wish to know how to regard someone we have not met before, we are likely to ask, "What does he do?" From the answer we expect to derive some idea of his income, the kind of home and neighborhood he resides in, the quality of social importance he commands, and the degree of deference we may have to show him.

Work as a prominent force in the lives of adults has long attracted the interest of social and behavioral scientists. Popular social critics around the turn of this century published dismaying reports on the status of work and the impact of rising industrialism, geographic mobility, and urbaniza-

tion upon occupational life and worker exploitation. Treatises appeared on the rise of trade unionism and the changing economic needs and status of workers. Even earlier, nineteenth-century political and economic theorists, notably Marx and Engels, had written on the plight of the working classes. Industrial psychologists, first in Germany and shortly thereafter (about World War I) in the United States, brought a disciplined empirical emphasis to the study of such issues as personnel selection, training, and the identification and measurement of environmental variables in worker efficiency.

The vigor and fecundity which marked these investigations of occupational performance over the first thirty years of this century is amply documented in Viteles' (1932) classic volume, *Industrial Psychology*. A few years later, a profoundly influential series of studies was launched by Elton Mayo and his colleagues at the Hawthorne (Chicago) plant of the Western Electric Company. These shifted the focus of attention from physical and mechanistic work variables to those involving human relationships, the nature of work supervision, and worker morale and satisfaction (Roethlisberger and Dickson, 1939; Whitehead, 1938). Perhaps the chief legacy of the Hawthorne studies was the establishment of the social psychology of industry as a domain for continuing research by sociologists and psychologists.

But this vigorous cultivation of research on the adult worker has hardly been matched by inquiries into the nature of vocationally relevant phenomena in children and youth. An assumption appears to have been made by most social and behavioral scientists that occupational phenomena may be fruitfully examined only when explicit and only within the formal setting of work itself—for example, the overt choice of an occupation or the overt performance of workers on the job.

It does not seem to have been sufficiently appreciated that work and the characteristic work customs and values of particular subcultures profoundly affect socialization processes in pre-employed youth. Long before the individual reaches employment age, it is possible to examine with profit the processes by which he acquires concepts of work; the nature of his work concepts and fantasies; the social valences he attaches to the work function; his factual knowledge of the occupational structure and of specific vocations; his rationale for ranking occupations according to some standard of worth, and the characteristic order in which he places them; his occupational aspirations; the desiderata he consciously or unconsciously employs in the personal decision-making process; his attitudes toward education; and his appreciation of the interdependence of education and employability. In short, there is a rich field for investiga-

tion in the development and manifest expression of his vocational motives.

A number of studies dealing with these research issues are, indeed, already available. They will be reported in this chapter and an attempt made to identify their central meanings and to suggest some implications for those educational, child-rearing, and counseling practices which are designed to foster the vocational sensibilities and maturity of youth. But passing note needs to be made of the sporadic record of research productivity on children's work-relevant behavior—in particular, the disproportionately small number of investigations employing subjects below the lower-secondary school level. In part, the explanation lies in simple expediency. Since those who do occupational research with students typically work in a college or secondary-school setting, they find it far easier to study issues appropriate to their student populations and for which experimental samples are readily available. Moreover, the preponderance of standardized instruments on occupational variables (for example, aptitude tests, vocational interest blanks, and value-preference inventories) have been developed and normed for high school, college, and adult populations, only occasionally for subjects below the ninth grade, and rarely for elementary school pupils.

More fundamental reasons, however, may account for the neglected study of the occupational behavior of younger children. These relate to a system of beliefs and policies that governs the training and assigned roles of youth. It tends to discourage any immediate contact with employment experience and to establish rising age and educational barriers against early participation in the labor market. Paradoxically, the American trend toward training youth for psychological and social autonomy has been coupled, in an age of abundance, with an opposite trend toward prolonged economic dependency. The occupational census taken by the United States Bureau of the Census in the early decades of this century used age fourteen as the basal age in defining the potential labor force. In 1900, approximately 45 per cent of children between ages fourteen and nineteen were at work in America. By 1960, the labor participation rate for this age group had fallen to approximately 23 per cent, and the rate has continued to decline (Wolfbein, 1964). The combined effects of extended child-labor legislation, enacted at the federal level with the 1938 Fair Labor Standards Act, and the passage of more stringent age-based compulsory education laws in most states, have been to exclude the majority of youth under age sixteen from the labor force. The age at which the average young American now takes regular, full-time employment is probably above nineteen. As the proportions of young people entering

college and graduate training programs increase, the age of entry will undoubtedly continue to rise.

With changing social patterns now formally excluding youth from early labor-force participation, the occupationally related behavior of younger subjects that may hold significance for vocational planning cannot, of course, be observed directly in the institutional context of work. But this does not mean, as the comparatively meager yield of research might appear to suggest, that the study of children's occupational concepts and motives is unfeasible or unimportant to an improved understanding of how the mechanisms of vocational adjustment are acquired.¹ This chapter will develop the thesis that the vocationally relevant behavior of pre-employed youth, broadly conceived, (a) begins in early childhood, (b) is most profitably studied as a developmental process, and (c) can be examined in terms of certain classes of familial, societal, and intrapsychic variables which shape the emerging career pattern. If this general position is pursued through an intensified program of research, future textbooks on child and adolescent behavior may be expected to supplement their treatment of genetic, physical, intellectual, motor, sexual, social, and moral development with a chapter devoted to phenomena of vocational development. At present, general works on human development which address themselves to this topic are the exception (Mussen, Conger, and Kagan, 1963; Nicholas, 1963).

SYSTEMATIC APPROACHES TO THE STUDY OF OCCUPATIONAL BEHAVIOR

Work as a subject of scholarly inquiry represents an amorphous domain having boundaries both indistinct and shifting. Few of the social and behavioral sciences have failed to engage themselves in some manner with the nature of work and the study of man as worker. Yet none has occupied itself exclusively with problems of work, and none has produced a theory of work sufficiently comprehensive to permit a valid claim to stewardship over the field. This uncertain state of theoretical and em-

¹ It may be noted that, notwithstanding the position taken in this chapter that some of the roots of occupational behavior are discernible in comparatively early childhood, the literature of child psychology has had very little to say about the growth of vocational motives and attitudes. For example, inspection of the developmental psychology chapters in *Annual Review of Psychology* and of the citations in *Child Development Abstracts and Bibliography* which appear under the heading of human development suggests an indifferent interest in problems of occupation. R. Q. Bell's chapter on "Developmental Psychology" in the 1965 edition of *Annual Review of Psychology* contains no more than three per cent of 207 referenced papers which are in any real sense even tangentially related to concepts of occupational choice and competence (Bell, 1965; Harris, 1965).

pirical knowledge is compounded by the circumstance which finds one of the principal consumers and purveyors of information about work, the field of vocational guidance, lacking the status of "an independent scholarly and research discipline," and hence inadequate to the task of synthesizing a global conception of youth as worker-to-be and of man as worker (Brayfield, 1964).

How are we, then, to assemble a set of organized principles bearing upon the development and expression of occupationally relevant behavior? In part, our information derives from the field of labor economics which furnishes serviceable models of the external, real-world setting that imposes important demands, expectations, and restrictions upon youth and within which the young person acquires a complex assortment of motives and skills as he grows toward economic independence. Knowledge comes also from the fields of occupational and industrial sociology. These share the organizing premises that work is essentially a social institution and that to know the meaning and impact of work for the aspiring youth or the employed adult, one must understand the folkways, mores, and ethos of the culture which surrounds him and shapes his behavior. Finally, new perspectives are being supplied by a comparatively recent field of study, that of vocational development, which examines characteristic patterns of behavior in the context of psychosocial growth.

The disciplines enumerated have occupational concerns that are broadly diversified and far-ranging. To the extent that these disciplines contribute to an informed understanding of the social and behavioral processes by which youth develops occupational motives and values and comes to vocational maturity, they form the basis of much that follows in this chapter. The intent will be to draw upon them selectively in order to construct a holistic interpretation of youth in an occupational universe.

THE ECONOMIC CONTEXT OF CONTEMPORARY WORK SOCIETY

One obstacle to improved understanding of the vocational planning and adjustment problems of school youth is the failure of most conceptualizations of career behavior to relate themselves to the existing occupational structure and the realities of the economic world. Since meaningful research must be rooted in viable theory, the building of conceptual models of worker behavior and of work itself is essential. But such models are, of course, only analogues of reality and run the risk of misinterpreting it. As an example, some theories of vocational choice and work adjustment, particularly those which stress the importance of personality

in work, attempt to build an isomorphism between characteristic personality styles and occupational groupings. Their resulting job classification schemes are caricatures or, at best, oversimplified models of the occupational structure as it really exists. Illustrations of how the world of work may thus be unwittingly distorted are provided by the manner in which parents, teachers, and some counselors represent occupational life to young people. A teacher or club adviser, for example, may idealize work by referring to the dignity and joy of all labor, or by citing only high-prestige occupations when he urges students to think seriously about their futures. A counselor may confer a nonexistent homogeneous character upon the psychological value of occupation by assuming that any work for which a subject possesses the necessary aptitude and other requirements can be intrinsically rewarding.

Proper assessment of the vocational aspirations and expectations of youth, then, presupposes an informed conception of the occupational world. Although the work economy is admittedly very complex and in a continuous state of flux, it is possible to identify some salient features and to place them in their proper relationship to youth. The following discussion takes note of several major perceptible trends in the world of work and suggests some of the significant ways in which they will affect the lives of students and young workers.

Changes in the Work Economy

1. Worker productivity is on a sharply rising course. Improved methods of production and distribution, spurred by such developments as computer-programmed production and record-keeping operations, numerical machine control, and greatly speeded rates of supply of both raw and processed materials, have dramatically increased output per man-hour. In manufacturing alone, output per worker rose more than 50 per cent between 1947 and 1961; in agriculture, the increase was more than double. Estimates place the current real gross national product per capita at three times that which existed at the turn of the century (Wolfbein, 1964). While there is maldistribution of the tangible rewards resulting from increased productivity, the purchasing power and standard of living of the average American family are the highest in the nation's history.

2. Growing proportions of young people entering the labor market become employees of large-scale industrial organizations. The social context in which work is performed is, for many occupational categories, increasingly formal, structured, complex, and impersonal. The social and geographic distances between the worker and highest levels of management have widened. Communication between those who establish com-

pany policy and those who execute it at the lower levels has become more complex and more difficult. The morale and job performance of the worker in the lower echelons have come to depend more importantly on his relations with his first-line supervisor. The meanings of the job to the worker, the ways in which he identifies both with job and employer, and the conditions which nourish or diminish his loyalty are all undergoing change. Yet there is no clear evidence, despite the commonly asserted contrary position, that opportunities for upward socioeconomic mobility have declined in an era dominated by large-scale work organizations (Gross, 1966).

3. Radical shifts are occurring in the nation's occupational structure. By 1950 the United States had become the first country of record with a majority of its workers to be found in services, as contrasted with goods-producing industries. Seven years later, the number of white-collar workers surpassed those in manual occupations. In the half-century span between 1910 and 1960, the percentage of all employed Americans classified as professional workers more than doubled; a similar rate of growth held for sales and clerical workers. During the same period, on the other hand, the percentage of unskilled workers in the labor force decreased by more than half, while that of farm workers dropped to about one-fourth of the 1910 figure (Wolfbein, 1964).

4. While the percentage of people of labor-force age who are working today has hardly changed at all since the turn of the century, this is accounted for chiefly by the rising proportion of women workers. That rise results, in part, from the sharp redistribution in types of occupations that has taken place. Many jobs traditionally closed to women (e.g., heavy, unskilled labor) have been replaced by occupations which women may ordinarily enter. The number of women workers is now increasing at almost twice the rate of male workers. Already, nearly one of three workers in the American labor force is a woman. Nor is the average work tenure of the female employee necessarily short. While the working careers of young married women are often interrupted during the years families are being raised, increasing numbers among such women are returning to the labor force. Thus, the estimated age of the average American woman worker today is about thirty-eight years. It probably comes as something of a surprise to high school girls, their parents, and teachers—many of whom continue to hold notions of incompatibility between working careers and homemaking, and most of whom think of women's work as a short-term expedient—to discover that girls now in high school may typically be expected to spend twenty-five years of their remaining lives in the labor force (Wolfbein, 1964).

5. There has been a pronounced decline in average length of the

work week. From an estimated 69.8 hours in 1850, the figure has dropped steadily to 60.2 hours in 1900, to 44.0 hours in 1940, to 40.0 hours in 1950, to 37.5 hours in 1960 (Dewhurst, 1955; D. C. Miller, 1964). Realization that the work week of the average American worker very probably will continue to decline has led to serious conjectures by social analysts and educators that further shifts may occur in the psychological meaning and importance of occupational experience. It has likewise stirred considerable comment on the need to prepare American youth, through school and other means, to invest in a personally rewarding and socially responsible manner the hours of leisure time that will become increasingly available to them. An ironic aspect of the work-leisure problem concerns the professional, whose work week is as long as or longer than formerly. Wilensky's (1964) data from the Labor-Leisure Project "suggest that there is a slowly growing minority of the male urban labor force in the United States who usually work 55 hours a week or more; at least a third of the lawyers, professors, small proprietors, and middle managers in our samples worked that long." Thus, we see that those who are members of what has traditionally been called "the working class" are the chief beneficiaries of the new legacy of leisure which an economy of abundance offers. By contrast, those whose education and intellect may best qualify them to put such leisure time to rich and enterprising use possess the work habits and high-demand economic competencies which may combine to narrow their access to it.

Trends in Educational Qualifications for Employment

1. Note was taken earlier of the tendency to raise the formal educational requirements for entrance to many occupations. What is not entirely clear is the cause-and-effect relationship involved. Certainly, the elimination of many positions in certain occupational categories (e.g., unskilled labor and farm labor), coupled with the emergence of numerous new jobs created by an expanding industrial technology, have been major factors in employers' demands for workers with more schooling. On the other hand, the growing commitment of parents to the financial support of schools and to the extended formal training of their children—a commitment which the nation's unprecedented affluence makes easier to honor—has produced a steadily growing supply of qualified school and college graduates for the labor market. To illustrate, the percentage of high school graduates who enter college has leaped from about 20 per cent immediately prior to World War II to well beyond 40 per cent. Thus, prestige employers with attractive job openings can often afford to be more selective in their hiring practices.

This is not to suggest, of course, that the average educational level (and quality of scholastic preparation) of youth currently entering the labor market is adequate to the economy's changing needs. It seems reasonable to conclude that both a bona fide need for more highly trained workers in the contemporary industrial complex and the nation's implicit faith in the importance of formal education are contributing to the establishment of more formidable educational qualifications for job entry. The trend is seen clearly in the rising educational levels attained by representative groups of workers in certain occupational categories. School youth who are giving thought to educational plans should know, for example, that by 1959 clerical and sales workers were already averaging beyond a high school education (12.5 years of school completed) and that professional and technical personnel were averaging beyond a college education (16.2 years of school completed) (U.S. Department of Labor, 1960).

2. The importance of formal education as a qualification for job entry is reflected in the unemployment statistics. In 1959, only 2.5 per cent of those with at least some college training were jobless. In the same year, those possessing the high school diploma showed an unemployment rate of 4.5 to 5.0 per cent. Those with less than a high school education (dropouts) attained an unemployment rate of 8.5 per cent (U.S. Department of Labor, 1960). Recent surveys have reported the unemployment rate among early school leavers to be about three times that of the national average for all potential workers.

It is well known that graduation from high school is becoming increasingly common among American school youth. It is estimated that 70 per cent of new young entrants in the labor force during the present decade will possess at least a high school diploma. The remaining 30 per cent, consisting of an anticipated 7.5 million youth, will begin their employment careers lacking a high school education (U.S. Department of Labor, 1960). Many of them will have to be identified and enrolled in special training and counseling programs, such as those created by the Vocational Education Act of 1963 and the Economic Opportunity Act of 1964. Unless this is done, the probability is very high that they will have checkered work histories involving frequent episodes of unemployment and following a typical course of horizontal occupational mobility, i.e., movement from position to position without appreciable improvement in job skills, rank, remuneration, or security. A disproportionately large number of these nongraduates will be rural youth. They will not find stable employment waiting for them if they migrate to the city, nor can they look forward to a lucrative career in farming. The President's Commis-

sion on Youth Employment has reported that only about 10 per cent of 1960 farm youth can expect to achieve an adequate livelihood if they remain on farms (Baer and Roeber, 1964).

3. The boundaries between schooling and work are becoming increasingly blurred. Many students can expect to continue their education after they enter the labor market through a variety of learning experiences—evening classes, refresher courses, in-service training programs, industry-sponsored workshops, special institutes, graduate work leading to advanced degrees, and the like. Many of these programs will be required for advancement to more responsible positions on the career ladder. Others will be entered for the express purpose of keeping pace with new knowledge and technical methods in the field or to prepare for still newer occupations. Some observers of occupational trends are predicting that the increasing rate of obsolescence of jobs will require that the typical worker of the future be retrained two or three times for new positions during his working life span. Thus, the "polyvalent" worker (i.e., one possessing multiple occupational skills), the worker with satellite skills (i.e., subskills of the major job competence having high degrees of transferability to other occupations), and the worker who has "learned how to learn" will be among those who will best survive and advance in a fluid, rapidly changing technological society.

SOCIOCULTURAL INTERPRETATIONS OF OCCUPATIONAL BEHAVIOR

Investigations by sociologists of the problems of work consistently examine the individual in his social milieu. Accordingly, the significance of the socioeconomic status, occupational prestige, and level of aspiration variables discussed below is best understood in terms of the social forces which generate them.

Socioeconomic status as an occupation-related variable. Sociological analyses of community life and structure have long emphasized the importance of social class membership as both a correlate and a determinant of the individual's customs, beliefs, and institutional affiliations, including those associated with occupation (Hollingshead, 1949; Lynd and Lynd, 1929, 1937; Warner, Meeker, and Eells, 1949). The family as the child's primary reference group tends to define his occupational universe by (a) furnishing work role models with which the child can identify and (b) by transmitting a set of values about work in general and types of work in particular. Evidence is abundant that the differential occupational concepts, experiences, attitudes, and aspirations which the

child acquires tend to be associated with family socioeconomic status, even though not all of these behaviors are learned directly from the family. How family social-class status influences the development of vocational motives is described by Burchinal (1961). He points out that the status level of the family is instrumental in defining the social context and secondary reference groups from which the youth acquires some of his concepts and expectations of self, and some of his information and values concerning education and work. These associates and reference groups also function as the social reinforcers of his role-taking behavior and of his announced educational and occupational aspirations.

Because of the importance of the socioeconomic status concept to the analysis of different patterns of socialization, including those associated with work, attempts have been made to develop research instruments to measure social-class status. One well-known method of estimating the social status of the family is the Index of Status Characteristics devised by Warner and his associates (1949). Scores are based on the values assigned to father's occupation, type of dwelling, neighborhood in which dwelling is located, and father's source of income (e.g., wages, salary, self-earnings, and so on). The relevance of this last-named variable as an indicator of social-class status has been questioned by some critics. Father's occupation is commonly employed as an expedient, unidimensional index, and it is this class-level variable that has been used in a number of studies whose findings will be reported later in this section.

Occupational prestige. A second important conceptual tool is suggested by the propensity of nearly all individuals above the approximate age of twelve to think of types of jobs in terms of some kind of rank order. Subjects from about the tenth grade forward tend to use the perceived status-conferring power of jobs as the chief basis for ranking them. This property of work, commonly referred to as occupational prestige, has consequently been widely employed in the study of job hierarchies. Authorities are by no means fully agreed on the characteristics of jobs that subjects employ in assigning occupational prestige values. Source and amount of income, autonomy (i.e., freedom from supervision in performing the job), educational level, skills and other special qualifications necessary for entrance to the job field, the exercise of influence or power permitted by the job, the public visibility which the occupation affords, the adventurous, romantic, or risk-taking nature of the job, whether it is "head work" or "back work"—all are doubtless among the characteristics that people use in varying degrees, consciously or inadvertently, in deciding on the prestige rank of an occupation. Yet none of these is in itself identical with the concept of prestige. The income rank

of a job field, for example, is somewhat independent of the social status that people ascribe to it.

It is remarkable, therefore, to find that the prestige rankings of occupations are extremely consistent from study to study, from year to year, from social class to social class and, to a lesser degree, from country to country. A widely cited study by North and Hatt (National Opinion Research Center, 1947) was repeated in 1963, and the two sets of ranks correlated for a list of approximately 90 occupations. A correlation of .99 resulted. Samples drawn from all socioeconomic classes tended to rate occupations alike. The job rankings by blue-collar workers differed only slightly from those by white-collar workers. Comparisons of the results of these studies with those published earlier revealed no substantial changes in occupational prestige rankings since 1925 (Hodge, Siegel, and Rossi, 1964). Because occupational prestige is so stable a variable, and because it appears to operate strongly upon vocational aspirations and choice as well as upon later job satisfaction, it is an important and vigorously pursued subject of research, both with adults and younger individuals.

Level of aspiration. A closely related concept in educational and occupational research is that of aspiration level. Somewhat divergent interpretations of the concept are applied in personality theory and clinical psychology in the study of frustration and conflict (Barker, Dembo, and Lewin, 1941), and in child and educational psychology in the analysis of student motivation and achievement behavior (Lavin, 1965; Sears, 1940). As commonly used in occupational research, the concept refers both to the idealistic goals and to the short-range and the long-range realistic goals which the individual has set for himself. Haller and Miller (1963) present a recent review of the level-of-aspiration literature and relate the concept to pertinent principles in the behavioral sciences. Recent interest in the topic centers on the high promise which measures of aspiration level appear to offer for the investigation of social mobility mechanisms in youth. To illustrate, Miller and Haller (1964) cite a seven-year follow-up study of high school junior and senior boys which showed a measure of level of aspiration to be the most accurate single predictor of number of years of college education completed ($r=.52$) and the prestige level of the individual's field of employment ($r=.46$).

On the grounds that no suitable research instrument has been available for the measurement of aspiration level, in particular one compatible with available theory on the subject, Haller and Miller (1963) developed the *Occupational Aspiration Scale*. They extracted seven hypotheses from level-of-aspiration and attitude theory, which they then tested by exam-

ining both published and unpublished research for evidence of correlations between existing measures of level of aspiration and a variety of social-psychological variables. On finding that level of aspiration did, in fact, behave predictably, they concluded that it is a valid construct. Proceeding then to a detailed empirical analysis of their *Occupational Aspiration Scale*, they concluded that it (a) yields a profile structure consistent with that predicted by theory; (b) shows moderately high concurrent validity ($r=.62$) when another well-known level-of-aspiration instrument (North-Hatt free-response technique) is used as the criterion measure; and (c) possesses a high degree of administrative expediency in that it can be both easily and quickly completed by students and easily scored. Haller and Miller concede that the predictive validity of the instrument, its appropriateness for girls and younger subjects, and its value as a counseling tool with students are important research questions which remain to be answered.

Socioeconomic Status as Related to Occupational Aspiration and Choice

No simple, linear correspondence exists between the social-class origins of subjects and their educational-occupational aspiration levels. Relationships between these variables are influenced by factors of age, previous achievement, personal values, and by the reference groups with which subjects are identified. Notwithstanding this complexity, the findings permit certain dependable inferences. There is some evidence that family socioeconomic status is more influential than parent's occupation alone in determining whether the aspiration level of boys is above or below the occupational position of their fathers (Thomas, 1956). In a study of twelfth-grade Michigan boys, Youmans (1956) concluded that "social stratification is more important in the formation of youths' occupational choices than are the types of community, the school, work experience, or certain factors in the home situation." A few years earlier, Hollingshead (1949) had divided his adolescent subjects into five social-class levels and discovered that the vocational choices in each class tended to be those with which the subjects were most familiar, that is, those common to their particular subculture. Hollingshead reasoned that the experiences which were characteristic of the particular class and family culture complexes shaped the notions which his subjects developed about desirable jobs. Research on the relationship between social class and level of occupational aspiration is sometimes flawed, as in a study by Nelson (1963), by the failure to control intelligence since high-aspiring children also tend to have higher I.Q.'s. However, when the effects of I.Q. on the

preferences of high school seniors were controlled, social-class status was still found to be significantly associated with the occupational aspirations of boys and girls (Sewell, Haller, and Straus, 1957).

Few of the studies, of which the foregoing are typical, provide a helpful analysis of the *specific* ways in which the social-stimulus variables associated with social-class level operate in the acquisition of educational and vocational information, biases, and values. Moreover, as is suggested by some of the other studies to be reported here, not all investigators single out socioeconomic status as the dominant influence upon vocational aspiration and choice. Situational and fortuitous circumstances, such as the type of part-time job the student finds or the particular teacher to whom he is exposed, may clearly have a decisive effect on vocational plans.

Interaction effects. Inasmuch as formal education is widely recognized as a major vehicle for vocational attainment and upward occupational mobility, it is pertinent here to examine the influence of family upon educational aspiration. There is general agreement that, from early childhood, the child begins to acquire in the family milieu attitudes and values toward education, concepts of self as a student, and personal habits affecting his task orientation and achievement behavior. Moreover, the assistance the child receives at home with school assignments, the type of school he attends and, in part, the quality of school experiences to which he is exposed, are clearly related to family social-class level. In comparison with lower-class families, the experiences and attitudes which characterize middle-class families are reflected in the positive values, achievement orientation, and educational aims of their children. However, the manner in which socioeconomic status influences the child's educational aspiration level is in no sense simple and has been shown to depend on a number of interwoven contingent circumstances.

A study by Kraus (1964) identifies some of the interaction effects of these contingencies, and suggests how they may influence the educational decisions of youth from different socioeconomic strata. Kraus administered questionnaires to 706 high school seniors in the San Francisco area shortly before graduation. Subjects were divided into lower- and middle-class groups according to occupation of father and they were studied for similarities and differences in educational plans. While middle-class subjects generally evinced higher-level educational aspirations, there were some revealing ramifications of the aspirations of youth from lower-class families. For the latter group, 53 per cent of those with mothers engaged in nonmanual work were planning to attend college; only 29 per cent of those whose mothers were performing manual work had

plans for college. If the mother had worked before marriage, the probability that the youth looked toward college was approximately 50 per cent; if the mother had not worked, the probability dropped to about one chance in three. The educational level of these lower-class parents was likewise shown to have bearing on the educational aspirations of their high school children. For example, for lower-class fathers with some college background, 61 per cent of the subjects were college bound (as contrasted with 41 per cent of all subjects with lower-class fathers). In instances in which lower-class fathers had graduated from high school, the educational level of the mother was shown to be a variable significantly related to the plans of the offspring. In such families, college plans were indicated for 76 per cent of subjects whose mothers had more education than the father; among subjects whose mothers had the same or less education than the father, 44 per cent and 29 per cent, respectively, planned to attend college. Finally, the educational experience of peers and older siblings bore a relationship to the educational aspirations of the lower-class subjects. Eighty-one per cent of those reporting all friends going to college also planned to attend; only 10 per cent of those reporting all friends not going to college planned to attend themselves. Of those lower-class seniors having college-going older siblings, 53 per cent were college bound; half this percentage was found for those subjects without siblings who had gone to college.

In summary, the influence of the family's social-class level upon the educational aspirations of high school youth is complicated by a number of related variables including, among others, (a) father's educational level, (b) mother's educational level compared to father's, and (c) educational level and intentions of peers and older siblings.

Rural-Urban Differences in Educational-Occupational Aspirations

Declining employment opportunities in agriculture is one of the factors which have led sociologists to examine the educational and vocational plans of rural youth. Many writers appear to agree with Youmans (1959) that restrictions upon the social experience of rural youth have an adverse impact on the range and ambitiousness of their occupational goals. Burchinal (1961) cites the research literature that shows lower level-of-aspiration scores to be characteristic of farm boys and rural non-farm boys. In a nationwide sampling of the educational plans of high school seniors, 55 per cent of the male urban students stated they were planning to attend college the following year; only 34 per cent from farm homes were college bound (Burchinal *et al.*, 1962). For those youth planning to farm, the percentage intending to go on to college was small.

Sewell (1964), observing that factors of sex, intelligence, and parental emphasis on education tend to be significantly associated with the urban-rural polarity in college aspirations, attempted to control these variables in his study. His results showed that combining sex, I.Q., and socioeconomic status into a composite control on the relationship between community of residence and college plans reduced the connection between these two variables only slightly. The community-of-residence variable involved eight subsamples of youth from rural areas, small towns, through cities of 100,000 population. Confirming evidence is reported by Sewell and Orenstein (1965). Even when those stating an interest in farming as an occupation were removed from the sample, subjects from rural and smaller communities showed a lower level of aspiration. A combined control on factors of social-class status, sex, and intelligence virtually eliminated the level-of-aspiration score differences between rural and urban females; but for male subjects half the original difference remained. There appear, then, to be cultural and experiential factors associated with the lower educational and occupational aspirations of rural male youth other than those of intelligence and socioeconomic status. It seems highly likely that restricted opportunities for diversified social and occupational experience are among these unanalyzed factors.

As the foregoing analysis indicates, most urban-rural studies of the occupational status of youth, like studies involving other socioeconomic variables, use measures of educational and occupational aspiration as adjustment criteria. It would be erroneous, however, to conclude that the influence of personal history and social environment variables upon occupational behavior ends with specification of goals or with actual entrance into curriculum or job. Many of the experiences associated with pre-employed vocational development continue to influence the career pattern, directly and indirectly, long after entrance into the labor force. For example, while the values associated with family class level affect the decision to go to college, graduation from college has a pronounced influence upon subsequent career achievement which is independent of factors of academic ability and social origin (Eckland, 1965). Yet the same factors of family life that help to shape youth's vocational choice also shape the quality of his performance on the job. Ministers who were treated as equals in childhood, and whose choice of the ministry was endorsed by their mothers, were more successful in their work than ministers with contrasting childhood backgrounds (Allen, 1955).

Precipitants of Vocational Choice

The process of career development is long, and the circumstances which nourish and direct it are numerous and complex, frequently inter-

acting with each other in their effects upon the career pattern. It is futile, therefore, to attempt to identify any single, preeminent influence upon the occupational history. Nonetheless, an interesting line of attack on career research has been concerned with asking subjects to name the chief influence upon their choice of vocation. We may distinguish here between *predisposing factors* in vocational planning, chiefly those ongoing mis-en-scène conditions involving the youth in his social setting as discussed above, and the *precipitants* of vocational choice, that is, the experiences or personal encounters as perceived by the subject which led him to specify a particular occupational goal. Analysis of the retrospective reports of subjects yields four fairly distinct precipitants of choice: (a) outside work experience, (b) school studies and institutional pressures associated with school, (c) parents, and (d) other significant persons.

It is not uncommon for a student to name a job which he has held as being instrumental in the crystallization of his vocational choice. Slocum and Empey's (1956) high school and college women singled out work experience as the most important influence upon their vocational choices. For young rural males, also, the opportunity to work at a particular job appears to have a decisive bearing upon occupational selection (Edlefsen and Crowe, 1960; Slocum, 1956). When this outside experience is gained in a field related to the preferred occupation, it appears to have a more significant effect upon the making of overt vocational decisions in the case of both men and women students.

Experience with particular school subjects is frequently reported by high school and college students as a major influence in establishing or sharpening a work-related interest and in resolving problems of vocational choice. For an entering college student who is vocationally undecided but concerned about matters of planning and choice, it is not unusual to arrive at a tentative choice through edifying experience with a new course as, for example, economics or psychology. On the other hand, students who choose careers in the physical sciences have more often decided upon their occupational goals earlier in life, at least tentatively, and have frequently elected as many science courses in high school as they could schedule (Cooley, 1964). The career choices of British students are also evidently influenced in many instances by school course experience. Wilson's (1953) English secondary students, for example, frequently named preferred school subjects as the reason for their career choices.

Society and the schools confront the student with a series of choice-points which obligate him to make plans and decisions. Such societal and institutional pressures make themselves felt in curricular and voca-

tional choices. Low-achieving school children from lower-class socioeconomic backgrounds often make overt vocational choices a year or two earlier than academically motivated and high-achieving students—not because they are necessarily accelerated in their vocational development but because they leave school earlier and are forced to make personal commitments. It is a common finding of college counseling offices that the vocational indecision rates are high among freshmen enrolled in liberal arts programs within institutions that do not require early curricular decisions. The percentage of those without vocational choice is considerably smaller, however, among freshman in colleges stressing earlier curricular specialization. Both the early curricular and occupational commitments of physical science students and the comparatively high withdrawal rate from physical science curricula are significantly related to the pressures and expectations which typify these fields of training. Among Merit Scholars, changes in choice of major field of study or of vocation have been found attributable to recruiting pressures and actual college experience (Forrest, 1961). The pressures cited here may operate subtly but there can be little doubt that they shape the career patterns of young people, often by restricting the range of experience or choice or by forcing curricular and occupational decisions upon them prematurely.

The dependence of educational-occupational aspirations upon family social-class status has been treated earlier in the chapter. Elder (1963) shows further how the family functions in the development of youth's occupational motives by providing (a) opportunities for achievement, (b) contact with persons who value achievement behavior, and (c) child-rearing practices and learning opportunities that foster the development of achievement potential. It is not surprising, then, that the family is found to be a major precipitant in youth's specification of occupational choice. Burchinal and his associates (1962) cite several studies in which both male and female subjects named parents most frequently as the persons who had great influence on their vocational plans. In their review, they conclude that among personal agents, teachers are named second most frequently, friends third, and counselors fourth. Very similar results were reported by Slocum and Empey (1956) whose female subjects ranked parents as most influential on their decisions, but who also cited teachers, relatives, and friends with some frequency. The order of mention differs somewhat among academically superior secondary-school students. In a survey of 400 outstanding students attending a national high school institute sponsored by Northwestern University, 52 per cent of the subjects stated they had received most help in making

educational and vocational plans from parents, 34 per cent named school counselors, and 30 per cent cited classroom teachers (North Central Association of Colleges and Secondary Schools, 1961).

In very few studies is the percentage of students naming counselors as influential upon vocational choice as large as that reported by the North Central Association. In discussing student attitudes toward high school counselors, Powell (1963) asserts, although he furnishes no substantiating evidence, that most students report having been little helped or influenced vocationally by counselors or say that they have been offered counseling too late. The comparatively low rank of counselor as a source of influence upon occupational decision-making has three possible explanations. One is that the appointment of school counselors on a nationwide basis is a comparatively recent development. In many schools, particularly rural and smaller institutions, professional counseling either has been unavailable to students or available only to small numbers owing to an unfavorable student-counselor ratio. As recently as 1963, there were 537 students in the nation's schools for every counselor (Thompson, 1964). A second explanation can be found in the surveys of school counseling practices which make clear that many school counselors devote considerably greater time to curricular program planning and to assisting students with college application procedures than to student problems of vocational counseling. A third is that student contacts with counselors are often brief and unmemorable and have relatively little impact on attitudes and decisions.

A sharp rise in the number of qualified school counselors is occurring, and counselor-preparation programs appear to be placing more emphasis than formerly upon the vocational planning problems of school youth. It seems reasonable to assume, therefore, that school counseling experiences in the years immediately ahead will have a more prominent place in the vocational development of students. Some evidence is accumulating that counselors as adult-role figures in the school setting are potentially important modifiers of student attitudes. A recent study by Krumboltz and Varenhorst (1965) presented ninth-grade subjects with a series of fictitious statements, informed them that certain of the statements were supported by counselors, others by parents, and the remainder by student peers, then asked them to indicate their degree of agreement or disagreement with each statement (e.g., "To develop greater social poise, one should join a social club in school"). Ascription of the various statements to the three communicator or authority groups was rotated from subsample to subsample such that each fictitious statement was identified, in one subsample or another, with every communi-

cator group. The order of presentation of the statements was also varied from subsample to subsample. An analysis of variance of the students' responses was performed. The finding that the students accorded a higher level of credibility to the statements when they were identified with counselors as the source strongly suggests that students may be highly receptive to the influence of counselors as agents of social reinforcement.

Occupational Inheritance

Another way in which one sees the influences of family and social setting upon occupations is in the succession of some sons to the occupations of their fathers. The phenomenon of occupational inheritance is more common in some fields than in others, as, for example, farming, mining, business proprietorship, and some professions, including medicine. It is probable that the growing complexity of industrial society, the urbanization of American life, the extension of educational opportunities to larger proportions of youth, and increasing geographic and social mobility are bringing a decline in the incidence of occupational inheritance. At present, however, there remains some tendency for the youth in both upper-class and lower-class families to enter the same general fields in which their fathers work. But they do so for vastly different reasons. Gross (1958, 1964) speaks of the *transmission* of an occupation versus the *forced inheritance* of an occupation. In the former, found typically in socially and economically advantaged families, the father deliberately and proudly indoctrinates his son in the beliefs, customs, and practices of his own occupation. He may instruct him in the skills of his work as found, for example, in a profession, craft, or business proprietorship. In the second instance, the son may prefer not to follow in his father's footsteps, but is obligated to do so because of the social or economic restrictions attendant upon his lower-class status. Thus, inheritance of occupation is in actuality a reflection of inheritance of social class.

Rogoff (1953) found that 70 per cent of males in her occupational mobility study were in occupations other than those of their fathers. A more recent study by Duncan and Hodge (1963), which involved more than 1,000 Chicago males, reported a maximum of only 10 per cent occupational inheritance. While the first National Opinion Research Center (1947) survey found the percentage of occupational inheritance to be highest among farmers (84 per cent), there can be little doubt that the decline in farming opportunities has combined with other factors to reduce this percentage drastically. Yet many farm youths continue

to take on a legacy of low educational and occupational aspiration, if not the legacy of farming itself, and this circumstance poses serious problems of economic adjustment for them later on. If, as Duncan and Hodge conclude, formal education is becoming a more potent factor than father's occupation in the son's occupational achievement, then means must be found to broaden and strengthen the educational aspirations of farm youth.

Vocational Development Problems of the Culturally Disadvantaged

The preceding discussion has suggested at several points that membership in a family of lower socioeconomic status may raise difficulties of vocational planning and adjustment for school youth. The impact of severe and protracted cultural restrictions upon educational and occupational socialization processes has recently been the concern of many writers (Himes, 1964; Olsen, 1965; Riessman, 1963).

Attempts to catalog the conditions of psychological and social blight to which seriously disadvantaged youth are exposed include the following: limited life space with grave restrictions upon the experiences, flow of information, and rewards necessary to develop appropriate coping behavior; circumscribed interpersonal relations which limit contact largely to others of the same depressed socioeconomic level or of the same racial or national origin; absence of at least one parent from the home for extended periods of time and a resultant lack of biparental child-rearing experience; absence of successful, achievement-oriented role models among the older children and adults of the community; attitudes of distrust toward the law and law enforcement agents; negative or indifferent attitudes toward school and the potential contributions of education to upward mobility; absence of encouragement from parents and other adults with respect to the development of independence and socially valued skills; lack of recognition of the child's intellectual qualities; poor facilities and teachers in the community's schools; and lack of opportunity for vicarious learning of the meanings and rewards associated with work.

What impact a continued exposure to such conditions of cultural deprivation has on the occupational outlook and vocational readiness of youth is vividly described by Himes (1964) in his characterization of lower-class Negro youth. Despite notions about the value and dignity of work which are promulgated by the schools and society at large, children from disadvantaged homes may learn from their subculture that work is neither good nor pleasant and is to be regarded chiefly as a prerequisite of survival. Because their own reference group has not taught

them what to expect from the outside world of work nor how to act as part of it, the shop or office is likely to be perceived as a strange and threatening social environment. Because of their impoverished education, such children are likely to be functional illiterates and to have difficulty understanding and following orders, even when they are fortunate enough to find employment. Thus, the net effect of cultural deprivation, in Himes's view, is to bestow upon youth "a trained unreadiness for smooth transition from family, school, and neighborhood to the social world and technical roles of work" (Himes, 1964).

New programs aimed at improved methods of training disadvantaged youth for a more effective and productive work role have stressed (a) the teaching of basic social and educational skills in direct conjunction with the teaching of specific work skills, (b) training under job-simulated conditions, including compensation for work performed, but under close supervision, and (c) continuous opportunity for counseling in an atmosphere which recognizes that the trainee already possesses a set of values and beliefs of his own that cannot be ignored if he is to be reached and helped (Kohler and Freedman, 1962; Meyer, Borgatta, and Jones, 1965; U.S. Office of Education, 1962).

Recent congressional enactments, such as the Vocational Education Act of 1963 and the Economic Opportunity Act of 1964, have established the bases for a variety of new research and training programs to deal with the obstinate educational and vocational problems of disadvantaged youth. Among these are Operation Head Start for preschool children, the Youth Opportunity Centers, and new experimental training programs for the noncollege bound. A number of promising research and evaluation studies on programs with a prevocational emphasis are currently under support by the Bureau of Research in the U.S. Office of Education. At this writing, however, it is too early to discern the main directions which future educational strategy will follow to accelerate and strengthen the vocational development of lower-class youth.

One facet of the occupational motivation of lower-class youth that merits further study is the discrepancy between occupational aspirations (i.e., preferences) and occupational plans (i.e., expectations). At least one study (Stephenson, 1955) would seem to question the urgently expressed and unqualified recommendation of some authorities that the level of aspiration of lower-class youth be raised. Stephenson found slight differences, as have some others, between the occupational aspirations of his upper-class, ninth-grade subjects and those subjects whose fathers' jobs fell in the lower socioeconomic groupings according to

Edwards' (1943) classification. However, when Stephenson asked his students to state their occupational plans, it was those of lower-class status who lowered their occupational aspirations most. The occupations they said they planned to enter approximated their fathers' occupations more closely. Thus, for some youth at least, the problem of realistic vocational planning may not rest so much with the need to raise the level of aspiration as with the need to help them utilize personal, educational, and other social resources to maximize chances for improved socioeconomic status.

PSYCHOLOGICAL INTERPRETATIONS OF VOCATIONAL DEVELOPMENT

Paradoxically, current theory making and research in vocational development are at once outgrowths of and reactions against the classical occupational psychology which is anchored in the study of individual differences. Originating in the pioneering psychometric work of men like James McKeen Cattell (1890) and spurred later by the testing achievements of American army psychologists during World War I (Yerkes, 1919), vocational psychologists adopted a trait-measurement model for the study of appropriate occupational choice. By means of this model, objectively assessed dispositional traits (e.g., intelligence, special aptitudes, vocational interests, personality characteristics) are matched to the functional properties of jobs, and probabilistic statements are made concerning the individual's prospective success or failure in certain occupations. Trait-measurement psychology has contributed a vast number of studies on the prediction of work-related behavior (e.g., occupational choice, performance in vocational training, performance on the job) and has exerted a profound influence on the strategy of vocational guidance both in the United States and abroad.

Despite its historical importance and widespread acceptance by guidance practitioners, the trait-measurement approach embodies a number of serious limitations. First, there is the tendency to confound the prediction task in the choice of a suitable vocation with that in personnel selection work. In the latter instance, the task typically involves a number of applicants and a single, rather well-defined occupation whose performance parameters can generally be known. These conditions do not ordinarily obtain in vocational counseling, in which one person's characteristics must be statistically related to a large number of generic occupational performance sets. Secondly, the prediction model in classical vocational psychology is derived from a static picture of behavior.

Measured traits are generally assumed to be fixed and resistant to change. Those who employ this model seldom make serious inquiry into the dynamic origins of the personal attributes which are used as predictor variables or into the means by which they might be systematically cultivated or modified. Thus, in the classical mode, research on the causal relationship between antecedent and consequent conditions of vocational behavior has either been lacking or gravely deficient in adequacy of design.

Finally, the preoccupation of the traditional research model with the pragmatic aspects of predicting training and job performance precluded serious attention to sophisticated conceptual formulations. There were few serious attempts to represent vocational planning and choice processes in motivational, developmental, and learning terms, or to account for them as special instances of broad, generalizable theories of behavior. Over the first half of the century, trait-measurement psychology remained largely untouched by the maturing family of behavioral sciences, neither drawing in a significant manner from their insights in theory making and research nor contributing to their understanding of developing youth as a potential worker.

Emergence of a developmental emphasis. It is difficult to establish a chronological demarcation between the simple, trait-measurement interpretation of occupational behavior and the emerging, dynamically oriented developmental conceptions. Elsewhere, the present writer has given brief accounts of the rise of the new approach, commonly referred to as vocational development or career development, as this emphasis was reflected in professional papers which began to appear in the early 1950's (Borow, 1959, 1960). There were, of course, important precursors of the new research. Super (1957), who is generally conceded to have given principal form and substance to the reconceptualization of occupational behavior, has traced the taproots of the movement to such earlier contributions as those which dealt with the life stages concept (Buehler, 1933); the growth of occupational thinking in children (Lazarsfeld, 1931); sociological notions of occupational mobility (Davidson and Anderson, 1937); and the concept of the career pattern (Miller and Form, 1964).

Brayfield (1964) has identified the chief distinguishing feature of the new emphasis as "an ambitious attempt . . . to link research to theoretical formulations." By one means or another, current theory making and research draw upon principles of concept construction and research design that are closely identified with the study of human development. The work of Buehler (1933) and Lazarsfeld (1931) in Europe clearly

suggested the fruitfulness of a genetic approach to the study of vocationally relevant behavior in children. In the United States, Carter (1940, 1944a, b) published a series of papers showing that research problems centering on vocational aspiration and choice were developmental in character and could be profitably attacked within the framework of developmental psychology. Working at about the same time as Carter, Bordin (1943) advanced a dynamic theory of vocational interests and undertook limited testing of parts of his developmental formulation. Super (1942) had by then discovered Buehler's work on psychological life stages and had published a volume containing intimations of his later systematic account of vocational development. A fuller and more explicit set of statements on the social maturation of vocational development appeared in several papers published by Super in the early 1950's (Super, 1951, 1953, 1954). An influential volume, *The Psychology of Careers* (Super, 1957), presented a comprehensive summary of the literature on occupational behavior, integrated within his revised and extended theoretical framework. Super's work and that of Tiedeman, O'Hara, and Baruch (1963) in the Harvard Studies in Career Development represent the initial two major thrusts in programmatic research on vocational development.

In contrast with both trait-measurement and sociological approaches to occupational behavior, the identifying marks of present-day psychological conceptions of career development may be said to fall into four general groups: (a) There is more explicit attention to the need to establish a theoretical framework for generating vocational hypotheses and interpreting empirical findings. (b) Closer attention is being paid to the isolation and systematic measurement of stimulus variables thought to be associated with the development of career behavior—for example, identifiable types of child-rearing climate, patterns of course work and scholastic experience, avocational experiences, and opportunities for counseling. (c) There is a greater concern with the childhood roots of vocational motivation. (It may well be argued that such concern is still not as deep or as effectively expressed in theory making and research as the importance of the topic warrants.) (d) The assumption has been rejected that data on aspiration and choice represent the only significant outcome variables in the study of the occupational behavior of pre-employed youth. The concept of occupational behavior is broadened to include such mediating or transitional criteria as avowal of acceptance of responsibility for one's personal planning, knowledge and use of sources of occupational information, overt planning for one's future, and sequence of decisions in the career pattern chain (Crites,

1961; Gribbons and Lohnes, 1965a, b; Super and Overstreet, 1960).

Holland (1964) has provided a carefully documented review of psychologically oriented programs of research on career development in which he treats the contributions of Super and his associates at Columbia Teachers College, Roe at Harvard University, Tiedeman in the Harvard Studies in Career Development, Flanagan at the American Institute for Research, and Holland at the National Merit Scholarship Corporation.

While the broad-gauged reconceptualizations of these workers have attracted considerable attention, a precautionary note is in order. Because of the appealing integrative flavor of such theoretical systems and because they seem to explain so much, there is a persistent tendency among counseling psychologists and vocational guidance personnel to misconstrue postulate and hypothesis as fact. That the existing body of credible empirical principles in vocational development is still a modest one makes the temptation to commit this error even stronger.

There are, nevertheless, virtues as well as risks in current systematic interpretations of career behavior. First, by offering broadly integrative models, they bring the study of youth in vocational development into the mainstream of behavioral science and allow readier access to the insights and *modus operandi* of related disciplines. Descriptions and explanations of vocationally relevant behavior are thus being evolved more frequently within the framework of personality development and organization. Secondly, the newer and broader conceptual systems have suggested a wide-ranging assortment of promising research issues, a condition that has unmistakably revitalized psychological research on occupational behavior. Three systematic views having an influence clearly visible in current writing and research are those associated with Eli Ginzberg, Anne Roe, and Robert Havighurst. Each is described briefly below.

Ginzberg's Approximation to a General Theory

The studies of Ginzberg and his associates (1951) at Columbia University provide but one illustration of a dilemma commonly faced by workers in the field. They require an appropriate model of occupational behavior as a framework of research but fail to find one in the psychological literature. Ginzberg, an economist, assembled an interdisciplinary team which developed and partially tested a theoretical model of vocational choice—one which has spurred a number of studies on younger children by other investigators, such as those by O'Hara (1959, 1962). Ginzberg has correctly regarded his model as an initial approach to a

more comprehensive theory, an observation that appears sometimes to have escaped others who have used the model.

Ginzberg and his associates premised their investigation on the belief that the making of a vocational choice is a developmental process. Using a cross-sectional sampling technique, the team selected 64 upper-middle-class subjects, equally distributed by school grade-level subsamples from sixth grade to advanced graduate study. Data were collected by a semistructured interviewing method and were analyzed for evidence of age-related stages of thinking about self in relation to the process of vocational choice.

Ginzberg concluded that the decision-making process can be divided into three principal psychological periods. In the *fantasy* period, extending to approximately age eleven, the child's thinking about occupational choice is motivated chiefly by subjective considerations. He does not relate the task of choosing a vocation to the assessment of intellectual capacities and other personal qualifications, and appears incapable of structuring the problem in terms of the limitations and opportunities of the objective world. His verbalized vocational preferences are reflections of his limiting occupational stereotypes, and he appears to assume that he can enter any occupational field simply by designating it.

The second major period, the *tentative* period, extends from the approximate ages of eleven to seventeen. The child's choice-behavior is chiefly distinguished by an increasing awareness that certain qualifications exist for occupational entry and that these can be stated in terms of certain personal attributes. He tends to couch his tentative choices and his reasons for them in terms of his impressions of his own interests, capacities, and personal values. Ginzberg believes that the child's rationalized basis for choice shifts predictably as he moves through adolescence. It progresses from a consideration of compatible interests as the sole relevant qualification for job entry to a consideration of ability and training prerequisites (ages thirteen and fourteen); then to a consideration of the place of personal values in choice (ages fifteen and sixteen); and, finally, at about age sixteen or seventeen to a recognition of the need for a synthesis of interest, ability, and value factors in relation to one's goals. At about age seventeen, the youth finds himself in a transition stage in which the compelling realities of the outside world begin to influence his thoughts about occupational choice.

The *realistic* choice period, which the youth enters toward the end of his seventeenth year, is characterized by an attempt to work out a suitable vocational plan by synthesizing subjective (i.e., personal trait

factors) and external (i.e., economic) factors. Ginzberg analyzes the reality period into three chronologically ordered substages: *exploration* (acquiring experiences, such as course tryouts, as a basis for the resolution of vocational choice); *crystallization* (attaining readiness to terminate exploratory activities and to make a commitment to choice); and *specification*. The last represents for Ginzberg a process of closure, in which the individual's willingness to commit himself is overtly expressed by his selection of a particular occupation within a broader job grouping. In this final substage, Ginzberg believes, the individual strives to link his decision to reality.

Ginzberg's sample of women was too small, and too highly selective with respect to education and economic status, to permit confident generalizations. In so far as his limited data for women permit, they suggest that the fantasy and tentative periods in the choice-making process parallel those found for the boys—but that girls do not see college as helping in the resolution of the problem of occupational choice as clearly as do boys. Ginzberg speculates that the young woman's movement through the substages of the reality period is complicated by the contingencies of marriage and the economic status of the future husband, if she should marry. Since both contingencies are generally still uncertain at the end of the tentative choice period, she has no clear picture of how these marital factors will affect her life and hence cannot arrive at a clear resolution of vocational choice.

In summary, Ginzberg regards the socially decisive act by which one ultimately enters the world of work as the culmination of a series of sequentially ordered decisions which span a minimum period of six or seven years and which usually require at least ten years for their completion. In working out his choice, the individual stands in conflict between his subjective desires (i.e., psychological motives) and the demands and restrictions imposed by social and economic reality. The occupation he settles upon thus represents a compromise with reality, and the process by which the occupational choice is ultimately specified is, according to Ginzberg, an irreversible one. While the use of the term "irreversible" is unfortunate in that it denotes a rigidity in the choice-making procedure imposed by conditions of the early career history, Ginzberg uses it essentially to mean that access to alternate choices narrows as the pressures of reality and ego defense become more insistent. His interpretation is not without support. That restrictions upon the effective range of possible choice are progressive through the time-extended vocational planning process is a condition noted, following Ginzberg's report, by a number of other observers (Blau *et al.*, 1956;

Caplow, 1954; Nelson, 1963; Rosenberg, 1957). This is a problem related to the phenomenon of *subjective occupational foreclosure*, a topic that will be treated briefly in a subsequent section.

Roe's Hypotheses Regarding Early Child-Rearing Climate and Vocational Choice

Roe, a clinical psychologist, has been struck by the significant psychological role that occupation assumes in human experience. Like Brayfield (1961, 1964), she has contended that general psychological theory has much to gain from the study of work motives and satisfactions (Roe, 1956). Failing to find an existing theoretical model to suit her research purpose, she developed her own by adopting relevant principles from developmental and motivational psychology.

As a framework for her studies, Roe arranged occupations in a two-dimensional matrix. One dimension, termed "Groups," distributes occupations according to primary focus of work activity involved (e.g., Science, Service, Outdoor). Roe's Groups correspond roughly to occupational interest families and, in fact, partially reflect the work in factorization of vocational interests. The second dimension, called "Levels," establishes a hierarchical arrangement of occupations within each Group according to training and skill requirements. The result is a two-way categorization of occupational fields in an 8- x 8-celled table in which contiguous Groups hold a closer functional relation to one another than noncontiguous Groups. At the suggestion of Moser, Dubin, and Shelsky (1956), Roe reduced her hierarchy of Levels to six and thus simplified her occupational classification scheme to an 8- x 6-celled arrangement, as shown in Table 1.

Roe next undertook a study of the research literature in a quest for significant psychological attributes common to the occupations within each Group-and-Level cell. Her subsequent activity, which may be said to represent her primary research objective, involved a search for significant life experiences and motives that shape the choice of certain occupational fields within her functional classification scheme (i.e., occupations grouped by common worker functions and worker attributes). Roe drew upon Maslow's (1954) theory of the prepotency of needs as a means of relating personality to vocational choice, but her principal assumptions and hypotheses derive from the potential differentiating influences of early family experience upon work motives (Roe, 1957). Reasoning that the directions which psychic energy takes are determined by the constellation of satisfactions and frustrations met in the nexus of early childhood experience, Roe hypothesizes that the in-

TABLE 1. TWO-WAY CLASSIFICATION OF OCCUPATIONS

Level	Group							
	I. Service	II. Business Contact	III. Organization	IV. Technology	V. Outdoor	VI. Science	VII. General Cultural	VIII. Arts and Entertainment
1	Personal therapists Social work supervisors Counselors	Promoters	United States President and Cabinet officers Industrial tycoons International bankers	Inventive geniuses Consulting or chief engineers Ships' commanders	Consulting specialists	Research scientists University, college faculties Medical specialists Museum curators	Supreme Court Justices University, college faculties Prophetes Scholars	Creative artists Performers, great Teachers, university equivalent Museum curators
	Social workers Occupational therapists Probation, truant officers (with training)	Promoters Public relations counselors	Certified public accountants Business and government executives Union officials Brokers, average	Applied scientists Factory managers Ships' officers Engineers	Applied scientists Landowners and operators, large Landscape architects	Scientists, semi-independent Nurses Pharmacists Veterinarians	Editors Teachers, high school and elementary elementary	Athletes Art critics Designers Music arrangers
2	YMCA officials Detectives, police sergeants Welfare workers City inspectors	Salesmen: auto, bond, insurance, etc. Dealers, retail and wholesale Confidence men	Accountants, average Employment managers Owners, catering, dry-cleaning, etc.	Aviators Contractors Foremen (DOT I) Radio operators	County agents Farm owners Forest rangers Fish, game wardens	Technicians, medical, X-ray, museum Weather observers Chiropractors	Justices of the Peace Radio announcers Reporters Librarians	Ad writers Designers Interior decorators Showmen
	Barbers Chefs Practical nurses Police men	Auctioneers Buyers (DOT I) House canvassers Interviewers, poll	Cashiers Clerks, credit, express, etc. Foremen, warehouse Salesclerks	Blacksmiths Electricians Foremen (DOT II) Mechanics, average	Laboratory testers, dairy products, etc. Miners Oil well drillers	Technical assistants	Law clerks	Advertising artists Decorators, window, etc. Photographers Racing car drivers
3	Taxi drivers General house-workers Waiters City firemen	Peddlers	Clerks, file, stock, etc. Notaries Runners Typists	Bulldozer operators Deliverymen Smelter workers Truck drivers	Gardeners Farm tenants Teamsters, cow-punchers Miner's helpers	Veterinary hospital attendants		Illustrators, greeting cards Showcard writers Stagehands
	Chambermaids Hospital attendants Elevator operators Watchmen	Messenger boys		Helpers Laborers Wrappers Yardmen	Dairy hands Farm laborers Lumberjacks	Nontechnical helpers in scientific organization		

(Reproduced from Roe, A. *The Psychology of Occupations*. New York: Wiley, 1956, p. 151.)

dividual seeks out the occupational fields which are compatible with his resultant need structure. She identifies three comparatively divergent psychological climates of parent-child relationship in early life. She labels these: (a) emotional concentration on the child (overprotecting or overdemanding); (b) avoidance of the child (neglecting or rejecting); and (c) acceptance of the child (casual or loving). In these parent-child relationships, Roe believes it is the basic parental attitudes toward the child rather than specific parental techniques which shape the needs and motives later given expression in adolescent and adult life, including those that underlie the making of vocational choices.

Roe's conceptual scheme for relating patterns of early child-rearing climate to certain categories of occupations within her classification scheme is presented in Figure 1. It is possible to generate and test empirically a variety of hypotheses from this model. In fact, Roe and a number of other workers have used the scheme for this purpose. For example, Roe has hypothesized that a child who experiences parental avoidance behavior in early life will show a high order of preference for occupations that do not involve orientation toward persons, such as those found in science and the technologies. Of the many studies which have involved tests of Roe's major hypotheses, few have yielded clear confirming evidence (Grigg, 1959; Hagen, 1959; Switzer *et al.*, 1962; Utton, 1962).

Roe (1964) has concluded from these and her own studies that her major general hypothesis, namely, that vocational choice is predictable from knowledge of type of parental attitude in childhood, is not substantiated. She believes, however, that the negative findings are at least partly attributable to the grossness of the research instruments and the simplicity of the experimental designs. For example, she sees a need for more sensitive measures of parental attitudes, and the desirability of obtaining separate measures for the attitudes of both parents. We may add that the practice of obtaining data on family atmosphere in early life by means of retrospective reports may obscure whatever relationships actually exist, although Roe and Siegelman (1963) have recently tried to meet this difficulty through the construction and testing of a detailed parent-child relations questionnaire.

Perhaps the most serious question about Roe's hypotheses concerns the oversimplified manner in which they represent the relationship between early home experience and vocational choice. No account is taken of the interaction effects of the many factors contributing to occupational selection. Economic determinants are ignored; also, the many fortuitous circumstances, while they cannot be known in advance and hence cannot fit simple theory, doubtless operate in concealed ways

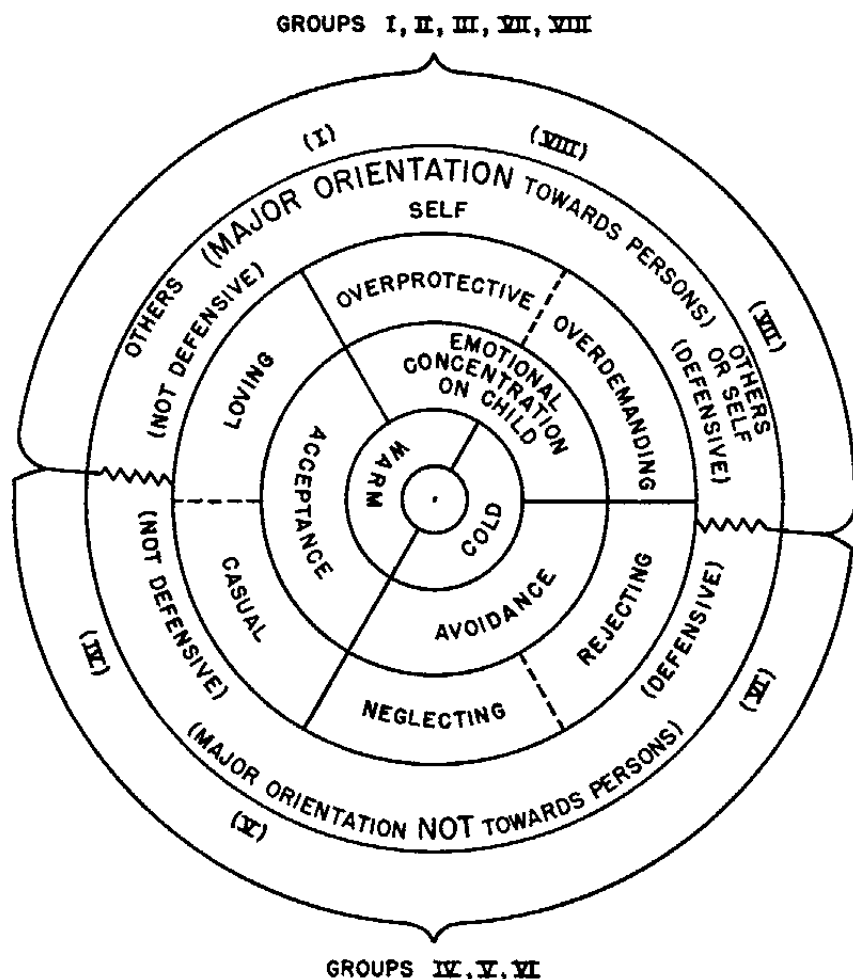


FIGURE 1.

(Reproduced from Roe, A. Early determinants of vocational choice.
J. counsel. Psychol., 1957, 4, 216.)

upon the shaping of vocational attitudes and choice. Roe (1964) has recently conceded as much when she writes, "Personality is only one broad factor in the decisions made at any occupational choice point . . . any predictions must take external variables . . . into account." In reflecting upon the relationship of personality structure to occupational direction, Roe observes that vocational development is a process involving many choice points and concludes that "practical career pre-

dictions at our present stage of knowledge may not go farther than from one choice point to the next." Both empirical and logical support for this position come from Cooley's (1964) work on the prediction of choice at successive stages in the educational careers of scientists, and from Lohnes' (1965) case for the application of Markov chains to problems of predicting career decisions.²

Interdependency of personality and career. Few if any workers take the position that the failure of research to reveal personality variables as clear indicators of occupational behavior means that personality is irrelevant to vocational aspiration, choice, and adjustment. The shared belief holds, instead, that relationships do exist but are much more complex than had been supposed. Research on the association between personality and occupation occasionally yields interesting results with regard to subsidiary hypotheses. For example, Roe and Siegelman's (1964) study on the origin of interests in children tested the assumption that the amount of love and attention received from parents in childhood is positively related to the degree of orientation toward persons in adult life. While little or no support was found for the main hypothesis—namely, that affectionate parent-child relationships are indicative of the choice of person-oriented vocations or college fields of study—other types of positive relationships were verified. Small but significant correlations were found between some of the measures of early social experience and adult preference for social activity. Further, the results tended to show that a subject who chooses an occupation that runs counter to the established occupational stereotype for his or her sex will likely have had an unusual early history of stressful relations in the home (e.g., parental conflict, lack of affection). Such a history, Roe and Siegelman found, held for many of their male social workers and female engineers.

Both Nachmann (1960) and Segal (1961) used psychoanalytic theory to hypothesize generalized personality trait differences between divergent student occupational groups, differences which they viewed as springing from characteristic childhood experience. Both found considerable support for many of their theory-deduced principles. To illustrate, Nachmann's data substantiated the hypothesis that, as children, law and dental students had strong, dominant fathers whereas social work students had fathers who were weak, inadequate, or absent. Ac-

² Markov chains provide a mathematical means of representing a continuing psychological process such as the development of educational and career patterns. Lohnes contends that an effective Markov model is capable of indicating that part of the variance at each transition or choice point which must be explained by making new predictions from external, independent variables.

ceptance of aggressive impulses was significantly found to characterize the childhood homes of the law students, whereas such impulses were repressed in the behavior of dental students as children.

Research has probably been too preoccupied with personality traits as determinants of occupation and has often slighted the obverse relationship, that is, the examination of occupational attitudes as contributors to broader personality theory. Holland's (1958, 1959, 1962, 1963) work represents one kind of excursion into new terrain. He has developed and assiduously tested a theoretical model of vocational choice behavior which he regards also as a conceptual tool for personality study. The model includes a six-category typology of personality—Realistic, Intellectual, Social, Conventional, Enterprising, and Artistic—and a second typology of six psychosocial environments which correspond in their characteristics and demands to the six personality types. The test subject's "pattern of personal orientations" (i.e., his scores on the six personality types) is determined by his responses on a number of instruments, among them Holland's (1958) Vocational Development Inventory, consisting of lists of occupational titles. In working out his vocational choice, the individual, according to Holland, favors those environments that are harmonious in their characteristics and demands with his own pattern of personal orientations.

Those interested in exploring the relationship of early-developing traits and characteristic response styles to occupation need to be concerned both with personality as an influencer of vocational choice and as a complex variable in adjustment to work after the choice has been made. As a federal agency has stated in giving advice to job applicants, "Repeated studies show that more workers lose their jobs due to poor character qualities than to lack of skill" (U.S. Employment Service, 1953). Much remains to be discovered about the nature of those traits of personality which may be assumed to contribute importantly to work adjustment. Little formal evidence is yet at hand, for instance, concerning how the development of achievement-oriented behavior in children relates to post-school career behavior. Yet the work of McClelland and others on the achievement motive suggests that its relation to occupational behavior would be a promising field of inquiry (McClelland *et al.*, 1953). The surmise offered by Levin (1949) on the way personality may operate in relation to vocational adjustment also merits attention. He writes ". . . many of the emotional and personality requirements of various occupations are fundamentally based on class-status factors and not on job requirements, as such. Thus the professional is expected to appear, behave, feel, and think quite differently than the skilled worker, and even more differently than the semiskilled

or unskilled worker." For Levin, class-status factors rather than the formal job duties per se may dictate which personality traits the worker is expected to exhibit on the job.

Adolescence and the Concept of Vocational Developmental Tasks

Havighurst (1953) introduced the notion of the "developmental task" to signify a progression of necessary learning experiences that the individual meets in his successive life stages and through mastery of which he acquires the coping techniques that permit movement toward increasing degrees of self-control and effective personal autonomy. There are striking resemblances between Havighurst's developmental task concept and Erikson's (1950) idea of psychosocial tasks. In the sense that the developmental tasks of a given life stage in a given culture occupy substantial amounts of the individual's time and psychic energy, their study contributes to our knowledge of normative behavior and to improved insight into the dominant motives associated with that life stage. While an urgent need remains to generate unambiguous operational indicators of the several developmental tasks that Havighurst has proposed for each life stage, a number of theory makers evidently continue to find the developmental task notion useful in building explanations of behavior. Super and his associates (1957), reporting on the longitudinal Career Pattern Study, suggest that the orderly patterning of behavior which marks vocational development can be better understood by invoking the concept of developmental tasks.

Recently, Havighurst (1964) established a six-stage schema of vocational development by merging the concepts of vocational life stages and vocational developmental tasks (Super *et al.*, 1957) and Erikson's (1950) notion of psychosocial tasks. The ages and principal developmental tasks which correspond to the first four stages of vocational development in Havighurst's system are as follows:³

<i>Age</i>	<i>Stage of Vocational Development</i>	<i>Representative Vocational Developmental Task</i>
5-10	Identification with a worker	Concept of working becomes an essential part of the ego ideal
10-15	Acquiring the basic habits of industry	Learning to organize one's time and energy to get chores and school work done
15-25	Acquiring identity as a worker	Choosing and preparing for an occupation
25-40	Becoming a productive person	Mastering the skills of one's occupation

³ This list represents an adapted and somewhat abridged version of the schema presented by Havighurst.

Havighurst, like Erikson and Super, believes it is important that adolescent striving be understood in part as an attempt to acquire an occupational identity. Even while recognizing that the nature and meaning of work are changing rapidly, he concludes that vocational development will continue to occupy a significant place in the life experience of youth.

Realism in Vocational Aspirations and Preferences

The concept of "realism" as applied to career planning behavior has been given several interpretations in the professional literature. Ginzberg (1951), as has already been mentioned, has used the term to describe the period in which the subject synthesizes subjective factors with those of objective reality in exploring, crystallizing, and specifying his occupational choice. In the classical actuarial or trait-measurement model of vocational guidance, "realism" has been principally used to connote the agreement between the individual's objectively ascertained trait composition and relevant personal history, on the one hand, and the requirements (including training) which have been formally established as conditions for entering the chosen occupation, on the other. The fact that investigators do not always specify the particular sense in which the term is used, and sometimes fail to be explicit about the rationale underlying their choice of criteria, makes the literature on realism of vocational aspirations and preferences difficult to interpret.

The findings of workers who have been careful to specify their indicators of vocational realism are in general, but not universal, agreement that behavior progresses toward increased realism during early and middle adolescence. Using the Concept Test on Crites' Vocational Development Inventory, Hall (1963) observed that in their self-descriptions, high school seniors, in comparison with sophomores and juniors, more frequently described themselves as individuals who (a) recognize the necessity for making a vocational choice, (b) see the importance of various relevant factors in working out a suitable choice, and (c) are capable of making reality-based choices.

Using elements of Ginzberg's (1951) developmental model, O'Hara and Tiedeman (1959) studied ninth-, tenth-, eleventh-, and twelfth-grade private school boys and found evidence of a progressively closer correspondence between the tested and self-estimated traits of the subjects from grade to grade. O'Hara and Tiedeman concluded that a process involving the progressive clarification of self concepts occurs during this period which contributes to the making of realistic vocational choices.

Corroborating evidence is furnished by Douvan and Adelson (1966) whose sixteen-year-old boys in a national sample, as compared with

fourteen-year-old boys, (a) are more frequently able to state a vocational goal, (b) are more likely to name a specific occupation (e.g., chemist) rather than a broad occupational category (i.e., scientist), (c) give a larger number of rational explanations to support their choices, and (d) have more realistic conceptions of the preparation demanded by their chosen fields.

High aspiration level as a lack-of-realism indicator. A common basis for charging adolescents with lack of realism in vocational planning is the disparity between the percentage of subjects in any sample who aspire to professional-level jobs and the base rate for professional entry known to exist for the socioeconomic stratum from which that sample has been drawn. Owing to the appealing social image commanded by most jobs classified as professions, the percentage of secondary school students who name professional fields as their vocational objectives often substantially exceeds the percentage who will complete training for and enter this competitive class of occupations. To illustrate, a survey involving a stratified national sample of 660 boys, age fourteen to sixteen, asked, "What kind of work would you like to do as an adult?" (Survey Research Center, 1955). Jobs classified as professions were named by 40 per cent of the respondents. Yet, men in professional jobs at that time probably constituted not more than 10 per cent of the nation's male labor force. A similar finding with thirteen- and fourteen-year-old subjects led Dufty (1960) to conclude that his subjects held to a level of aspiration considerably beyond their probable level of occupational attainment. Also, Douvan and Adelson (1966) report that the realistic and high achievement-motivated, upward-aspiring subjects in their sample of fourteen-to-sixteen-year-old boys chose vocational goals only moderately advanced in status above the jobs held by their fathers. In contrast, the unrealistic, upward-aspiring subjects named occupations far different in status from their fathers' positions.

It is by no means always legitimate, however, to use high aspiration level as an indicator of lack of realism. As Thomas (1956) has pointed out, the market for workers in the high-status occupations so attractive to adolescents may frequently be less oversupplied than the low-status occupations they tend to reject. The vocational preferences of adolescents may thus be more nearly commensurate with economic opportunity than commonly supposed. The barrier to the realization of job aspiration frequently centers on educational requirements rather than on unfavorable worker supply-and-demand ratios. Many occupations, Thomas contends, restrict entrance to candidates of high intelligence less because performing the actual work requires it than because the established program of formal schooling demands it. Thus, lack of real-

ism may lie as much with the way society shapes the course of occupational entry as with the immaturity of the aspirant.

Realism and problems of planning and choice readiness. A related line of evidence stems from inappropriate educational implementation of the career choice. Counselors and research workers alike report that students frequently have educational plans that are too modest for achievement of their high-level occupational goals. In the University of Michigan Survey Research Center study cited above, only 18 per cent of the adolescent boys were judged to have a clear picture of the path leading to their preferred occupations. Further evidence of inadequate educational planning in preparation for the preferred occupation is supplied by the Career Pattern Study:

The specificity of planning was . . . low; more than half of the ninth-graders had apparently done little about getting information on which to base high school plans. About one-third of the boys made no mention of appropriate high school plans related to their preferred occupation, and post-high-school planning was not very different (Super and Overstreet, 1960, p. 149).

In the American culture, ninth-grade students are commonly expected to make decisions about the senior high school curriculum they intend to pursue (e.g., college preparatory, commercial, vocational) and, accordingly, their school counseling typically emphasizes giving assistance in the formulation of a specific vocational objective. Yet Super and Overstreet (1960) conclude that the vocational maturity of students at this grade and age level is sufficiently undeveloped, the vocational preferences as yet so unstable, and student readiness for dealing with problems of specific goal attainment as yet so limited, that counseling which focuses upon the making of specific plans and choices may be a mistake. This belief is now rather widely shared among counseling psychologists. If valid, it is an inference that holds serious implications for the aims and functions of school counseling.

GENESIS OF PRODUCTIVE BEHAVIOR AND OCCUPATIONAL MOTIVES IN YOUNGER CHILDREN

The position was taken at the beginning of the chapter that occupationally relevant behavior is initiated in the context of early social experience and can profitably be examined as a developmental process. Since the young child lacks immediate confrontation with work as a formal institution, only indirect observation of the growth of occupa-

tional behavior is possible. Nonetheless, the study of mastery behavior in early childhood would appear to have considerable promise for understanding how concepts of self as a productive person in a work-centered society are acquired. The assumed relevance of the achievement motive to occupational behavior has already been noted. Pertinent, too, are notions centering on the development of impulse control in young children and the ability to delay gratification of needs.

Closely related constructs which hold promise for fruitful study of early stages of vocational development are *competence* and *coping behavior*. White's (1959) analysis of competence or *effectance motivation* conceptualizes the process by which the child learns to deal effectively with his environment, and implies possible links with subsequent productive behavior in school and job settings. Murphy (1962) is concerned with the observation of strikingly similar phenomena in her work on the Coping Project at the Menninger Clinic. She describes *coping behavior* in terms of the child's efforts to satisfy cognitive needs, to explore his environment, to participate in (rather than to avoid) what is going on around him, and to increase his mastery of the surrounding world.

Mussen and associates (1963), in citing evidence on the effects of early training in independence, assert that mastery behavior is already common in the behavior of the five-year-old child, but they note the paucity of research which focuses upon achievement motivation with subjects of this age. Contending that early achievement behavior is one of the most stable attributes of personality and that it serves as an indicator of the child's later achievement behavior, Mussen, Conger, and Kagan offer this proposition: "The child who enters school with a desire to do well is likely to develop into the adult who is concerned with intellectual competence." What this implies in occupational terms is specified by Super (1957), who writes: "Habits and expectations of success in the childhood family constitute a basis for later vocational success. The person who grows up in a home in which he is given experiences of success (and) in which his successes are rewarded . . . develops habits of success which carry over into school, social life, and work."

Support for the foregoing claims comes from well-designed longitudinal studies which attempt to relate achievement behavior as exhibited in preschool children to task-oriented behavior in adolescence and adulthood. Although such studies are still comparatively few, their potential yield is suggested by the work of Moss and Kagan (1961). Using subjects from the Fels Research Institute's longitudinal popula-

tion, these investigators contrasted primary school and young elementary school children who exhibited mastery behavior (i.e., independent achievement-oriented behavior) with children of comparable grade placement who exhibited recognition-seeking behavior. They concluded cautiously that striving in young school children, based on the need to achieve a self-imposed ambitious intellectual goal, may be a reasonably good indicator of achievement behavior in adolescence and adulthood.

Occupationally-Relevant Research Findings with Younger Subjects

Maccoby (1962) hypothesized that the preferences of middle-class children for middle-class occupations can be accounted for on the basis of preference for authority roles, a preference presumably reflecting middle-class values. Her results with sixth-grade boys furnished modest support for the hypothesis. The study suggests that the children of middle-class and upper-class families favor occupations which provide opportunities for training, supervising, or controlling others.

Several other research reports shed some light on the effect of parental role modeling upon life style and occupational preparation. Maccoby (1961) presents some evidence that young children acquire a set of adult-like response tendencies by parental imitation and that these tendencies express themselves in interactions with peers later on, even when pressures from the peer group call for other behavior. O'Hara (1962), in a study of fourth-, fifth-, and sixth-grade pupils within the conceptual framework of Ginzberg's occupational choice model, reported finding more fantasy choices among boys than among girls. He concluded that the reasons for choice given by the subjects suggest that (a) social experience provides girls with more effective like-sexed role models and that (b) girls have enacted early in their behavior the roles of mother, teacher, and nurse and hence have a better initial understanding of their possible future careers.

Earliness of vocational choice. O'Hara's inference is not to be construed as meaning that all stages of vocational development leading to decision making are accelerated in girls. We have already observed that the uncertain contingency of marriage may pose an obstacle to early and definite vocational choice. Among a sample of 29,000 seventh-grade Oklahoma students, Parker (1962) found the same frequency of boys and girls (nine per cent of each) admitting that they lack even a general idea of what job they would be holding some day. On the other hand, half again as many boys as girls (18 per cent versus 12 per cent, a significant difference) said they definitely knew what their future would be. Caution requires that such statements of certitude about vo-

cational choice not be equated with stability of choice, since it is common to find subjects shifting from choices about which they had felt certain in middle childhood and early adolescence. Williamson's (1937) counsel of many years ago is still sound, that one needs to be as concerned with the appropriateness as with the definiteness of youth's occupational choice. An exception to the general rule appears to occur among young boys who decide on careers in science. In a twelve-year longitudinal study of the vocational choices of Oregon school children, Tyler (1964) found that boys who chose scientific careers crystallized their interests between the ages of ten and fourteen. However, she felt that some of the response tendencies which distinguished her science-bound boys from other subjects were probably discernible at a much earlier age, and she produced some evidence showing that boys who later chose fields of science made more masculine choices as first graders than did boys who later selected nonscience fields.

Socioeconomic status and occupational preferences of young children. The relationship between social-class status and occupational motives of elementary school children is unclear. In Tyler's (1964) longitudinal study, few career-related differences in interests appeared between subjects of different social-class membership until the eighth grade. Davis, Hagen, and Strouf (1962) evaluated and compared the maturity of the vocational choices of sixth-grade pupils from middle-class and lower-class neighborhoods. While they found no differences, one may question whether the negative result was a function of restriction of range in the socioeconomic status variable. Stewart (1959) distributed a sample of 243 fifth-grade boys into socioeconomic groups according to father's occupational level and compared the groups with respect to occupational attitudes and interests. No distinctions in behavior occurred when the boys were asked to evaluate class symbols in an abstract manner. When they were asked to state their vocational preferences, however, response differences appeared along social-class lines in the generally expected direction. When Galler (1951) asked elementary school children to write essays on their future vocational choice and to furnish reasons for these choices, she found that middle-class boys, in comparison with lower-class boys, were more likely to offer rationales based on intrinsic interest and altruistic motives.

Phenomenon of subjective occupational foreclosure. Impressive evidence is accumulating that the child's movement toward vocational choice is often marked by premature and unconscious elimination of many fields of work. Something akin to the development of a negative response set is operating. Tyler's (1955) study of the vocational inter-

ests of ten-year-old children appears to refute the commonly accepted notion that vocational interests emerge as clusters of positive social responses set against a neutral background. The study strongly suggests, instead, that patterned interests develop through the acquisition of a set of dislikes. Support for this view comes from Nelson's (1963) study of the knowledge and interests of elementary and secondary school students regarding a series of 16 occupations. The subjects were 595 Baltimore area students in the third, fifth, seventh, ninth, and eleventh grades. The younger children, and those of lower I.Q. and socioeconomic status, tended to respond positively to all occupations. The older, brighter, and advantaged children evinced negative attitudes and responded much like adults. The occupational foreclosure starts early. The narrowing (i.e., rejection) process is seen as early as the third grade. Negative responses to the occupations outnumbered positive responses in a ratio of almost three-and-one-half to one for all children in the study. Nelson does not offer a detailed explanation as to why a pattern of occupational rejection is established, but he states that the negative concepts, once learned, may be internalized because no early attempts are made to combat them through objective exposure to the occupational world.

One of the more detailed studies of the development of occupational concepts and motives in children has been performed by Gunn (1964). She asked samples numbering 20 boys each in grades one through twelve to rank 11 occupations and to give explanations for their rankings. The occupations represented equal prestige steps as found in the North-Hatt study conducted for the National Opinion Research Center (1947). Gunn used an interviewing method to elicit responses from her elementary school subjects, then compared ranks and reasons by school-grade level and socioeconomic class. Her principal findings may be briefly summarized as follows.

First- and second-grade boys characterized occupations in highly personal terms, i.e., in terms of Piaget's "age of egocentrism." In explaining their rankings, they avoided terms of rejection and disapprobation. Third-grade boys were the youngest group to begin to perceive occupations within a hierarchy of status. High status tended to be identified, however, not with the power of the occupation to confer prestige on the worker but with the importance it was judged to have for the community. Fourth-, fifth-, and sixth-grade boys understood the concept of ranking better than did the younger subjects. Moreover, they displayed a strong tendency to account for their ranking of particular occupations on grounds of their presumed service value, in other words, their good for the community or the nation. Beginning with the seventh-

grade, Gunn's boys were able to rank all 11 occupations according to some standard. While the service-to-community criterion remained the chief consideration, seventh-grade boys were the youngest to be able to recognize a definite ladder of occupational prestige. The tendency to think about jobs in terms of a social-class hierarchy was more marked among seventh-, eighth-, and ninth-grade students than among younger students. Beginning with the tenth-grade, boys tended progressively to rank the occupations in approximately the same order assigned to them by the adults of the North-Hatt study. Differences in value systems associated with socioeconomic level began to appear as disparities in occupational rank order. For example, lower-class boys rated *teacher* lower in status and *electrician*, *machinist*, and *service station attendant* higher in status than did upper-class boys. Beginning at the tenth-grade level, subjects' explanations of their rankings also reflected notions of contempt for what was believed to be an inferior job. The occupational elimination process, instigated in part by a nascent prestige motive, thus was now well under way, although its manifestation in the Gunn study appears to occur at a somewhat later age than for Tyler's (1955) or Nelson's (1963) subjects.

Facilitation of Vocational Development in Children

As dependable knowledge accumulates about the dynamics of vocationally relevant behavior in children, it becomes possible to improve the quality of the training and guidance experiences by which children are assisted to function more rationally in task-oriented settings. Neither the rate nor the course of vocational development is immune to influence. The findings of research can thus point the way to the acquisition of improved adaptive behavior. In occupational terms, maturing adaptive behavior is to be observed in the youth's development of such characteristics as (a) better work habits, (b) greater readiness to consider and make personal plans, and (c) improved decision-making skills.

While it has not been a major intent of this chapter to deal with the complex issues of vocational counseling, it seems pertinent to conclude with a brief enumeration of salient trends in counseling which are suggested by the research on emerging occupational motives and roles in younger children. A selected list of such research-based trends appears below.

1. The enforced detachment of contemporary school youth from occupational life points to the need to provide children with systematic exposure to notions about work. Jahoda (1949), Kaback (1965), and

C. H. Miller (1965), among others, have argued the case for introducing course units on the nature and meaning of work into the elementary school curriculum. Current projects of the Joint Council on Economic Education and the National Vocational Guidance Association are directed toward this goal.

2. Since distorted concepts and ineffectual motives concerning work are often acquired in the context of early family life, there is strong justification for the movement toward enlisting parents as social agents in the planned modification of attitudes, aspirations, and habits. Counseling with parents as an adjunct to counseling with school youth on problems of academic and occupational adjustment appears especially promising with culturally and economically disadvantaged families.

3. Increased use of behavioral counseling techniques seems indicated as a means of promoting improved educational and vocational planning strategies among school youth. In view of the provisional state of knowledge, an experimental approach to the use of behavioral counseling methods is to be recommended. The recent study of Krumboltz and Schroeder (1965) is a noteworthy example of this approach. These workers found that eleventh-grade students, particularly girls, who were given positive verbal reinforcement whenever they behaved in an information-seeking manner during educational and vocational counseling subsequently engaged in significantly more problem-solving behavior (i.e., information-seeking behavior) outside the counseling interview.

4. While social, technological, and educational barriers increasingly delay entry into the full-time labor force, as noted earlier, it is nonetheless true that a larger percentage of late-adolescent youth now hold part-time paid jobs than perhaps ever before. But it is likewise evident that such part-time jobs often hold little meaning and fail to provide a basis for effective transition to subsequent regular, full-time employment. Part of the explanation appears to lie in the failure of school, home, and employer to interpret the casual work experience to the adolescent as a significant reality-testing episode. In this respect, recent attempts to integrate work-study programs with counseling warrant closer examination. For children seriously culturally deprived, who have little opportunity to experience work either vicariously or through part-time employment, the innovation of simulated work experience also appears promising. Where the vocational adjustment of youth with limited academic motivation and proficiency is of concern, such reality-centered methods appear to hold a clear advantage over conventional, wholly verbal approaches to counseling.

5. If techniques such as the foregoing are to be established on a

sound empirical base, accelerated research on the growth and significance of occupational motives in children will be required. In the design of such studies there will be a genuine need, as Super (1954) recognized, for comprehensive longitudinal attacks on the patterns of career development and their antecedent and correlative conditions. Beyond that, there is need for considerably more research to test the hypothesis that the vocational fantasies, choices, and conflicts of youth are linked to attempts to deal with such psychological need-states as belongingness, recognition, status, and self-esteem.

6. Finally, since teachers offer one kind of occupational role model for school youth and counselors cannot conscientiously avoid concern with problems of vocational development, a convincing case can be made for infusing both teacher training curricula and counselor education programs with selective concepts from the psychology of earlier childhood. The tendency still exists among some teachers and counselors to examine and interpret student behavior cross-sectionally at a particular instance in time. Assisting youth to move toward vocational maturity in an increasingly complex industrial society will require, it seems clear, that they augment their other seasoned perspectives on youth with the perspective of the developmentalist.

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Juvenile Delinquency: The Sociocultural Context

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CONCERN FOR THE MISBEHAVIOR of the "younger generation" is at least as old as recorded history. Today, however, worldwide attention to problems of child welfare, together with extensive publicity which is accorded the most sensational and outrageous delinquency episodes, projects this concern to the far corners of the earth, from the most advanced and affluent societies to emerging "new nations." The body of literature concerning juvenile delinquency and juvenile delinquents, popular and scientific, is enormous and growing rapidly.

In the United States the problem of gang delinquency has been romanticized for posterity by the dramatic and beautiful *West Side Story*. The most tangible evidence of widespread interest and concern for these problems in this country, however, is to be found in recent activities directed to their control by private and public agencies, from rural townships to the federal government. In 1961 this concern crystallized in passage of the first federal legislation ever directed to these problems—the Juvenile Delinquency and Youth Offenses Control Act. Designed to stimulate greater local efforts to control and prevent juvenile delinquency, this legislation has been the impetus for large-scale planning and demonstration projects in many places throughout the country, and for training and research projects in great variety. The President's Committee on Juvenile Delinquency and Youth Crime, together with programs of other agencies—notably the National Institute of Mental Health, the United States Children's Bureau, and more recently the Office of Economic Opportunity—have combined to bring about a high level of activity directed to delinquency control.

Despite the almost timeless and universal concern with the problem and the feverish activity that has been generated, it is not possible to specify with certainty either the extent or the nature of juvenile delin-

quency in this or any other country. Much less is it possible to speak with assurance concerning changes over time. This regrettable state of affairs is due in large part to the global nature of the concept of juvenile delinquency and the consequent lack of precision in measurement of the phenomena loosely grouped under this elusive label. To be sure, official sources of information—arrest rates, court referrals, and dispositions—show an upward trend in recent years. Roughly two per cent of all children in this country from the ages of ten to seventeen, inclusive, have been involved in court cases each year after 1954, as compared to pre-World War II rates of approximately one per cent, and the rate continues to rise. But these rates “may be ‘very high’ only when we compare them with the ‘very low’ rates of the late thirties” (Teeters and Matza, 1959, p. 211). Good data over more extended periods are rare, indeed, but in some cities in the U.S. we know that the rates of juvenile court appearances during the early part of the twentieth century were at least as high as are contemporary rates.¹ The measurement problem has both historical and “procedural” roots.

Historically, juvenile delinquency is a relatively new concept, having been invented with the establishment of the first juvenile court in 1899, in Cook County, Illinois. Prior to this time juveniles were subject to the same laws as were adults, though under such legal systems as the Roman Law and the English Common Law, very young children were held not to be capable of criminal intent and so not subject to the law, while criminal intent was a matter for determination up to and sometimes beyond the age of puberty. Establishment of the juvenile court created a new legal system for children—one with less formality (and less protection in terms of due process) and with great flexibility, all to the end of rehabilitation and protection of the youngsters subject to its jurisdiction. Furthermore, while the statutes under which the juvenile court operates in the several states and in other countries vary greatly, the tendency is to define the delinquent child in terms so broad that virtually all children *could* be held to be delinquent. Here, again, the aim is to provide the maximum in flexibility so that the court, acting as *parens patriae*, may intervene in the lives of all children (and their parents) who stand in need of the services of the court. Although the rehabilitative aims of the court are laudable, it is well to recognize the

¹ Teeters and Matza present data for Cuyahoga County (Cleveland), Ohio. H. D. McKay has made available to the author unpublished data showing that delinquency rates for males in Cook County (Chicago), Illinois, were higher during the early years of this century, peaking in 1906, than present rates.

problems thus created for traditional due process concerns of the legal system, as well as problems related to defining "who is delinquent" for purposes of etiological inquiry.

The procedural aspects of measurement problems relate to the fact that the most commonly employed, and the most universal and standardized, sources of information concerning delinquency reflect *the actions of others in relation to delinquents*, rather—or at least to a greater extent—than the behavior of youngsters, e.g., the policeman who decides whether to "let a boy off with a warning," send him home, take him to the station for booking and perhaps referral to the court which, in turn, may exercise various prerogatives, such as formal or informal hearing, probation, or commitment (again, to one of a variety of institutions). Information about delinquents based on official activities is biased in largely unknown ways by these selective processes.² For these reasons, social scientists seeking to measure, understand, or predict the *behavior of delinquents* increasingly have turned to other methods of observation and description, rather than relying on official sources (Reiss and Rhodes, 1961; Short and Nye, 1957-58; Short, Tennyson, and Howard, 1963). Although some attempts have been made to measure delinquency systematically by nonofficial means, the greatest progress along these lines has been made by investigators who have refined information from official sources, sometimes utilizing independent sources of evaluation, while bringing to bear highly sophisticated techniques of analysis toward the specification of the meaning of such data. (See especially Ball, Ross, and Simpson, 1964; Sellin and Wolfgang, 1964.)

THE SOCIAL DISTRIBUTION OF DELINQUENCY

As the result of several decades of research, we know a great deal about the types of behavior for which youngsters are officially defined as delinquent and the distribution among significant social categories of youngsters who become so defined. We know considerably less about the occurrence of actual delinquent behavior and its distribution. This section will survey these studies, beginning with recent arrest data.

For more than a decade (as long as we have had such data) arrests

²The nature of these selective processes is suggested in the work of Goldman (1963) and of Piliavin and Briar (1964), who report that police officers exercise discretion in dealing with juvenile offenders, based on "a few readily observable criteria, including boys' prior offense records, race, grooming, and demeanor" (p. 206).

of young persons have increased more rapidly than have arrests of older persons. The accompanying table presents data on the offenses for which young persons were arrested in 1964, as reported to the Federal Bureau of Investigation (F.B.I.).

NUMBER OF PERSONS UNDER 18 YEARS OF AGE
ARRESTED FOR MAJOR CRIMES IN THE UNITED STATES
AND PERCENTAGE OF THOSE ARRESTED IN TWO
AGE GROUPS, 1964

Offense Charged	Number of Persons Arrested Under 18	Percentage	
		Under 18	Over 18
Larceny—theft	193,670	54.0	46.0
All other offenses (except traffic)	149,836	29.3	70.7
Burglary—breaking or entering	96,087	51.4	48.6
Disorderly conduct	75,300	15.8	84.2
Runaways	70,517	100.0	—
Curfew and loitering law violations	64,784	100.0	—
Auto theft	62,734	64.4	35.6
Vandalism	59,413	77.3	22.7
Liquor laws	40,044	26.0	74.0
Assaults other than aggravated	26,722	14.0	86.0
Drunkenness	21,918	1.5	98.5
Suspicion	19,659	19.3	80.7
Sex offenses (except forcible rape and prostitution)	13,720	23.6	76.4
Aggravated assault	11,791	14.8	85.2
Robbery	10,790	27.6	72.4
Weapons: carrying, possessing, etc.	9,662	20.4	79.6
Vagrancy	9,052	6.8	93.2
Stolen property: buying, receiving, possessing	6,293	34.7	65.3
Arson	3,315	63.5	36.5
Narcotic drug laws	3,305	8.7	91.3
Forgery and counterfeiting	3,111	10.2	89.8
Gambling	2,270	2.2	97.8
Forcible rape	1,776	18.8	81.2
Driving under the influence of alcohol	1,774	.8	99.2
Fraud	1,323	2.9	97.1
Offenses against family and children	805	1.4	99.6
Murder and non-negligent manslaughter	546	8.5	91.5
Prostitution and commercialized vice	537	1.9	99.1
Embezzlement	193	2.2	97.8
Manslaughter by negligence	185	6.9	93.1

SOURCE: *Crime in the United States: uniform crime reports—1964*. Washington, D.C.: Federal Bureau of Investigation, Dept. of Justice, 1965, p. 111.

It will be noted that property crimes bulk large in this list. Except for embezzlement, fraud, forgery, and counterfeiting, which require considerable finesse and/or relatively high social position, a large percentage

of all arrests for property offenses in this country is accounted for by juveniles. There is evidence that robbery among juveniles is associated with other aggressive behaviors and with various forms of "authority protest" (Short *et al.*, 1963), and that, together with buying and selling stolen property, it is a later stage in the "criminal careers" of youngsters than are other property offenses (Cohen and Short, 1958).

It is possible that juvenile delinquency has grown more violent and destructive in recent years, but definitive evidence is lacking. Observational data suggest that police records are quite unreliable concerning the extent and nature of such behavior (Wise, 1962). As a result, the usefulness of police data for the study of different patterns of behavior—including nondelinquent as well as delinquent behavior—and the etiology of these patterns is severely limited.

Age and Sex

Most children who come to official attention of the police and courts are in the older age categories. Thus, in 1964 the largest number of persons arrested for all crimes, as reported to the F.B.I., were seventeen years of age, followed by eighteen, and then sixteen-year-olds (F.B.I., 1965). Ball and associates (1964) report that "For boys, the incidence of delinquency (in Lexington, Kentucky) doubles from age 11 to 12 and then more than triples from 12 to 17" (pp. 90-91). For girls, with a much lower delinquency rate (.5 per cent as compared to 2.3 per cent for boys during 1960) a peak of 2.2 per cent was reached at age fifteen. The rate of first offenders was greatest at age fourteen for boys (4.48 per cent of the eligible population) and for girls a year later, at fifteen (1.56 per cent).

The ratio of boys to girls who are involved in delinquency, as judged by such varied sources as self-reports and juvenile court records, is between 4 and 5 to 1, a considerable decrease from the 50-to-60 to 1 ratios of juvenile court appearances which obtained in this country around the turn of the century.

Sex ratios vary greatly for different types of delinquent behavior. Boys come to official attention primarily for offenses involving stealing and property destruction or mischief of one sort or another; girls are brought before the court most often—and more often than boys—for offenses involving sex behavior, directly or indirectly. This, despite the fact that more boys than girls are involved in sexual misbehavior.

The sources of case referral to the courts also differ for boys and girls. The police refer the great majority of all delinquency cases to the

court, but higher percentages of girls' cases are referred by parents, other relatives, schools, and social agencies.

The Ecological Setting

The basis for a great deal of sociological speculation concerning the causes of juvenile delinquency is to be found in the ecological studies of the "Old Chicago School" of the 1920's and 1930's, and of those which followed (Lander, 1954; Shaw *et al.*, 1929; Shaw and McKay, 1942). These studies related the distribution of delinquency to growth patterns and resulting conditions within cities and to degrees of urbanization outside cities. The basic finding of these studies was that delinquency was heavily concentrated in the slum sections of larger cities and that it was directly related to the degree of urbanization of the countryside. Highest rates are found in urban areas, and it is generally true that the largest cities have the highest rates. Rural areas have the lowest rates and semiurban areas fall between rural and urban. In recent years, however, there is evidence that rural and semiurban rates are rising more rapidly than are urban rates (Children's Bureau, 1963).

Within cities, delinquency rates are highest in blighted, inner-city areas characterized by physical deterioration, the encroachment of industrial usage, and the concentration of other social problems such as poverty, suicide, adult crime, and mental illness. The concentration of delinquency, whether measured by arrests, truancy rates, first court appearances, or recidivism, for boys and girls, and over the years, led to the concept of "delinquency areas." Rates for other areas vary inversely with their distance from those delinquency areas. These empirical regularities have been the subject of much interpretive comment. We will return to the data and their interpretation in the discussion of sociological theories of delinquency below.

Race and Ethnicity

Racial and ethnic groups have widely varying delinquency rates. Estimates of Negro rates, for example, are from twice to five times as high as rates for the general population (*Journal of Negro Education*, 1959). High rates currently are found also among Puerto Ricans, Mexicans, and American Indians. By way of contrast, American Orientals tend to have low rates (Eisner and Tsuyemura, 1965).

Among both racial and ethnic groups, variations reflect both ecological and social-class patterns. Groups with highest rates at any one time typically have been the most recently arrived immigrants to the city

from rural areas in this country or from other countries. As these groups moved over time from the slums which had been their areas of first settlement, their delinquency rates, along with rates of adult crime, suicide, most forms of mental illness, broken homes, and poverty tended to decrease. Viewed cross-sectionally, at any one time, delinquency rates of these groups were, and are, high in inner-city slums and lower in better socioeconomic areas.

Robison's (1957) study of delinquency among Jewish children in New York City is especially instructive in the present context. Robison notes that Jews constitute more than a quarter of the white population under age fifteen in New York City but account for only about three per cent of juvenile court cases (1952 data); this, in contrast with nearly 20 per cent in 1930, and even higher rates in earlier periods. As Jews have attained social and economic advantages in New York, delinquency rates have dropped. Robison notes also that the character of delinquency by Jewish youngsters has changed over this period. Utilitarian offenses such as theft have yielded to rebellion against controls and status-oriented activities, such as "joy riding." Higher proportions of referrals to the court are made by Jewish families and social agencies, rather than by the police.

Social Class

On the basis of ecological findings—the close association of delinquency rates and poverty—and of studies of youngsters who are known to be delinquent, social class has come to be considered an important variable in the etiology of delinquency. In large cities, data gathered by means of field observation and self-reports confirm official records suggesting the higher likelihood of involvement in delinquency by lower-class children (Short and Strodtbeck, 1965). However, studies conducted in several small cities and towns fail to demonstrate greater delinquency involvement by lower-class youngsters (Erickson and Empey, 1965; Himelhoch, 1964; Nye, Short, and Olson, 1958; Polk, 1963). Studies of middle- and upper-class delinquency are greatly needed. (See Greeley and Carey, 1963.)

Family Structure

Concern with the social-class correlates of delinquency often has been closely tied to the relation between delinquency and family structure. Controversy concerning the relation between "broken homes" and delinquency resolves into a number of points.

1. Almost all studies find that official delinquents come more often from homes broken by divorce and separation than do nondelinquents. However, family disorganization, like delinquency, is differentially distributed among social groups, and Shaw and McKay (1931) demonstrated that the broken home-delinquency relationship was very small when ethnicity was held constant.

2. Toby (1957) has demonstrated that the protection afforded by well-integrated (as opposed to disorganized) families is more effective for girls and preadolescents than for adolescent boys. (See also Toby, 1965.)

3. Nye's research (1958) suggests that differences in family structure are slight in relation to delinquency as measured by self-reports, and that broken but happy homes produce less delinquency, better parental relations, and fewer psychosomatic symptoms than do unbroken but unhappy homes. Homes that are happy and unbroken produce the fewest personal and interpersonal problems of these sorts. This research emphasizes the social psychological implications of family structure.

4. W. B. Miller (1958; Kvaraceus and Miller, 1959) argues persuasively that socialization in "female-based households," where no male is present on a stable basis, contributes to delinquency involvement by both males and females in the lower class. It is not difficult to demonstrate that homes broken by divorce and separation, and common-law marriages, are more common in lower-class than in other communities, and among some minority groups, e.g., Negroes (Tennyson, 1966). It is more difficult to demonstrate the precise relation of these factors to delinquency, however, and definitive evidence is lacking.

Miller's argument is that lower-class males find masculine identity a particular problem because of family domination by females and the absence of stable father-role incumbents. This problem is solved, says Miller, by association with the one-sex peer group so common in lower-class communities. The importance of peer relations to delinquency generally, and to gang delinquency in particular, will be the major focus of the chapter following discussion of sociological theories of delinquency.

SOCIOLOGICAL THEORIES OF DELINQUENCY

The ecological patterns of delinquency, while subject always to local variation, are among the best-documented empirical regularities in the annals of sociological research. The principal sociological theories of delinquency causation rest heavily upon them. This section discusses

these theories and examines in greater detail ecological and other types of data which have resulted in their modification.

Social Disorganization

The concentration of social problems in urban slums has been widely interpreted both as symptom and product of social disorganization. Thomas and Znaniecki (1927), and Cooley (1909) before them, had defined social disorganization in terms of a "decrease of the influence of existing social rules of behavior upon individual members of the group," ranging from minor rule-breaking by a few individuals, which occurs in all societies, to "a general decay of all institutions of the group" (Thomas and Znaniecki, 1927, p. 1128). High concentrations of crime and delinquency, suicide, family breakdown, and failures of economic, political, and religious institutions to function effectively led many to the conclusion that the major institutional forms of society had lost their influence on residents of the slum.

A favorite word used by disorganization theorists to describe these areas was "interstitial," that is, intervening. In his classic description of the growth of the city, Burgess (1925) referred to the fact that the slum often immediately surrounds the central business district of the city. He referred to this area as a "zone in transition," "an interstitial area in the throes of change from residence to business and industry" as the central business district expands outward. The life history of neighborhoods was described as moving from residential home ownership, characterized by a high degree of neighborhood loyalty, through tenancy and the invasion of business, occupancy by low-status minority groups and other transient populations, and finally complete take-over by business or industry. Social control diminishes from the first phase until, just prior to the last stage, community life is referred to as social chaos.

The concentration of delinquency in the blighted areas of larger cities was interpreted by Shaw and his associates (1929) as a reflection of the "disintegration of the community as a unit of social control."

Traditional norms and standards of the conventional community weaken and disappear. Resistance on the part of the community to delinquent and criminal behavior is low, and such behavior is tolerated and may even become accepted and approved (p. 205).

An element in this picture of broad theoretical significance is the fact that delinquency areas had persisted over time despite frequent changes in population. In particular, the inference seemed clear that neither

ethnicity nor race, as such, could be assumed to be a cause of high delinquency. Rather, these factors, too, were related to the basic process of social disorganization.

Culture Conflict

The notion of culture conflict was introduced in an attempt to be more specific concerning the nature of causal processes related to delinquency. For more than a century after the years of early settlement and the American Revolution, immigrants came to the United States virtually unfettered by legal restriction. Our great cities became the "melting pots" of many generations of these immigrants, and a great tradition was established, but not without cost to those who were uprooted from traditional cultures and placed, many times at great disadvantage, in the midst of new cultural demands. The price was greatest, apparently, among the young, both those who emigrated with their parents and those who were born to immigrant parents. Their parents could retreat from conflicting cultural standards into "old world" cultural islands where both spoken and written word were likely to be in their native tongue, and institutional life was closely patterned after the "old country." For the young, however, escape from the new culture generally was neither easy nor considered desirable. Their exposure was to schools and playmates whose traditions were those of the United States. Parent-child conflict thus acquired a cultural dimension quite beyond that of the child of native-born parents, where social change was the major gulf between the generations. For here there was conflict, in addition, between the values and standards of old country and new.

Sellin (1938) noted that problems of adjustment to conditions in the "new world" often were complicated by the fact that immigrants were shifting also from a rural to an urban environment and from a well-organized, relatively homogeneous society to a society characterized by great heterogeneity and disorganization of conventional institutions. Immigrants settled typically in the slums of great cities. It was here that their "cultural islands" were established.

Even the adults could not escape entirely from the hazards of culture conflict in these islands, however. Sellin cites the case of "a Sicilian father . . . [who] killed the sixteen-year-old seducer of his daughter, expressing surprise at his arrest, since he had merely defended his family honor in a traditional way" (p. 68). The young, on the other hand, were even more likely to run afoul of the law by attempting to "live up to" customs they did not understand. (See also Park and Miller, 1925.)

With the passage of restrictive legislation on immigration to the United

States, assimilation of most immigrant groups occurred over a relatively short period, and conflicts and misunderstandings of these types became less frequent and less important as causes of juvenile delinquency. As restrictions to full participation in the social life of American communities have subsided, so have delinquency rates of ethnic groups so situated. Conversely, ethnic groups which have been blocked from full assimilation, such as the American Negro, continue to have high delinquency rates.

Other studies establish clearly that in more recent years the foreign-born population is not to a major degree responsible for juvenile delinquency in the United States. Chilton (1964) has replicated earlier efforts by Lander (1954) and Bordua (1958-59) and added new data which demonstrate either no relation at all or a negative relation between delinquency rates in census tracts of three major cities (Baltimore, Detroit, and Indianapolis) and the percentage of foreign-born persons living in these tracts. Following in the tradition of Burgess, Shaw, and McKay, Chilton finds evidence for the continued association of delinquency with such factors as overcrowded and substandard housing, mobility, low income and education levels, low proportion of married men, and low percentage of dwelling units owner-occupied. Recent data also establish the association of these factors with the nonwhite, largely Negro, population. As was true of these ethnic groups in the past, delinquency rates of Negroes vary also with the neighborhood conditions described; but as a result of racial prejudice and high visibility, the Negro remains very largely an unassimilated lump in the great American melting pot.

Important new findings from the Illinois Institute for Juvenile Research point to the importance of *community* factors in the production and control of juvenile delinquency. By carefully computing rates of juvenile court referral for 79 Chicago communities, McKay (1965) has been able to study the trend of officially recorded delinquency in these communities over a thirty-five-year period, from 1927 to 1962. The most striking finding of this research is that both the communities with the most pronounced *upward* slopes and those with the most pronounced *downward* slopes are Negro communities. The difference between these communities is the following: The three communities with the most rapidly rising rates of delinquency are areas of recent Negro settlement, virtually all white at the beginning of the series, with very rapid Negro influx during the late 1940's and the 1950's, with succession occurring only during the later years; the three communities with the most rapidly falling rates are areas which have been virtually all Negro since the begin-

ning of the series—their influx occurred shortly after the turn of the century, prodded by the rapid increase in Negro immigration following World War I. McKay finds also that truancy rates and mental illness rates behave in a manner similar to the rates of court appearance. The inference is clear and consistent with other data: under the disorganizing impact of residential shift from an “invading” socially and economically disadvantaged population, communities lose their ability to control undesirable behavior. Conventional institutions break down and social problems in great variety increase. It takes time for conventional institutions to become reestablished, and for less conventional lower-class or “ethnic” institutions to stabilize so that they, too, can exert control over undesirable behavior within the community. It would appear that the process applies equally well to other groups, e.g., the large-scale influx of Puerto Ricans to New York City and Mexican migrations to other cities.

The Slum as Social Organization

Social disorganization theorists tended to view such forms of organizations as they discovered in the slum from the perspective of more conventional institutional forms and so as symptoms of disorganization and moral decay. Thus, Thrasher (1927 & 1963) concluded from his study of 1,313 gangs in Chicago that:

The gang is almost invariably characteristic of regions that are interstitial to the more settled, more stable, and better organized portions of the city. . . . the gang occupies what is often called “the poverty belt”—a region characterized by deteriorating neighborhoods, shifting populations, and the mobility and disorganization of the slum. Abandoned by those seeking homes in the better residential districts, encroached upon by business and industry, this zone is . . . to a large extent isolated from the wider culture of the larger community by the processes of competition and conflict which have resulted in the selection of its population. . . . the gang develops as one manifestation of the economic, moral, and cultural frontier which marks the interstice (pp. 20–21).

It was William Foote Whyte (1943 & 1955) who brought most forcefully to attention the error customarily made by the social disorganization approach to the study of the slum and its problems. Whyte studied a slum district in Boston which he called “Cornerville” and which he found to have “a complex and well-established organization of its own.”

I was interested in that organization. I found that in every group there was a hierarchical structure of social relations binding the individuals to one another and that the groups were also related hierarchically to one another. Where the group was formally organized into a political club, this

was immediately apparent, but for informal groups it was no less true. While the relations in such groups were not formally prescribed, they could clearly be observed in the interactions of individuals (1955, p. viii).

Whyte found that the social structure of Cornerville consisted of a series of elements which were internally structured, as well as related to one another, through "a hierarchy of personal relations based upon a system of reciprocal obligations" (p. 272). The corner gang, the racket (largely numbers and other forms of gambling), the police, politics, the church, and "old country" ties all conformed to the pattern—a pattern of organization sometimes implicit and apparently unconscious, at other times quite explicit. Yet this was an area of poverty and physical deterioration, of corruption, vice, crime, and delinquency. By many criteria it appeared to be disorganized.

The point is not so much that all communities are organized, but that the nature and degree of social organization varies from community to community and that these variations are related in important ways to the behavior of residents of these communities. It is the case that in many communities the traditional, conventional institutions of socialization and social control are ineffective. It appears also that some of the forms of organization which arise in such communities are conducive to behavior that is illegal and disturbing to the larger community and, in many instances, to local residents. This is particularly true of episodes of violence which result in serious injury, robbery, or property damage, and of predatory activities such as purse-snatching and burglary. No community condones these activities; even those who participate in them wish to be protected against victimization by others. How, then, do they come about? The answer seems to lie in the complex interaction of personal characteristics, certain themes or focal concerns of lower-class culture, and the institutional forms which arise in response to these characteristics and concerns.³

It is appropriate to ask in what sense these "institutions" deserve the name, for they differ so greatly from conventional institutionalized forms. The examples suggested by Whyte—the corner gang, rackets, police, and politics—are instructive. These forms of association were demonstrated to have structure and continuity over time, and to be functional in the lives of individuals and to community life generally. They were directly productive of political corruption and crime which was to a high degree tolerated and even encouraged by local residents.

³ There is a vast and growing literature on poverty, lower-class culture, and social stratification. See, for example, S. M. Miller (1964) and W. B. Miller (1958).

The corner gangs upon which Whyte focused were older boys and young men. They did not at the time of study engage in gang fights, vandalism, or extreme behavior of any sort, but in their younger days apparently they had done so.

Paralleling the institutional forms described by Whyte is a series of "institutions" common in many lower-class communities that tend to conduce to delinquency. These "institutions" are less formally structured in most instances and, in part because of this, less effective in controlling the behavior of participating individuals. They are, however, functional in a variety of ways to their clientele, both young people and adults.

Since our concern is with juvenile delinquency, we will omit discussion of institutions in which the clientele is primarily adult, such as store-front churches. The type of institution with which we are concerned primarily is cogently revealed by the response of a detached worker to a question posed by the director of the YMCA program, with which our Chicago study of *Street Corner Groups and Patterns of Delinquency* was associated (Short, 1963). The director, R. W. Boone, had posed this question to the staff: "What are the most significant institutions for your boys (members of gangs with which the program was in contact)?" He had explained briefly the concept of institutions as recurrent forms of association which satisfy important needs of participants and which have recognizable structure. The detached worker who first answered the question paused a moment, then said, slowly, "I guess I'd have to say the gang, the hangouts, drinking, parties in the area, and the police."

The other workers nodded assent, though a few thought they might want to add the boys' families. Certainly this list is not definitive, but it is instructive. Numerous examples of this class of institutions might be cited. They are found in settings such as street corners, poolhalls, taverns, and in houses and "quarter parties" (see below).

As a gang hangout and a center of much community behavior, the poolhall constitutes an important institutional context for its habitués. Its influence extends beyond these people to others in the area who do not frequent its premises, and may even heartily disapprove of those who do. The only reference to a conventional institution by our detached worker, above, was to the police, and this was clearly a negative association, an antagonistic link with the conventional world of political and economic controls. No reference was made to the school or the church, and only a half-hearted acknowledgment of the importance of the family. The institutions listed, with the exception of the police, have much in common. They call to mind Drake and Cayton's (1945) description of "The World of the Lower Class":

Lower-class people will *publicly* drink and play cards in places where people of higher status would lose their "reputations"—in the rear of pool-rooms, in the backrooms of taverns, in "buffet-flats," and sometimes on street corners and in alleys. They will "dance on the dime" and "grind" around the juke-box in taverns and joints, or "cut a rug" at the larger public dance halls. They will "clown" on a street corner or in public parks (p. 610).

It is in such settings that much illicit behavior is encouraged.

These centers of lower-class congregation and festivity often become points of contact between the purveyors of pleasure "on the illegit" and their clientele—casual prostitutes, bootleggers, reefer peddlers, "pimps," and "freaks." Some of these places are merely "fronts" and "blinds" for the organized underworld (p. 610). (See also Short and Strodtbeck, 1965, Ch. 5.)

The relation between institutions of this sort and delinquent behavior goes much beyond the contact they afford between illegitimate "purveyors of pleasure" and their potential clientele, however. It is in such settings that much behavior occurs which is disruptive both of the larger social order and the local community because of threats to basic values of life and property. Of particular concern are episodes of violence which result in serious injury, death, or property destruction, the threat of which is ever present in situations ranging from the shifting liaisons of common-law marriage to even less formally structured quarter parties, poolhalls, and street corners (Drake and Cayton, 1945; Short and Strodtbeck, 1965).

Specifically with reference to gang delinquency, the "quarter party" is an especially interesting phenomenon. Quarter parties are regular events in many lower-class Negro communities. While there are variations in format and in composition of participants,¹ there are common objectives to all such varieties. Typically, an adult will hold the party in his or her (usually her) home, for adults, teens, and usually some of both. The objective of the hostess is to make money. (In Seattle, I am told, such gatherings are called "rent parties.") Party-goers pay a quarter to get into the party, and a quarter per drink after they are in. The parties are boisterous, loud, and crowded. Fights are not unusual—often they involve members of rival gangs. Two examples from research conducted recently in Chicago suffice to illustrate the manner in which these gatherings may precipitate serious gang conflict.

A. This teenage party that was held at the girl's house on 10th and Harwood. Her mother and father were there, although they stayed out of the way. There was friction. The Rattlers were there, and there were some

boys from the projects just west of the area [members of a rival gang known as Navahoos]. They weren't in the Rattlers. David and Donald, Duke's brother, took me down. It was a pay-at-the-door party. Pay a quarter at the door. Right away when I got in I knew there was friction because there was this one group of boys in one room and another group in another. I saw several bumpings as they came through the door and looks, "Stay out of my way." They were trying to see how much each group would take. They had three rooms occupied. Living room, dining room, and kitchen. I was in the dining room around 10:00, I guess. I heard this noise in the living room. Right away everyone started running for the living room. There's a fight out there. I started out and tried to get through the crowd to get into the living room, and just as I was fighting my way through the crowd I saw one of my boys, Bill, he's 16—very big though for his age. . . . He and this other fellow from the projects—it started out as these things usually do—they had started out boxing at a party. Bill had hit the other fellow a little too hard and he had hit back, and it led to that. This other fellow was much smaller than Bill but he was older, and he hit Bill and knocked him into this huge window, and *plang*, the window went out. By this time I saw my way through the crowd and I stopped them. . . . David helped me break it up. They respected him. . . . He grabbed the other fellow. Nobody bothers him. I just got between them and told Bill to stop. Bill said, okay. . . . He was coming back for the boy, though, after he broke the window, and he's a big boy. The other fellow stopped right away.

Q. Party go on?

A. No, the lady said this was it. But I thought there might be a little trouble 'cause some of the other boys from the projects were waiting outside, so I told Bill to stick close to me and we would leave together. Bill, myself, David, and Donald. This we did. The other boys were standing outside. They made a few remarks but they didn't do anything (Short, 1965, pp. 175–177).

Two weeks later this same worker provided a more elaborate picture of a similar party in which adults played a major role. The objectives of various classes of party-goers is made explicit.

This woman who is called "Ma" was giving the party. . . . There was a lot of drinking—inside, outside, in the cars, in the alleys, everywhere. There were Rattlers and a bunch of boys from the [housing] projects. They had two rooms, neither of them very large. There was some friction going on when I got there—boys bumping each other, and stuff like this.

There were a lot of girls there. Must have been about 50 to 75 people in these two rooms, plus another 20 or 25 outside. There were some older fellows there, too—mainly to try and grab one of these younger girls. The girls were doing a lot of drinking—young girls, 12- and 13-year-olds.

This one girl, shortly after I got there, had passed out. I took her home. Nobody there, but two of the other girls stayed with her.

The age group in this party amazed me—must have been from about 11 to the 30's. There were girls there as young as 11, but no boys younger than about 15. The girls are there as a sex attraction, and with the older boys and men around, you know the younger boys aren't going to do any good.

We had one real fight. One of David's sisters was talking to one of these boys from the projects—a good sized boy, bigger than me. I guess she promised to go out to the car with him. . . . To get outside you had to go out this door and down this hall, and then out on the porch and down the stairs. She went as far as the porch. As she got out there, I guess she changed her mind. By this time the guy wasn't standing for any "changing the mind" business, and he started to pull on her—to try and get her in the car. She yelled for David, and he came running out. All he could see was his sister and a guy he didn't know was pulling on her. David plowed right into the guy. I guess he hit him about 15 times and knocked him down and across the street, and by the time I got there the guy was lying in the gutter. David was just about to level a foot at him. I yelled at David to stop and he did. I took him off to the side and told Gary to get the guy out of there.

The worker walked down the street with David, trying to cool him down. What happened next very nearly precipitated a major gang conflict:

Duke, Red, and Mac were standing eight or ten feet away, sort of watching these project boys. This one boy goes up the street on the other side and comes up *behind* David and me. We didn't see him. All of a sudden Duke runs right past me. I was wondering what's going on and he plows into this guy—crashed the side of his mouth and the guy fell flat. Duke was about to really work the guy over.

. . . Duke said, "Well look, man, the guy was sneaking up behind you and I wasn't gonna have him hit you from behind! I did it to protect you."

I got the guy up and he said, "I wasn't going to hit you—I just wanted to see what was going on," and this bit.

By now Duke says, "Well, the heck with it. Let's run all these project guys out."

They banded together and were ready to move, but I talked them out of it. I said, "Look, don't you think you've done enough? The police aren't here yet, but if you start anything else they'll be here. Somebody is bound to call them. The party is still going on so why don't we all just go back inside. No sense in breaking up a good thing—you paid your quarter."

Peer Groups and Social Roles

A vast literature exists demonstrating that juvenile delinquency tends to be a group phenomenon, particularly among males, and that delin-

quent gangs are heavily concentrated in delinquency areas (Shaw and McKay, 1931, 1942; Thrasher, 1927 & 1963). It appears, further, that as youngsters become more involved in delinquency they become more involved with other delinquents. On the basis of ecological data and extensive case studies, sociologists have suggested that a great deal of delinquency can be understood as resulting from the transmission to the child of neighborhood traditions of group delinquency, sometimes including adult crime, and of specific influences of peer groups (Cressey, 1964; Kobrin, 1951; McKay, 1949; Sutherland and Cressey, 1960).

In addition to cultural transmission, much attention recently has been directed to the impact on individuals of being socially defined—labeled by others—as “delinquent,” a “drug addict,” “criminal,” and so on (Becker, 1963, 1964; Tannenbaum, 1938). While “hard data” on the matter are difficult to come by, it seems clear that how a person is defined by others influences their reactions to him, his own definition of self, and his behavior (Reckless, Dinitz, and Kay, 1957; Reckless, Dinitz, and Murray, 1956; Scarpitti *et al.*, 1960).

Sociologists have related the influence of peers and others to the various social positions occupied by individuals and to the social roles into which they are cast as a result of these positions. Grosser's (1952) research suggests, for example, that the stealing behavior of boys and girls is very much related to their social roles as boys and girls. Grosser distinguished between stealing which was “role expressive,” i.e., fulfilling a role, and that which was “role supportive,” or facilitating. Boys were found to engage most often in stealing which was directed toward *demonstrating* their courage and daring, in short, their masculinity. Girls, on the other hand, most often stole objects which could *facilitate* their more adequate performance of feminine roles, e.g., cosmetics or clothing to enhance their attractiveness. In thus differentiating their behavior, these youngsters were to a degree conforming to certain social expectations. Stealing is hardly this simple, of course, but Grosser's research is highly suggestive of types of systematic differences in behavior which correspond to social expectations. In the treatment which follows we will narrow our attention to gang delinquency, and the influence of peers and of roles within peer groups will be examined further in this context.

THEORIES OF GANG DELINQUENCY

It is generally agreed among behavioral scientists and professionals concerned with the problem, that focus upon homogeneous patterns of behavior—as contrasted with such a gross category as delinquency—will

lead to greater knowledge and control of the illusive phenomena so loosely grouped under this rubric. But homogeneous with respect to what? Psychiatrists and psychologists have tended to concentrate on psychological processes and associated patterns of family relations which are hypothesized to be associated in various syndrome explanations of behavior (Eissler and Federn, 1949; Redl and Wineman, 1951). Occasionally efforts have been made to establish social correlates of psychological types of delinquency (Healy and Bronner, 1936; Hewitt and Jenkins, 1947; Reiss, 1952).

Only recently have sociologists joined theoretical and empirical forces in the search for explanations of relatively distinct and homogeneous behavior patterns. The most important of these efforts have focused on the delineation and explanation of various group patterns of delinquency. This section examines the principal theories advanced to account for the phenomena of delinquent gangs and patterns of behavior associated with them.

Lower-Class Culture as a Generating Milieu of Gang Delinquency

Our brief description of lower-class institutions, above, bears a close resemblance to W. B. Miller's (1958) analysis of the roots of gang delinquency. On the basis of extensive personal observation and systematic reports by a team of detached workers, Miller argues that lower-class culture, "a long-established, distinctively patterned tradition with an integrity of its own" (p. 5) is the most important and direct influence on the behavior of youngsters exposed to it.

Miller discusses six "focal concerns" which characterize "the lower-class way of life." In them much of the flavor of the lower-class institutions we have been discussing and a good deal more which is salient to lower-class life has been abstracted. The focal concerns elaborated by Miller are:

1. *Trouble*—concern with trouble is a dominant feature in the assessment of any situation, be it involvement with a group, a prospective son-in-law, or a job; conceptualized largely in terms of law-violating versus law-abiding behavior.

2. *Toughness*—a combination of physical prowess, "masculinity," absence of sentimentality, an exploitative attitude toward women, and so on. Miller attributes the intense concern with toughness to the domination of many lower-class households by females, and to the problems of masculine identity which such a situation creates for young men. Failure to be tough is conceived of as weakness, ineptitude, effeminacy.

3. *Smartness*—"the capacity to outsmart, outfox, outwit, dupe, 'take,' 'con' another or others, and the concomitant capacity to avoid being outwitted, 'taken,' or duped oneself" (p. 9). Miller relates the constant byplay of "ranking" and of "signifying" (the mutual exchange of insults in progressively more vulgar terms) to this focal concern (Berdie, 1947).

4. *Excitement*—the rhythm of boredom and routine, broken by short periods of high excitement; routine and repetitive employment, hanging on the corner, pierced by the weekend of partying and release, the sharp exchange of conflict with another gang, and so on.

5. *Fate*—the belief that one's life is beyond personal control, that it is controlled by "luck" or the lack of it.

6. *Autonomy*—concern for freedom from constraint and authority, mixed with dependency needs and the wish to be "cared for."

To this list Miller adds, for lower-class adolescent street-corner groups, concerns with *belonging* and with *status*. "Since the corner group fulfills essential functions for the individual, being a member in good standing of the group is of vital importance for its members" (p. 15). Membership is maintained and status achieved "by demonstrated possession of the valued qualities of lower-class culture," that is, in terms of the previously discussed "focal concerns."

Miller's data are rich in flavor and detail. By examining a large number of aggressive acts committed by members of a single gang, he demonstrates that aggressive activities of gang boys are directed largely *within* the gang and that such behavior is functional to the group in numerous ways (Miller, Geertz, and Cutter, 1961). Here, again, a form of organization indigenous to areas considered disorganized by the criteria of conventional institutional values is found to produce, in some measure, the very behavior by which judgments of disorganization often are made.

Social Structure and Anomie

In contrast to the lower-class cultural determinism of Miller are theories which stress the social position of persons relative to others in the larger social order. Merton (1957) provides the basic premise and the "jumping-off point" for other theories. Merton's analysis is based on the open-class ideology of the United States, by virtue of which all are held to have equal opportunities to work out their own destinies, and on the universally held value of achieving success, defined largely in terms of money and material possessions.

Goals are held to transcend class lines, not to be bounded by them, yet the actual social organization is such that there exist class differentials in accessibility of the goals. In this setting, a cardinal American virtue, "ambition," promotes a cardinal American vice, "deviant behavior."

. . . Poverty as such and consequent limitation of opportunity are not enough to produce a conspicuously high rate of criminal behavior. . . . But when poverty and associated disadvantages in competing for the culture values approved for *all* members of the society are linked with a cultural emphasis on pecuniary success as a dominant goal, high rates of criminal behavior are the normal outcome (pp. 146-147).

Merton's analysis has been modified and applied specifically to gang delinquency by Cohen (1955) and by Cloward and Ohlin (1960). Cohen seeks to account for the fact that delinquency in this country is engaged in primarily by young, working-class males, that it tends to be collective in nature (rather than being committed by individuals alone), and that much of it is destructive rather than acquisitive, or at least role-expressive rather than role-supportive in nature. The delinquent subculture—"a way of life that has somehow become traditional among certain groups"—arises, according to Cohen, as a response to status problems experienced by working-class boys. Because they have grown up in lower-class homes and in lower-class culture, these youngsters are ill-equipped to achieve in terms of "respectable" criteria of the larger society—criteria of the "middle-class measuring rod" such as "good manners," ambition, thrift, neatness, and self-restraint.

Cohen argues that youngsters who are similarly disadvantaged in this way join together to establish their own subculture within which they can achieve status and other gratifications. Their alternative status system, says Cohen, takes the form of a reaction formation *against* the middle-class criteria in terms of which they are found wanting. It is this which accounts for the nonutilitarian, malicious, and negativistic character of the delinquent subculture. Status is the granting of respect by others; thus, the response of these youngsters "makes sense" only as a group response. By virtue of their repudiation of convention, these youngsters experience even greater loss of respect from those outside the subculture; hence, they become all the more dependent for status upon one another. The extremity of gang behavior is related to the fact that "group interaction is a sort of catalyst which releases potentialities not otherwise visible" (p. 136).

Cohen has recognized the existence of "more or less distinct delinquent subcultures" and, with Short (1958), has attempted to delineate

and explain the emergence of conflict, semiprofessional theft, and drug-oriented subcultures from the parent or "garden variety" of delinquent subculture which he had previously described.

The most ambitious and systematic theory to account for varieties of delinquent subcultures is found in *Delinquency and Opportunity: A Theory of Delinquent Gangs* (Cloward and Ohlin, 1960). In this book, Cloward and Ohlin add to Merton's basic premise concerning the relative accessibility of legitimate means the notion of differential availability of illegitimate means, and they develop more fully the implications of the theory specifically for subcultural delinquency. Delinquent subcultures are formed by lower-class youngsters who are blocked in their ambitions for improvement in economic position.

Cloward and Ohlin assume, with Merton, that legitimate means to success goals are severely restricted and, hence, that intense pressures toward deviant behavior are generated. The result, as Merton suggests, is that "Al Capone represents the triumph of amoral intelligence over morally prescribed 'failure,' when the channels of vertical mobility are closed or narrowed in a society which places a high premium on economic affluence and social ascent for all its members" (p. 146). However, *illegitimate means* are not equally available to all. Their availability, according to the Cloward-Ohlin theory, varies with the extent of "integration" of adult carriers of conventional and criminal values. (See Kobrin, 1951.) In "integrated" areas relations of persons engaged in conventional business, political and even religious pursuits, and those who participate in the rackets and other criminal enterprise are held to be accommodative. By contrast, in "unintegrated" areas the aims of these adults conflict, and neither group is effectively organized. Opportunities for learning and performing criminal roles are available in "integrated" areas, unavailable in "unintegrated" areas. Social control efforts—both conventional and unconventional—are effective in integrated areas, ineffective in unintegrated areas.

Youngsters who have "a sense of being unjustly deprived of access to opportunities to which one is entitled" seek opportunities for advancement by illegitimate means. Under the varying circumstances described above, however, their delinquent adaptations take different forms. In integrated areas a rational and disciplined criminal subculture emerges as the boys learn by example of their elders and by doing, and as they seek legitimation in the eyes of powerful adults. The absence of either legitimate or illegitimate opportunities in unintegrated areas leaves youngsters with no status alternative but expressive behavior in the form of the conflict subculture.

Cloward and Ohlin see the resort to drug use and other "kicks" as an escapist reaction on the part of youngsters who are failures even in available illegitimate avenues to achievement, that is, crime in integrated and violence in unintegrated areas. Those who are "double failures" form "retreatist" subcultures.

For Cloward and Ohlin, as for Cohen, participation in a delinquent subculture *requires* commission of delinquent acts. The norms of the subculture are regarded as the primary determinant of the delinquent behavior of the youngsters. It should be noted that these theories do not claim to explain all delinquency nor do they claim that all gangs are delinquent. Both attempt to explain the development of delinquent subcultures and the consequences of participation in them.

Merton, Cohen, and Cloward and Ohlin thus see universal goals of American society as responsible for problems of adjustment of lower-class, and thereby disadvantaged, adolescent youngsters. Relative position in the social order, rather than absolute position as argued by Miller, is the major factor contributing to the delinquent solutions chosen.

THEORETICAL EVALUATION: THE DATA OF GANG DELINQUENCY

Empirical research into gang delinquency and delinquent subcultures has not kept pace with theoretical development. Indeed, until very recently no large-scale empirical effort had focused on gangs since Thrasher's classic work, first published in 1927.

The early work of Thrasher and of Shaw and McKay and their associates led, during the 1930's, to delinquency prevention efforts which attempted to redirect the energies and the behavior of gangs, and to organize lower-class communities more effectively. (See Kobrin, 1959; Sorrentino, 1959.) These efforts, in turn, were followed by more recent programs with large-scale local and federal support. None of these programs has been documented systematically, but several have included research components which provide rich descriptive data (Crawford, Malamud, and Dumpson, 1950; New York City Youth Board, 1960; Richards, 1962), and a few have been the subject of special study by social scientists (Caplan *et al.*, 1963; Rice, 1965). Even these few have placed major emphasis on the description or evaluation of the program rather than on the behavior of youngsters and its explanation.

In this section data from several studies will be brought to bear on the previously discussed theories of gang delinquency. Because it focuses

specifically on delineation of behavior patterns by gang youngsters and on their explanation, major attention will be given to a study in Chicago, conducted by the author and his associates and continuing to the present writing (Short, 1963; Short and Strodbeck, 1965).

We turn first to the matter of delinquent subcultures. Do they exist, and how do they influence the behavior of youngsters who participate in them? The answer seems to be that they do exist, but their influence is less a matter of delinquent norms than of a variety of community influences and the operation of group processes, together with interpersonal skills (or the lack of them) possessed by gang members.

Field observation, coupled with systematic measures of the values of the boys by means of a semantic differential, suggested that gang boys' commitment to delinquent norms was quite tenuous (Gordon *et al.*, 1963), indeed, virtually nonexistent except in specific types of situations which involved the group, such as threat to the gang from another gang, or threats to the status of boys individually. (See Jansyn, 1960; Short and Strodbeck, 1965.) Analysis of behavior patterns and self-concept measures suggested that the gangs contained considerable numbers of "stable corner boys" and even a few "college boys"; there were "scouts" as well as "cool aggressives" within the same gang. This led us to question the homogeneity of gangs, as well as the degree of normative commitment which the gang places on its members.

It seems clear that the vast majority of delinquent gangs lack the "purity" of adaptation hypothesized in the literature. Negro conflict gangs were easy to find in the Chicago study, but they were involved also in a great deal of stealing, and we were unable to locate a real criminal gang, despite our determined and prolonged efforts to do so.⁴ We found occasional cliques or other subunits within larger gangs which engaged in special criminal activities, e.g., systematic theft or strong-arming. In one group there was a clique of "winos," and several had "singing" cliques.⁵ After a full year of investigation we located what appeared to be a genuine retreatist group.

The subcultural emphases specified in the literature were neither abundant nor as exclusive as their descriptions in the literature suggested. Factor analysis of detached worker behavior ratings isolated a

⁴ Spergel (1964) reports the existence of both "racket" and "theft" subcultures in New York City, but it is not clear in what sense these are gang patterns of behavior, as distinguished from community patterns. It is possible that Chicago lacks integrated communities, but highly unlikely in view of the city's long history of organized crime. It seems more likely that the communities to which we had access were not well integrated in this sense.

⁵ Singing cliques literally get together to sing—rhythm being emphasized.

cluster of behaviors which was conflict-oriented, and another which was a combination of drug use, homosexuality, common-law marriage, attempted suicide, and pimping that we could label as retreatist, but no criminal factor was found. Neither conflict nor retreatism characterized exclusively any of the gangs under study. Other activities emerged also as clusters which blended into the behavior patterning of these boys, e.g., stable corner-boy activities, heterosexual behavior, and an "authority protest" factor involving chiefly auto theft, truancy, running away from home, vandalism, and creating public disturbance (Short, Tennyson, and Howard, 1963). The simplicity of subcultural patterns described clearly is challenged by these data, a conclusion shared by Spengel's (1964) observations in New York City and by other studies more limited in scope (Bloch and Niederhoffer, 1958).

Yet there was within each of these gangs a shared perspective, and often this perspective was shared as well with members of other groups. For some gangs, in contrast with others, conflict with other gangs was a major focus of group activity and a source of considerable status within the gang. These gangs more often than others engaged in a variety of violent episodes in addition to gang conflict. Their investment in a fighting reputation was considerable. The boundaries of their concern for such a reputation are not clear. We know it includes other fighting gangs, but there is evidence also that it includes a much broader public. Members of such gangs often evinced great pride when the mass media took note of their activities, even though the notices usually were derogatory. A prominent member of one such gang compiled a scrapbook filled with newspaper articles featuring his gang. The scrapbook was embellished with "art work" featuring guns, dynamite, "brass knucks," money, a skull and crossed pool cues (!), and a motto—"Lords of Lovers." The names of the gang and of individual members were underlined whenever they appeared in the articles. Gang boys at first would be suspicious and ambivalent about having newsmen follow them around in search of a story, as they occasionally did, but to the best of our knowledge reporters never experienced prolonged difficulty, and willing informants were always at hand.

Conflict gangs. Conflict gangs created roles expressive of their conflict orientation, thus differing in structure from other gangs. Such positions as "war counselor" and "armorer" were jealously guarded, even though the duties and privileges of office were rarely defined in a formal way. These roles served as a focus of ceremonial deference within the group, and they provided still another basis for individual status and for group identity. Case studies of gang incidents strongly emphasize the status-

giving functions of the conflict subculture and suggest that status management is a major problem for these youngsters, leading both to gang membership and to involvement in particular delinquency episodes (Short, 1964).

We know from study of numerous incidents that not all members of conflict gangs participate in conflict, even when they are on the scene. Why this should be the case is not entirely clear, but it appears that boys who are most likely to be involved at any time are those who are most heavily committed to the gang at the moment, usually gang leaders or other boys who aspire to prominence in the gang. Outstanding performance on such occasions is one of the few available avenues to achievement in gangs such as these.

A retreatist gang. The contrast between our one group of retreatists and all other gangs under observation was striking. After several months of contact with this group one of our graduate student observers reported that the basis of camaraderie among the drug users was their common interest in kicks. He then made the following report of an evening spent with the group, during which "tales about some of the crazy and humorous things in which various of the drug users had been involved" were discussed:

The relating of these tales was greeted by laughter from all. Often the worker or observer would mention an incident and Butch would fill us in or correct us on details. Some of the incidents mentioned:

(1) The time Willie was so high he walked off a roof and fell a story or two and broke his nose. . . . Butch said it was over a week before he went to the doctor. . . . Harry said he walked around the hospital in a crazy looking green coat whenever the guys went to visit him.

(2) The time Snooks, Baby, and Jerry climbed on a roof to wake Elizabeth. One of the guys reached through the window and grabbed what he thought was Elizabeth's leg and shook it to wake her up. It turned out to be her old man's leg and it woke him up.

(3) The more recent incident in which Sonny leaped over the counter to rob a Chinaman, who proceeded to beat him badly. When the police came, Sonny asked that they arrest this man for having beaten him so. He was doped out of his mind and didn't know what was happening.

(4) Walter got into an argument with a woman over whose car it was they were standing by. He insisted they call the police, and waited confidently until the police showed and took him away.

(5) Sonny tried to break into a building and was ripping off a door when the police found him.

(6) Some of the guys slept out in a car and woke the next morning to find the car was being pulled away. They asked the tower to stop just long enough so they could get out.

(7) One of the guys broke into a car and just about tore the door off doing so—this was a car with all the windows broken out—he was too high to notice.

(8) One of the boys tried to start a car but just could not manage it. The car had no motor.

All laughed at these true tales. Butch even noted that he had been with the boy who broke into the car with no windows.

The observer closed his report with the remark, "These tales may be in the process of becoming legendary within the group. They are so characteristic of this group and describe it so well" (Short and Strodtbeck, 1965, pp. 208-209).

As we note in discussion,

Though several of these boys had "grown up" together, they were not bound to each other by feelings of loyalty. Virtually their only common bond appeared to be use of drugs and the type of experiences which are recounted above. They did not really *share* drugs. Every boy was expected to "cop" (purchase drugs) on his own. In a peculiar way this was functional to the group, for although all of the boys who were financially and otherwise able to do so would get high, seldom were more than a few heavily under the influence of drugs at any one time. They liked to get high together, but boys who were not high appeared to enjoy the antics of others who were. They were really quite individualistic in their pursuit of kicks. Often the worker would find a boy off by himself, or with a girl friend or perhaps one other member. But these were not stable friendships. The group served the function of a sounding board for their common but individualistic interests—of moral support for a way of life (p. 209).

A criminal clique. We will describe briefly the most clearly criminal group of boys we were able to locate, a clique of eight boys in a larger number of loosely related "hanging groups" which coalesced sporadically and in widely varying numbers for activities such as drinking, athletic contests, occasional drug use, driving around in cars, general "rough-necking" and "hell raising," and once in a great while, a fight of major proportions. According to the leader of the criminal clique, these boys had joined together specifically and exclusively for the purpose of promoting theft activities.

. . . They were engaged in extensive auto-stripping, burglary, and shoplifting—no "heavy stuff" such as strong-arming, robbery, or shakedown. The boys hung on the corner with the larger group, and when they did so were in no way distinguishable from this larger group. They were a clique only when they met away from the larger group, usually in each other's homes, to discuss and plan their theft activities. According to the worker assigned to these boys, "Bobby and his guys talk about what they are doing

in one room, while Bobby's old man, who used to be some sort of wheel in the syndicate, talks to his friends about the 'old days' in the next room." The boys made it a point not to "clique-up" visibly on the street, and apparently their chief motivation for association with one another was the success of their predatory activities. In this way they were quite successful for a period of approximately two years. There is testimony that Bobby, in particular, enjoyed a considerable degree of police immunity (Short and Strodbeck, 1965, pp. 209-210).

In each of these instances, representing extremes of "specialization" in delinquency orientation, the term "delinquent subculture," or some variant, seems appropriate—although not sufficient—to explain the behavior of the members of the groups. Similarly, understanding the behavior of less specialized but highly involved groups is enhanced by employing subcultural theory. Norms are generated by the group, and there are many shared activities and perspectives among participants which, so far as group members are concerned, are the unique possession of the carriers of a particular subculture, though the boundaries of participation often transcend a particular group. Characteristically, the group effectively constrains individual members from expression of conventional middle-class values, by derision of such attempts as may be made, and by espousing alternative (rather than "anti") values such as toughness, sexual prowess, and being "sharp" or "cool." Specific examples from our data include the merciless kidding of youngsters who attempt serious discussion of such matters as responsible family relations and future aspirations in this regard, occupational and educational hopes and problems. These boys remain troubled and ambivalent about many of these problems, however, and their mention does not always meet with derisive or invidious comment. Even when serious comment is entertained within the gang context, however, it is not likely to be helpful to the youngsters, for their experiences, individually and in common, rarely are such as to provide a basis for solutions or realistic hopes. Delinquent gangs and subcultures do not minister directly to these concerns; instead, they offer alternative gratifications.

Values, Opportunities, and Status

Other data bear more specifically on the independent variables of the "anomie" theories discussed above. From the Chicago study, systematic assessment of the values of gang boys and nongang lower- and middle-class controls reveal neither rebellion against the social system nor evi-

dence of reaction formation against middle-class values, as hypothesized by Cohen (1955). Boys in each of these categories evaluated equally highly such middle-class images as "someone who works hard for good grades at school" and "someone who reads good books"—much higher than they did images representing participants in conflict, criminal, and drug-use subcultures (Gordon *et al.*, 1963). The gang boys did evaluate the latter images higher than did the other boys, however. Regrettably, members of neither the retreatist gang nor the criminal clique described above participated in this aspect of the study. Close field observation of these groups as well as other gang boys, however, suggests similar conclusions: these youngsters recognize the moral validity and the legitimacy of conventional values, but they are poorly equipped to achieve in terms of these values. They experience great difficulty in the search for status and other gratifications in middle-class institutional contexts where these values are most commonly embodied and encouraged. (See also Gold, 1963.)

Gang boys, far more than their lower-class, nongang controls, were unsuccessful in school (Freedman and Rivera, 1962; Short, 1964). Further, their relations with adults in such roles as teachers, religious leaders, policemen, businessmen, and politicians are defined less favorably by gang boys than by the others (Short, Rivera, and Marshall, 1964). When they, in turn, were interviewed, fewer adults nominated by the gang boys as those with whom they have had most contact reported conversations concerning school problems (Negro gang=39 per cent; Negro lower class, nongang=85 per cent; white gang=37 per cent; white lower class, nongang=78 per cent). Adults nominated by nongang boys more frequently expressed middle-class hopes and objectives for the boys when discussing their conceptions of "a good life" for the youngsters who had nominated them (Short and Strodbeck, 1965).

Gang boys thus are doubly handicapped, by weaker relationships with adults who might provide role models for "making it" legitimately and perhaps achieving upward mobility, and by their involvement in a social system (the gang) which provides the boys with an alternative status system in which achievement is possible. This system does not equip the boys for achievement in the world of work or for stability in family life and in relation to the law. But it provides important gratifications for boys who meet with disapproval in important institutional contexts—gratifications related to friendship, "being somebody," heterosexual relations, and excitement.

Consistent with Cloward and Ohlin, the Chicago study finds that gang boys perceive legitimate opportunities as relatively less open, and illegit-

imate opportunities as more so, than do nongang youngsters from the same neighborhoods (Short, Rivera, and Tennyson, 1965). However, this finding is for all gang delinquents. It was not possible to ascertain whether the conflict and criminal subcultures differed as predicted by the Cloward-Ohlin theory since, as already mentioned, we failed to find distinctly criminal gangs.

We have already noted also that findings from both the Chicago study and from Spergel's work in New York (1964) provide partial, but not complete, support for the dependent variables—delinquency patterns—of the theory advanced by Cloward and Ohlin.

Spergel provides observational and some interview data which suggest that the behavior adaptations of delinquents vary systematically, but with much overlapping in the degree of involvement of youngsters in "racket" and "theft" behavior, in conflict, and in drug use. The distinction between "rackets" and "theft" was not made by Cloward and Ohlin, but it is consistent with their rationale, and Spergel's empirical observations are supportive. Briefly, "rackets" are *organized* forms of criminal endeavor, such as policy or numbers and loan-shark activities, engaged in for profit, and with provision for legal protection, if not for juvenile enterprises of this sort, at least for their adult counterparts. "Theft" refers to pervasive activities which are less well planned, organized, and executed, at times for profit, but often chiefly for "kicks" and the establishment of "rep." Examples are joy riding, stripping of auto parts, apartment burglary, and robbery. Spergel's summary description of the areas in which each of these patterns was most clearly represented follows:

The integration of criminal and conventional elements and the integration of offenders of different age levels varied in each area. Racketville was highly integrated, for criminal and conventional orientations were interlinked there, and a well-organized hierarchy of influence and responsibility existed among the offenders of different age levels. In Slumtown, integration was weak, for the various age groupings and systems of orientation did not mesh effectively. Slumtown represented, so to speak, almost a series of islands of conventional and criminal orientation and different-age-level peer associations. Haulburg was only partially integrated and lacked a pervasive and powerful racket system. In this area, an orientation to thievery seemed to predominate and was supported by a system of somewhat diffuse relationships among conventional and criminal elements and among offenders of different age levels (pp. 27-28).

While delinquency involvement in the three areas was consistent with Cloward and Ohlin's theoretical predictions, there was much overlap-

ping, and Spergel failed to find evidence of drug use as a subcultural activity.

With respect to the independent, or exploratory, variables, Spergel reports striking contrast between the conflict-oriented delinquents in Slumtown and the racket-oriented delinquents in Racketville, in terms of their occupational and income aspirations and expectations. The disparity between aspirations and expectations may be viewed as an index of "position discontent," a condition hypothesized by Cloward and Ohlin to lead to pressure for deviant behavior. Participants in the conflict subculture showed the highest disparity scores, while boys from the racket subculture were lowest in this respect, "perhaps," Spergel suggests, "because of the availability of a criminal system of means" (p. 122).

Our Chicago study finds the disparity between boys' occupational aspirations and expectations to be greatest among gang members, and least among middle-class boys, both Negro and white, with lower-class, nongang boys falling in between these extremes. However, disparity between their fathers' occupational levels and the aspirations and expectations of the boys did not order the boys in this manner (Short, 1964). Evidence concerning anomie theory is, therefore, not unequivocally supportive.

More importantly, neither disparity scores nor perceptions of legitimate and criminal opportunities correlate highly (in a statistically significant way) with the delinquent behavior or the police records of the gang boys. This suggests that these variables are appropriate to an understanding of the social distribution of gang delinquency but not to explanations of *within-gang* variations in delinquent and nondelinquent behavior.

For the latter task, we have suggested the introduction of group process and personality level considerations. Albert Cohen has suggested that the gang is a sort of catalyst, releasing potentials for delinquency not readily apparent from knowledge of characteristics of participating individuals. More than this, however, we have sought to account for the eruption—the specific occurrence—of delinquency episodes by various mechanisms and characteristics of gangs and gang members. Extensive evidence has been found for the following:⁶

1. *Reactions to status threats.* Threats to a variety of valued statuses often are followed by delinquent behavior. This mechanism has been found to operate in response to situations which apparently were threatening to a boy's leadership status, to status as a male and an aspiring

⁶ The remainder of this section is based on material to be found in Short and Strodtbeck (1965), and in Short (1965).

adult, and to the collective identity of boys with a particular gang name. While the mechanism may operate individually or collectively, the delinquent solution characteristically involves other members of the group.

2. *The gamble of status gain vs. punishment risk.* In the calculus of decision-making, status rewards within the group related to "joining the action" appear to be both more certain and immediate than the reward of "staying out of trouble," particularly when the chief risk involved is the low probability of being caught and punished by a society which seems disinterested in one's personal fate. Episodes which seem to reflect simply a short-run hedonistic orientation to life are buttressed by experience which suggests that taking one's pleasure at the moment yields more predictable rewards than does deferral of more immediate gratifications in the interest of long-term rewards which are unlikely to materialize. At best, remaining aloof from "the action" is likely to lack group rewards associated with joining in—the affirmation of friendship bonds, status accruals from performance in an episode, personal satisfaction derived from demonstration of toughness, masculinity, and so on.

3. *The discharge of group role obligations.* A leader may be required to "join the action," or even to precipitate it, by virtue of his leadership position. Centrality in the group—being a "core" rather than a "fringe" member (unless the latter entails striving for "core" membership)—exposes one to involvement in situations with a high delinquency potential, as does occupancy of specific roles such as "war lord," "war counselor," "armorer," or "president."⁷

Social Disabilities and Gang Behavior

In addition to blocked legitimate economic and status opportunities, gang youngsters appear to be handicapped in terms of basic social skills which would enable them to profit from such opportunities should they become available. It appears also that the gang is less rewarding to its members in the area of interpersonal relations than generally has been assumed.

While early descriptions of adolescent gangs stressed the resourcefulness of the boys, their camaraderie, and their bold search for adventure, a closer look at the earlier data and more careful documentation in recent studies seriously question the image and lead to new insights concerning such groups. Delinquent gangs tend to be quite loosely structured, shift-

⁷ Mattick and Caplan (1963) report that status-seeking behavior by the most troublesome and trouble-laden member of a gang often takes the form of monopolizing virtually all of a detached worker's time. They find, however, that other gang members are influenced, apparently by listening to the worker's exchanges with the troublesome member.

ing in membership, and to have severely limited capabilities for concerted action beyond crowd- or mob-like action on the street (Pfautz, 1961; Short and Strodtbeck, 1965; Yablonsky, 1962). With few exceptions, they do not minister effectively, if at all, to adolescents' growing needs with respect to education, vocational training, or motivation, to preparation for family life, or participation in other aspects of the community life (Short and Strodtbeck, 1965, Ch. 10; Short, Strodtbeck, and Cartwright, 1962). Few of the boys, for example, know how to conduct themselves in an employment interview, or how to relate satisfactorily to authority relations in school or on the job, indeed, how to behave in any situation outside the area in which they live. From the earliest days of the Chicago project we were struck by the lack of social assurance displayed by the gang boys, and by their similarity in this respect to Whyte's "corner boys" (1943 & 1955). An instructive example is provided by excerpts from a detached worker's interview, which, incidentally, suggests also both the low degree of mutual obligation among gang members outside the arena of immediate interaction and their dependence on the gang and the "area" for a sense of social and psychological well-being (Short and Strodtbeck, 1965).

A: When I first started thinking about the annual YMCA banquet, I knew I'd be able to get about five tickets, and I had planned on taking three boys and using the other two myself. I talked it over with Duke. First thing Duke suggested, he wanted me to get him a date with one of the YMCA girls from the downtown office. . . . I told him I thought maybe he'd be better anyway to take Elaine because . . . "you've never actually taken Elaine anywhere of importance. You've taken her to the show, but she's never been to a downtown affair."

Q: Is Elaine the girl who has Duke's two children?

A: She has a baby girl who is a year old and one that's three. Duke's never taken her to a real nice place, and I thought it would be nice if he asked her to go. He was real excited. "Okay, I'll ask her." So that was closed.

Then I had one extra ticket. I said, "Well, Duke, seeing that you and Butch get along real well, maybe Butch would go."

The first thing Duke said was, "No, no, we don't want to take Butch because he doesn't know how to eat out in company."

So naturally I smiled and said, "Crisake, he knows just as much as you do."

"No, he just don't know how to eat out in company."

Then he went all the way back to the time I took them to the Prudential Building. I suggested that we go in and get a cup of coffee, but Butch said, "No, we'd better go back to the area [home territory] and get a hot dog or

Polish [sausage]." And Duke was all for it, too, because he didn't want to go in there either. On the "Top of the Rock" they did their sight-seeing, but they didn't want to go into the little restaurant and get coffee. They didn't feel they were dressed, or something. They're real shy about going into a strange place that's real nice.

Earlier in the summer I took Duke, Butch, and Harry out to Lake Meadows, and they were real shy. They didn't want to go in because they felt they weren't dressed good enough. But I made them go in and at least have a cup of coffee. We went early. They had a little combo and I figured a guy could sit and listen to them play for maybe half an hour and drink coffee. 'Course, they went in the restaurant part. They didn't go in the other side where you can really hear the combo. They all felt the same way—they weren't dressed good enough.

Anyway, Duke didn't feel Butch was qualified. So I smiled and said, "Okay, how about Harry?"

"Hell no. Harry hasn't got enough clothes to go."

Harry only has one suit. I had mentioned the banquet to him earlier in the week, but he didn't know whether or not he could go—meaning that he didn't know whether he could get his suit out [of hock or the cleaners]. He didn't know whether he'd have any money. But Duke felt so strong about Butch's not going that I didn't push Harry. So I dropped it, and that was it.

* * *

[After the banquet] Elaine complained because Duke insulted her and she couldn't eat her meat. Duke was trying to show her how to cut the meat. He said Elaine didn't know which hand to hold the knife in. She was real hungry and she ate everything but the meat, because Duke was rapping on her so much.

Q: I wondered why she kept looking around the table. She was very self-conscious.

A: Right. She felt real bad for not having eaten the meat. She didn't know whether it would have been appropriate to have Duke cut her meat or not. Duke said the meat was so tender he could cut it with his fork (pp. 219–220).

Knowing how to "eat out in company," dressing to fit the occasion, and the ability to carry on "polite" conversation in "polite" society are hard to come by for lower-class persons generally, but especially so for youngsters whose participation in conventional institutions where these skills are acquired has been severely attenuated. In the foregoing case we have noted further that:

Duke and his girl friend were noticeably silent throughout the YMCA banquet. The accident of seating arrangements found them sitting at a table adjacent to the one where the worker sat. They never initiated conversation with the half dozen other guests at their table, and their responses

to others' conversational efforts were brief and subdued. Throughout, Elaine seemed cowed by the experience, Duke less so, but obviously at some pains not to make a behavioral miscue. The two exchanged meaningful glances with one another during the course of the meal and the entertainment which followed. Their behavior was stiff and uncertain, quite in contrast to the generally relaxed and friendly atmosphere of the crowd (pp. 220-221).

Knowledge and skills such as these, of course, can be taught. It is more difficult, however, to inculcate basic skills in "getting along with people" in the varied range of situations which daily confront the individual. Further, characteristics of life on the streets, such as the highly aggressive means of establishing a "pecking order" and the playing out of status threats, the exploitation of each momentary situation for whatever immediate pleasure can be derived, the flouting of conventional middle-class expectations with respect to conduct, do little to inculcate or to encourage the development of these skills. Brim (1966) has noted that both the content and the processes of socialization involve interpersonal relations, that, in effect, "much of personality is learned interpersonal relations." In this important area, gang boys appear to be quite deficient.

Laboratory personality assessments of boys in the Chicago study also are relevant at this point. These studies find gang boys to be slightly more anxious, neurotic, and narcissistic than the other boys. They tend also to be less gregarious and self-assertive (in this test-like situation), and more reactive to false signals (Cartwright, 1962; Gordon, 1965). As we have noted elsewhere,

The possible cumulative effect of these differences is more impressive than are the individual findings, for they add up to boys who have less self-assurance and fewer of the qualities which engender confidence and nurturant relations with others. It seems likely that these characteristics heighten status insecurities of gang boys in many contexts. For example, our psychological testing team observed that gang boys were much more sensitive to how others were answering questions, completing instruments, and performing various tasks than were the other boys, and they appeared to be more anxious concerning their own performance relative to others. When we talked to gang boys about the research program, they indicated a special sensitivity to why *they* were being studied. We had to take special precautions in these respects, both to protect the anonymity and the integrity of responses and to assure gang boys that they were not being singled out for any peculiar and derogatory reason (Short and Strodtbeck, 1965, pp. 230-231).

Bandura and Walters (1959) report that their delinquent boys are less "warm" toward peers than their nondelinquents. In our Chicago study,

gang boys evaluated fellow gang members less highly than nongang boys evaluated members of their peer groups (Gordon, 1965; Short and Strodbeck, 1965). Rothstein (1962) finds that delinquent boys are less likely to regard loyalty and trustworthiness as attributes associated with high social status than are nondelinquents. Bandura and Walters also report that their aggressive boys were more conflicted and anxious concerning dependency behavior than were their control boys.

The latter finding is especially interesting. Because adolescence is a period of disengagement from childhood dependency relations, it is difficult for youngsters at this stage of life to express dependency needs. The problem is aggravated for gang boys, for any display of dependency is likely to be interpreted as a sign of personal weakness. The boys must prove themselves to be tough; "coming out on top" is inordinately important in any personal encounter on the street, and they are expected to be exploitative rather than tender in relations with girls. This compounds the boy's problems, for at a time when sexual needs are becoming more imperious as a result of changes in his body, social pressure to "make out" increases, but emotional needs are denied expression and the means toward their fulfillment are actively discouraged on the street.

The camaraderie and identification with one another, and the opportunity for open expression of these, which are provided by school athletic contests, in victory or in defeat, are largely missing for gang boys whose identification with the school is likely to be tenuous at best. Games played among themselves or with other gangs are likely to be marred by frequent conflicts. Kobrin (1961) has noted that gangs in Chicago which were under observation by the Institute for Juvenile Research were "so completely committed . . . to the value of victory that the rules of the game seemed to have a tenuous hold on their loyalties. It was not unusual for them when stern adult supervision was absent to avoid impending defeat in a sports contest by precipitating a fight" (p. 688). Among Chicago gangs we have studied, there appears to be an exaggerated tendency to rationalize failure by invoking factors presumably beyond the boys' control; for example, "We were so high we were almost blind when they beat us," or "They ran in a bunch of old guys—practically pros—or we'd a' beat 'em."

Gang activities provide opportunities which may be defined by the gang as legitimate for the expression of dependency behavior and which compensate in some measure for various social disabilities of the members. Thus, gang fights and their aftermath provide opportunities for sharing common exploits, for care of wounded, righteous indignation concerning "unfair advantage" taken by an opponent, and glory in com-

mon cause. Boys who are under the influence of narcotics may legitimately be protected from the public eye (and particularly the police) and from physical hazards such as might occur if they were allowed to wander into heavy traffic.

The Gang as a Concept in Studying Delinquency

There is some evidence that the large-scale gang activity which occurred in several large cities in the United States after World War II more recently has dropped off to a considerable degree. Certainly conflict gangs appear to be fewer in number and far less troublesome than was formerly the case in New York City and Chicago. Yet delinquency rates continue to be high in these and other cities. The question necessarily arises, therefore, as to how crucial "the gang" is to explanations of delinquency.

"The gang" has been a much discussed phenomenon, and some have found it inadequate as a concept (Sherif and Sherif, 1965; Yablonsky, 1962). Our own research suggests that the gang is much less well-organized and cohesive today than it was formerly, and we suspect that earlier descriptions exaggerated the extent of organization and cohesiveness in the groups studied. What apparently has happened in some cities, notably in Harlem in New York City, is that gangs have become less prevalent and those which exist are even less well-organized. Juvenile delinquency in this area is described as consisting "in the main, of general hell-raising and use of narcotics" (HARYOU, 1964, p. 143). We suspect strongly, but lack documentation, that this behavior remains collective in nature, and that the processes described with respect to gangs and lower-class Negro communities also apply to the new situation. It is probable that new roles emerge as organized gang activity subsides—roles which may be even less stable and more subject to challenge and threat in the rough and tumble of street life than are roles associated with gangs. The new situation—if, indeed, it is such—seems likely to be more subject to the mechanisms of "elementary collective behavior," as Pfautz (1961) has suggested, than were gangs. The need for careful study is apparent.

CONCLUSION: IMPLICATIONS FOR DELINQUENCY CONTROL

Competing formulations concerning the etiology of juvenile delinquency have much in common. It seems likely that the fine points of theoretical disagreement are less important to delinquency control than

are the large areas of agreement and convergence. In concluding this chapter a degree of license will be exercised in drawing together the perspectives discussed and in assessing their relevance for delinquency control.

There can be little doubt that realities of social structure such as social class and ethnicity influence differentially the "life chances" of individuals and groups with respect to widely shared goals such as the achievement of material wealth and of status in important institutional and interpersonal contexts. For many lower-class and ethnically disadvantaged persons, failure to achieve these goals begins early in life, for failure is a matter not only of the lack of opportunities in the marketplace, but of the results of socialization practices which ill-equip them for achievement. It is not enough, therefore, to open new avenues for achievement or opportunities for advancement. Youngsters and adults alike must be provided the skills necessary for effective utilization of opportunities, whether these be economic, political, or social, in the sense of social disabilities as discussed in this chapter. It is doubtful that delinquency prevention can be effective if any one of these skill levels is neglected. And, in the long run, a fourth, socialization skills, certainly must be added. That is, it seems necessary to change basic family socialization patterns to avoid future generations of youngsters lacking in social and other skills.

Efforts to improve these skill levels must reckon with an additional fact concerning adolescents: the influence of peer groups. Peer groups become an especially important status universe for adolescents. Ideally, peer groups and conventional institutional opportunities for achievement complement and supplement each other. For those who lack the social skills necessary for achievement in conventional institutions, or who for other reasons have failed in this respect, however, peer groups often come to provide alternative means of achievement—means which sometimes involve participation in delinquent acts.

Many of the peer groups and institutions that are the primary carriers of lower-class, ethnic, and delinquent subcultures are marked by social situations and physical objects which, together, create high risk of involvement in behavior defined as deviant or delinquent. To our discussion of the instability of the gang, the lack of social skills of many gang boys, and lower-class institutions in which "shady" and "respectable" elements are thrown together, might be added the heavy public drinking and the milling character of much social life in many lower-class communities, the great number of guns, and the acceptance of violence as a means of settling disputes. The playing out of status threats in such an

arena, and the compelling forces pressing for "joining the action," create a high potential for violence.

Yet much of the violence can be contained—particularly that which is organized and purposive among gangs—by effective monitoring of the flow of events by adults serving as street workers, or "detached workers," as they have come to be known (Crawford, Malamud, and Dumpson, 1950; New York City Youth Board, 1960; Short and Strodtbeck, 1965). It appears that detached workers are able to mediate and manipulate status-threatening situations for the boys, individually and collectively, often to tip the balance against "joining the action," and to work effectively with the police when large-scale gang conflict threatens. They are less successful, apparently, in turning the boys from stealing behavior (when the detached worker is not "on the scene") and much less effective in coping with drug use, once a youngster has become addicted (Rice, 1965), in preventing or reducing drinking and illicit sexual behavior. The complexities of motivation, opportunity, and control involved in these behaviors are perhaps even greater than those characteristic of violence.⁸ Aside from gratifications inherent in each of them—and these should not be ignored—one could argue their causation from every level of explanation: basic socialization patterns, motivations induced by societal values and social structural limitations, defective social control systems, and the operation of group processes. There is evidence that drug use is transmitted in peer groups (Chein and Rosenfeld, 1957; Cohen and Short, 1958; Kobrin, 1951; Short and Strodtbeck, 1965), but there is evidence also of much variability among group members in the extent of participation—variability which is not well understood. There is some evidence that boys who have especially severe personality problems, and who are less centrally involved in the group, are more likely to become involved in drug addiction (Chein and Rosenfeld, 1957). There is a strong suspicion that breaking up conflict gangs without providing alternatives for achievement which are acceptable to the youngsters, results in a higher incidence of drug use (HARYOU, 1964).

All of the evidence is not in concerning these matters, yet pressing problems urge that action be taken. With public awareness and concern for these problems at a high level, very large experimental programs aimed at the rehabilitation of delinquents and the prevention of delinquency recently have been mounted, with leadership and funding provided in large measure by sizable federal and private foundation grants

⁸ Most workers appear to concentrate on the prevention of violence and drug use, when it occurs, but on containing and "socializing," rather than preventing, sex and drinking, i.e., on directing the latter into socially acceptable patterns.

(Caplan *et al.*, 1963; Cooper, 1963; Empey and Rabow, 1961; HAR-YOU, 1964; Mobilization for Youth, 1961; President's Committee, 1964). Most of these programs propose to carry out very broad attacks on delinquency at each of the levels suggested in this chapter. In some of them, reduction of delinquency in the community becomes a secondary aim, with primary attention devoted to fundamental processes of socialization, education, vocational training, and community organization, based on the theory that these are the processes responsible for delinquency. Emphasis is on providing greater objective opportunities in these areas, and on the technical, social, and political skills necessary for effective utilization of new opportunities. Hopefully, much will be learned from these new programs. Past efforts to test the effectiveness of delinquency prevention programs unfortunately are not encouraging. By and large, they fail to demonstrate the effectiveness of any program (Witmer and Tufts, 1954). Negative findings may, of course, contribute much to knowledge, but evaluative research has not done so, except as data have been subjected to secondary analysis with the primary object of contributing to knowledge, rather than evaluating the effectiveness of delinquency prevention efforts. A few examples will suffice.

The Cambridge-Somerville Youth Study sought to prevent the involvement in delinquent behavior of a treatment group of boys by providing them with a "friendly counselor." The counselor attempted by various means to help the boys keep out of trouble. A matched group of boys—matched on the basis of previous behavior and various tests—were not counseled, and served as a control group. The treatment program averaged nearly five years. Evaluation at the end of treatment and some years later led to the conclusion that the treatment program "was no more effective than the usual community forces . . . in preventing boys from committing delinquent acts" (Powers and Witmer, 1951). But what had been tested? We know from published accounts that treatment consisted of a great variety of practices on the part of the counselors and that it lacked the intensity considered desirable by those who advocate early identification and treatment of potential delinquents (McCord and McCord, 1959; Toby, 1965). Toby has shown that the treatment was more effective in "better neighborhoods" than it was in slums, and has suggested that peer-group influences and other life circumstances not measured may account for this fact. Much has been learned from the later analysis of data from this program, but very little concerning the effectiveness of counseling as a delinquency prevention device.

A recent New York City Youth Board experiment in delinquency prevention is based upon the Gluecks' prediction scale, the basis of which is

the nature of family relationships (Glueck and Glueck, 1950). Family relationships of boys in two high delinquency area schools were rated when the boys were six years old and entering the first grade.⁹ In one of the schools, boys predicted to become delinquent were provided with the services of a clinical team of social workers, psychologists, and psychiatrists. The treatment program lasted four years. After seven years members of the treatment group were no less delinquent than were their controls. The controls, from another school, also had been predicted to become delinquent, but they had not received the treatment program. Follow-up studies from this program promise to yield much information of value, particularly concerning the influence of factors not considered in the original design, such as ethnicity and economic status of the boys, and in distinguishing the meaning and the importance for delinquency causation and control of various types of family relations (Toby, 1965).

A combination of detached workers, family casework services, and community organization efforts was unable to reduce either delinquent behavior or court contacts in Midcity, a lower-class district in Boston. Again, however, we do not know what treatment effort had what effect on the youngsters. We do know a great deal about the behavior of the youngsters, and some of the processes which seemed to be at work in bringing the behavior about, as a result of the fundamental research of W. B. Miller (1962, in preparation).

In a unique approach to measuring the effectiveness of delinquency control measures, Rice and Adams (1965) have studied the *costs* of providing a detached worker and correctional services to a delinquent gang. These were compared with the costs for a gang receiving less attention from detached workers, and one that had no contact with a detached worker. A group of 43 boys was provided full service by the detached worker, another group of 33 only partial service. Correctional costs accumulated over a three-year period prior to initiation of detached worker service were \$249 per boy *higher* for the fully serviced than for the partially serviced group. The average cost per boy three years after service was initiated was \$256 less for the fully serviced boys. Including cost of the detached worker program, an estimated saving of \$15,000 was realized over the three-year period. However, by comparing correctional costs of the fully serviced group with those of a totally unserved group previously studied, estimated savings totaled \$133,363 over the six-year period. Rice and Adams also report startlingly lower correctional costs for the younger brothers of the fully serviced group of boys,

⁹ Both family ratings and predictions of delinquency involvement were based upon the work of Glueck and Glueck (1950). See also Toby (1965).

compared with the partially serviced group. The latter finding is especially interesting since it suggests that detached workers may make significant inroads on the delinquent subculture which is so persistent in high delinquency areas.

Experimentation and evaluation are extremely difficult in any area involving human behavior in the open community (as distinguished from the small-groups laboratory, or a relatively closed situation such as a factory or a correctional setting). Experimental variables have proven virtually impossible to control with precision, and the impact of other, even less well-controlled, variables has so complicated the problem as to render any assessment suspect. Yet much of fundamental importance has been learned from evaluative efforts. Increasing sophistication of prevention programs and the associated research efforts, in terms of social science knowledge and theory and the tools of research, promise even more for the future.

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Modal Patterns in American Adolescence

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ADOLESCENCE, as a special interest within psychology, has a long history. G. Stanley Hall introduced the topic into the scientific literature in 1899 and published his monumental two-volume work in 1904, about the time that sensory discrimination and the unconscious were emerging as areas of special concern. Yet it is only in the last two decades that our knowledge of adolescent processes has begun to take on the quality of understanding that occurs when theory enters a field. Anna Freud's insights about the special dilemmas and defensive strategies of the period (1937) represent a theoretical claimstake in the territory of adolescence. The last twenty years have brought considerable conceptual charting and a marked advance in knowledge.

This lag between interest and theory seems to us an accident of history. Hall himself, despite the fact that he structured his thought around the idea that individual development followed the pattern of species development, was supremely atheoretical. He was an observer and cataloguer. As Dennis noted (1946), Hall's work was more vigorous, inspired, and lofty than it was theoretically relevant. Hall was a penetrating observer, and indeed he established the areas of observation (sexual development, body growth, periodicity, delinquency, religious conversion, and so on) which to this day serve as organizing concepts in textbooks on adolescent psychology. But he did not pose the questions about interrelationships among changes and causes of the organization of changes which might have advanced systematic thinking and research.

At the same time psychoanalysis, the theory most relevant to understanding adolescence, was developing on a course that reduced late childhood and the adolescent transition to a distinctly secondary interest. The early emphasis of psychoanalysis on the instincts and their vicissitudes led to a view of adolescence as primarily, if not entirely, a recapit-

ulation of earlier Oedipal conflict and resolution. Both clinically and theoretically psychoanalysis probed to the earliest presentation of a problem, for it was here that misadventure generally occurred, that anxieties, defenses, and symptoms were anchored in maldistributions and peculiar transformations of drive.

Furthermore, having demonstrated the existence of infantile sexuality, psychoanalysis could then dismiss those academic theories which had concerned themselves with adolescence in the erroneous belief that it marked the entrance of sex into the individual's life history. Consequently, insofar as the proper study of psychology was drive, according to the early psychoanalysts, there was nothing about adolescence to recommend it for special theoretical concern.

Just as the concepts of drive and instinct deflected early psychoanalysts from the study of adolescence, the recent reorientation of psychoanalytic theory to the broad area of ego development has brought adolescence at long last into its own. For make what we will of the similarity in drive at adolescence and in early childhood, the truth is that the five-year-old and the twelve-year-old are not identical. While we recognize important continuities in development throughout the human life span, adolescence warrants our attention as a special phenomenon.

Were we content simply to describe human development as it proceeds from conception to death, it would be sufficiently convenient to segment the human life span arbitrarily, making smaller segments of those years of greatest change for the purpose of containing our discussion. If, however, we aspire beyond description to a theoretical understanding of development, then we must conceive of the life span as an integrated flow of crucial changes, and let these crucial changes determine how we will somewhat less arbitrarily segment development for the purpose of discussion. This is the value of Piaget's conceptions of the development of cognition and of morality; of Freud's conception of the psychosexual stages; and of Erikson's conception of the developmental tasks upon which we lean heavily in this review. Each of these and other theoretical frameworks like them help us organize the data on development in a way that explains as well as describes.

One change which distinguishes adolescence as a phenomenon in human development is the growth spurt, and particularly the rapid maturation of the reproductive system. This accelerated dash into adulthood and the acquisition of potent sexuality, in turn, invoke changes in the way individuals are expected to behave, particularly in social interaction. These interlocked events, the biological change within and the

social change without, characterize the bio-social phenomenon of adolescence.

While changes in the pattern of growth are humorously, painfully, beautifully obvious in the gangling figures of boys and the rounding figures of girls, changes in social expectations are more subtle—and we should not go on before discussing the concept of *role* as it will be used here. “Role” is a brief way of summarizing the fact that groups of people who interact with one another come to agree after a time on how they should behave, particularly in relation to one another. These prescriptions about behavior consist of rights and obligations; some are quite specific and rigid, others are broad and flexible; some explicit, some implicit. Not everyone has the same rights and obligations: in groups where people may be differentiated according to their age or sex or family background or wealth or length of membership or some other characteristic, behavior prescribed for each subgroup may differ. The role is the set of prescriptions for proper behavior and it often bears a title like “father,” “friend,” “saleslady,” “boy.”

At successive stages of our lives different roles are laid upon us by our group, and at each stage we are called upon to play many roles at once. One of the central features of adolescence is that role demands are changing rapidly, in the process requiring changes in some longstanding and heavily invested behavior as well. For example, a subtle change takes place in the roles of “son” and “daughter”: the role of “child” fades out of them. When once the hurt boy could cry and be cuddled, this is no longer legitimate for the adolescent son; the adolescent daughter now finds her father vaguely uncomfortable when she snuggles with him. So some warmth and comfort fade with the role of child.

These rapid and fundamental changes generate the central developmental problem of the adolescent. Finding that he is looking different and feeling different, and that others are responding to him differently and expecting him to act differently, an adolescent must wonder whether there is anyone who is really “him.” Erikson (1950) has conceptualized this problem as the crisis of identity. That is, the adolescent must find ways to integrate what he feels he is with what his society allows him to be, at a time when he is not altogether sure what he is or what he is allowed to be. And in order that he may thrive psychologically, the adolescent’s integration of self with society must finally present a personality that is essentially the same—whether viewed from within by himself or from without as reflected to him by important others—and essentially respectable to those who matter.

This view of the nature of adolescence and its developmental task has

led us to organize our materials around the two elements of changing body and changing roles. We begin with a description of the maturation of sexuality by which we define the adolescent phase. Then we trace this theme of growth through a series of important roles which adolescents are called upon to play—son/daughter, friend-peer, student, worker, citizen, and believer. Finally, we discuss overall integration as a problem in the development of the self-concept.

SEXUAL MATURATION

Since changes in the sex glands are the central changes by which we will define maturational adolescence, it is necessary to consider changes separately for boys and girls. Among boys we will take as the onset of adolescence the beginning of accelerated growth of the testes. We choose this criterion because it is one of the earliest signs of puberty, it correlates well (about .55 to .75) with other criteria such as skeletal measures and the appearance of pubic hair, and it is a direct measure of sexual maturation. It is also a criterion which can be used in the midst of adolescent growth, in contrast to some of the usual criteria like the attainment of 90 per cent of maximum height, which can be determined only after growth is completed.

To the casual observer the most striking and obvious sign of the onset of adolescence is the spurt in height which about 75 per cent of boys experience around a year after onset of testicular growth (Tanner, 1962). Because of the comparative ease and reliability of its measurement and because of its direct comparability to growth among girls, the height spurt rather than testicular growth is often taken as the measure of adolescent onset. The most rapid gains in penis size also occur for most boys simultaneously with the spurt in height.

We define the end of adolescence in boys as the end of testicular growth. Stolz and Stolz (1951) found that measures of later stages of testicular growth, using photographs, are less reliable than measures of the end of the height spurt or of penis growth. Nevertheless, the ages at the beginning and end of accelerated testicular growth are intercorrelated .77. Testicular development almost invariably continues beyond development of the penis and in about 80 per cent of boys continues for about a year following the end of the spurt in height (Stolz and Stolz, 1951, p. 344).

So far we have not mentioned chronological ages associated with adolescence. We have not in order to emphasize that adolescence is a *developmental* rather than a *chronological* phenomenon. While the

development of testes, penis, height, weight, and other indicators of adolescence occurs in similar sequence for almost all boys, age at onset, rate of development, and age at end of adolescence vary widely. Reynolds and Wines (1951) provide data based on a sample of 59 boys observed over a decade at the Fels Research Institute. Onset and end of adolescence were measured by ratings of genital development from photographs, measures of onset relying heavily on observations of the scrotum and the penis.

TABLE 1. ONSET AND END OF ADOLESCENCE IN BOYS^a

ONSET		
<i>Chronological age</i>	<i>Per cent of boys beginning maturational adolescence at each age</i>	<i>Per cent of boys at each age who are maturational adolescents</i>
9.5	3	3
10.0	2	5
10.5	12	17
11.0	18	35
11.5	29	64
12.0	13	77
12.5	14	91
13.0	6	97
13.5	3	100
END		
<i>Chronological age</i>	<i>Per cent of boys entering maturational adulthood at each age</i>	<i>Per cent of boys at each age who are maturational adults</i>
15.5	3	3
16.0	1	4
16.5	8	12
17.0	11	23
17.5	21	44
18.0	31	75
18.5	25	100

^a Adapted from Reynolds and Wines (1951).

Among the boys observed by Reynolds and Wines, the youngest adolescents were nine and a half years old and the oldest preadolescents thirteen and a half. The youngest adults were fifteen and a half years old and the oldest adolescents over eighteen. Nor should we assume that boys characteristically begin adolescence at a specific age and progress smoothly through to the end of adolescence. Rather, the more typical pattern is one of fits and starts, boys unevenly and erratically growing into adulthood.

In girls, we will define as the beginning of adolescence the development of breast buds. This criterion recommends itself for the same reasons testicular growth is the useful criterion among boys: its early place in the sequence of adolescent growth, its reliable relationships to other measures of growth, its specifically sexual nature, and the possibility of observing it as it occurs. The height spurt among girls usually begins around the same time as the development of breast buds. The menarche, taken by most authorities as the indicator of adolescent onset in girls, follows on the average two years later (Simmons and Greulich, 1943; Tanner, 1962). Tanner finds a correlation of .86 between age of appearance of breast buds and age of menarche; Nicholson and Hanley (1953) a correlation of .74. According to Tanner, age of appearance of pubic hair is correlated .66 with breast development, appearing sometimes before breast buds, sometimes after. Development of the uterus and vagina probably begins about the time the breast buds appear (Tanner, 1962, pp. 31-32).

TABLE 2. ONSET OF ADOLESCENCE IN GIRLS, DEFINED BY BREAST BUD DEVELOPMENT*

<i>Chronological age</i>	<i>Per cent of girls beginning maturational adolescence at each age</i>	<i>Per cent of girls at each age who are maturational adolescents</i>
8.5	4	4
9.0	4	8
9.5	10	18
10.0	16	34
10.5	16	50
11.0	20	70
11.5	10	80
12.0	6	86
12.5	10	96
13.0	4	100

* Adapted from Reynolds and Wines (1948).

The youngest adolescent girl in the Reynolds and Wines study is eight and one-half years old, and the oldest preadolescent, thirteen years old.

We have not been able to find a clear criterion for the end of adolescence among girls. The full development of breasts, the initial stage of which serves as our criterion of onset, is reached while other aspects of growth are continuing, at about the age of fourteen (Nicholson and Hanley, 1953). Other measures reported in the literature also would set adulthood at an earlier age than we believe appropriate. A promising criterion, suggested by Ashley-Montague's work on the fertility of ado-

lescents (1946), is the regular production of fertile eggs or perhaps the stabilization of the menstrual cycle. It seems likely that these stages are reached at a modal age of sixteen to seventeen, which is the usual year or so earlier than the modal age for boys to reach adulthood and follows the termination of other aspects of growth. However, we have not been able to find any research on the ages at which any population of girls reaches these stages.

According to our criterion of adolescent onset, girls enter adolescence on the average of six months earlier than boys do. Other criteria, such as the attainment of 90 per cent of maximum height, set the average boy's lag as much as a year and a half behind the average girl's. It appears that, on the average, boys begin their sexual maturation only shortly after girls but take longer to reach maturity.

PSYCHIC MATURATION

As suggested in the way we have defined "adolescence," what is most crucial and interesting about this phase of development is the sudden surge of new drive and the reorganization of drives in the individual. The study of adolescence may usefully be regarded as the study of the impact of rapid changes in the intensity and quality of the sexual drive on the individual's mental life and on his social role. In this section, we will review research on psychic development, emphasizing those aspects which seem most closely related to sexual maturation.

Sexual Behavior

As a result of the fairly rapid maturing of sexual organs, one expects to find an increasingly intense and focused sexual drive and a greater manifestation of the sexual drive in adolescent behavior. Specifically, one expects an increase in the frequency of direct sexual behavior, in sexual interests, in sexual fantasy, and in anxiety and defensiveness about sexual matters. When one turns to the literature in search of evidence of such behaviors, one finds some surprises waiting. The evidence on sexual behavior, for example, turns up an interesting sex difference. While our image of sexual changes in adolescence includes both boys and girls, the pattern of change in direct sexual activity is markedly different in the two groups.

Kinsey and his associates (1948, 1953) present the best available data on sexual behavior, despite the fact that their samples of respondents may not be precisely representative of any identifiable population, particularly in the adolescent age range. While sexual behavior begins in

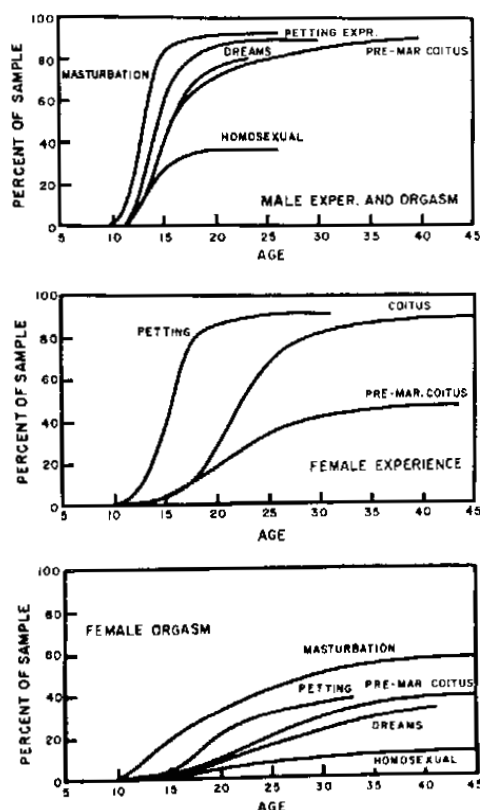


FIGURE 1.

Comparisons of Female and Male Experience and Orgasm. Accumulative Incidences (Figures 148-150 in Kinsey, A. C., et al. *Sexual Behavior in the Human Female*. Philadelphia: W. B. Saunders, 1953, p. 717.)

infancy and continues throughout childhood, a much broader group of individuals engage in sexual behavior with greater frequency at the onset of adolescence. The curves in Figure 1 show sharp rises in sexual experiences at about the age of puberty. We are interested here especially in the portion of the curves between ten and twenty years of age.

We note that Kinsey reports far less drive expression in females at all ages, especially during adolescence. Figure 1 shows that fewer females than males achieve orgasm in any type of activity. It seems reasonable to suppose that stricter social control of girls and the force of social taboos combine to produce this difference: sexual activity in adolescent girls

does not result in reinforcing tension release often enough to maintain the activity at the male level.

There is another striking detail in Figure 1. Not only does the curve of sexual activity for boys rise more sharply, but it also begins to rise, according to the researchers' estimates, earlier than the curve for girls. The authors write:

. . . we have emphasized . . . the later development of sexual responsiveness in the female and its earlier development in the male. We have pointed out that the male's capacity to be stimulated sexually shows a marked increase with the approach of adolescence, and that the incidences of responding males and the frequencies of response to the point of orgasm, reach their peak within three to four years after the onset of adolescence. On the other hand, we have pointed out that the maximum incidences of sexually responding females are not approached until some time in the late twenties and in the thirties, although more individuals became fully responsive at an earlier age (Kinsey *et al.*, 1953, p. 714).

In at least two ways, these data are in direct contradiction to data presented earlier. In the first place, we have seen that females as a group mature sexually earlier than males, which suggests that girls would manifest sexual behavior earlier than boys, rather than later. Second, the sharp rise in sexual activity for boys and the more gentle rise for girls precedes the ages at which puberty begins for boys and girls; perhaps these early increments are manifestations of the relatively few youngsters who are precipitated into puberty early, or of social pressures.

As to the sex differences, Kinsey and his associates (1953) write: "Nothing that we know about the anatomy or physiology of sexual response, or about the relative significance of psychological stimuli in females and males, would account for these differences in the development of sexual responsiveness and for these differences in the aging patterns of the two sexes" (p. 715). Some data on covert, emotional responses to surgent sexual drives, to be presented later, may help to illuminate these sex differences.

Figure 1 indicates that most adolescent sexual activity consists of masturbation, heterosexual petting, and heterosexual intercourse. The Kinsey data also make possible some rough estimates of changes and trends in adolescents' sexual practices over the first forty years of this century. The data for males of the youngest group studied compared with the generation who were adolescent sometime between 1910 and 1925 reveal very few generational differences. In the least educated group (grade school or less), the younger generation experienced hetero-

sexual intercourse on the average a year or two earlier than the older generation of men did, and they report a somewhat higher incidence of petting, masturbation, and nocturnal emission than the older group. In the most educated group (college), the younger generation report a higher incidence of petting and of petting to climax than the other group. Kinsey summarizes his findings on historical trends for males in this way:

... slight changes in attitudes, some increase in the frequency of masturbation among boys of the lower educational levels, more frequent nocturnal emissions, increased frequencies of pre-marital petting, earlier coitus for a portion of the male population, and the transference of the pre-marital intercourse from prostitutes to girls who are not prostitutes (Kinsey *et al.*, 1948, p. 416).

Changes in girls' sexual behavior over this same period are more marked, as we would expect from Kinsey's remark about the males' choice of partners. Among females, increases in both petting to climax and heterosexual intercourse appear in each decade since 1900 up to the group born in the 1920's (reaching adolescence in the 1930's and 1940's), where the curve levels off. Less than 20 per cent of the women born in the 1920's report petting to climax by age eighteen. About 20 per cent experienced heterosexual intercourse by this same age.

Reiss (1960), who has analyzed the attitudes and standards underlying sexual practices as well as the behaviors themselves, suggests that new standards have evolved over the last fifty years or so, and that the changes are generally away from a double standard toward a humanized single standard allowing sexual expression in the context of a strong affectional bond (i.e., when the partners are in love or plan to marry). He also concludes, however, that the change is occurring slowly, that the ideology of sexual freedom reached its peak of acceptance during the 1920's, and that strong traditional and irrational forces prevent rapid changes in either sexual standards or sexual behavior. Reiss's own research and most of the studies he reviews deal with older adolescents and young adults (i.e., college students, engaged couples, and so on) and we suspect that conservative forces, particularly parental attitudes, operate even more effectively in opposing change during adolescence proper.

Sexual Interests and Sensitivities

Interest in and sensitivity to sexual matters increase markedly at adolescence. Data from the Terman-Miles (1936) Masculinity-Femi-

ninity Test show a sharp rise in the masculinity interest scores of boys, which begins in junior high school and peaks during the high school years. The onset of adolescence marks a smaller increase in masculinity among girls as well; this trend quickly levels off among girls whose formal education ends at high school graduation or before but continues to rise to a peak among college sophomore women. Although the general trend during adolescence is toward greater masculinity of interests among girls and boys, adolescent girls as a group remain decidedly feminine compared to boys, and Terman and Miles note that the greatest differentiation of interests between the sexes occurs during adolescence.

Lessler (1962) provides a different kind of data to demonstrate that sex consciousness rises rapidly at adolescence. He had 120 males and females sort 3 by 5 cards on which were printed symbols previously judged by independent observers as symbolic of masculinity and femininity. Half of the cards displayed symbols which were masculine or feminine in their shapes (pointed versus rounded); half, in their textures (rough versus smooth). All the groups of subjects from fourth grade, ninth grade, and college successfully differentiated masculine from feminine symbols. But of special interest to us is the finding that ninth-grade and college students correctly identified more symbols than fourth-graders did.

Some of the increasing differentiation of interests revealed by the Terman-Miles M-F Test undoubtedly is a result of social rather than maturational forces, of subtle or explicit pressures on youngsters to "act like a man" or "be a lady." The activity preference list which is part of the test has obvious sex-role expectations built into choices between things like baseball and sewing. Lessler also feels that social factors are the major determinant of differentiation. He asserts that the sexuality of the textured symbols are more social in origin than the anatomically symbolic shapes. Since the textured symbols elicited stronger age differences than the anatomically symbolic shapes, Lessler concludes that social factors account for more of the age differences.

On the other hand, maturational factors should not be discounted. It seems likely that sexual maturation accounts for at least some of the differences in the word association component of the M-F Test. For example, more adolescent than preadolescent boys associate "trunk" with the extended proboscis of an elephant, while more adolescent girls think of "trunk" as something to pack for traveling.

We can agree, then, with Lessler's summary statement, ". . . cultural-biological symbol dichotomy probably does not exist." Whatever the

major source of influence, the Terman-Miles and Lessler studies indicate that adolescence carries with it a greater sensitivity to the sexual connotations of words and other symbols.

Sexual Fantasy

There is no clear evidence for an increase in sexual fantasies at adolescence. There are almost no developmental data on dreams. Evidence on adolescent fantasy is largely from Rorschach and TAT protocols.

Some evidence suggests that daydreams become more infused with sexuality at puberty. Hamilton (1929) asked 200 upper-middle-class married men and women to recall their earliest sexual daydreams. Many of them recalled such daydreams occurring prior to puberty, although 32 reported that the waking fantasies became more realistic or vivid during their adolescence.

Specific references to sex appear in Rorschach protocols so infrequently that no age trends can be discerned from them. Ames, McTraux, and Walker (1959) collected 700 Rorschach records from 398 boys and girls ten to sixteen years old, about 80 per cent of them members of upper-middle or upper-class families. Only small increases over age in projections of lush, flowery images gave any evidence of increasing sexual interest and awareness. Nor was there any indication of an increase with age in instinctual drives, inasmuch as there was no increase in images of animals or objects moving. That adolescents are gaining more control over instinctual drives is perhaps reflected in the increasing balance between fantasies of human as against nonhuman movement.

Two studies employing the Thematic Apperception Test, by Sanford and associates (1943) and Symonds (1949), agree, as far as we can tell, about the course of sexual and aggressive fantasy from preadolescence into the adolescent years. Sanford's data from 55 adolescents suggest that sexual fantasy increases among boys and decreases among girls as they enter adolescence, while aggressive fantasy increases for both sexes at the age of puberty. Symonds' TAT protocols from 20 boys and 20 girls aged twelve to eighteen suggest that aggressive themes grow more frequent during adolescence, while sexual fantasy declines and general criticism is not reliably correlated with age. However, Symonds does not present data separately for boys and girls. Taken together, studies of sex and aggression in adolescent fantasy are not clear about the course of these drives at the onset of puberty.

Perhaps the data on anxiety among adolescents will help to make more sense of Sanford's evidence concerning sex differences in sexual fantasy. Symonds' TAT data reveal marked increases in anxiety with age during adolescence: the anxiety theme increased in incidence more clearly than

any other. Furthermore, those youngsters who wrote stories expressing anxiety tended not to write stories of love. Further still, those individuals who showed the least interest in the opposite sex on a questionnaire also tended to write stories rated high in anxiety. Assuming an increase in biological sex drive at adolescence, these data support the interpretation that when the drive is blocked from fantasy expression, this defensive blocking is accompanied by anxiety.

The Rorschach data confirm that adolescent fantasy is increasingly infused with anxiety. While Rorschach analysts are by no means agreed on this interpretation, attention to shading and descriptions of cloud formations and distant vistas are often taken to be indicative of pervasive and overwhelming, diffuse anxiety (Allen, 1954). Of this indicator, Ames *et al.* (1959) write, "This is the determinant that increases most strikingly during the adolescent period" (p. 290). Further, "At every age except 11, many more girls than boys give shading responses. The difference . . . tends to increase with age" (p. 292).

Rorschach data from studies by Hertz (1942, 1943a, b) and Hertz and Baker (1943) support the proposition that adolescence generates anxiety, especially among girls. They report that the protocols of 76 boys and girls showed greater "introversion" at age fifteen than at age twelve. That is, the older youngsters were directed relatively more than the younger by their inner feelings—their impulses and their anxieties. Their characteristic response was to limit outward expression, and the girls appeared to grow much more introverted than boys, while boys seemed freer and less inhibited.

Powell (1955) contributes data of another sort to document heightened anxiety about increasing sexuality among adolescents, especially girls. He reports that 448 males and females aged ten to thirty years gave verbal associations to stimulus words categorized according to the area of conflict which they represented—religion, vocational outlook, heterosexual relations, and so on. An individual's anxiety in each area of conflict was measured by the average length of time it took him to announce associations to the words in that area, compared to how long it took him to respond to sets of neutral words. The sharpest increases in anxiety over the years eleven to seventeen occur in the areas of heterosexual relations and social acceptability. Girls show more anxiety than boys in both these areas at five out of the seven age levels, ages eleven and fifteen being the exceptions.

Powell's data fit neatly with the sex differences in growth rates: the sharp increase in anxiety over sex is at age eleven among girls, and not until a year later among the boys.

We are struck by the juxtaposition of data on themes of "abasement"

and sexual themes in Sanford's study. The former, expressions of feelings that one needs to do penance, be condemned and be punished, rises and falls among adolescents in mirror image of sexual expression. As boys grow into adolescence, their stories contain more sexual and fewer abasement themes. Girls' stories, on the other hand, show a marked increase in themes of abasement and the incidence of sexual themes declines. These data suggest that sexual impulses generate guilt and conflict in some adolescent girls which mask direct expression of impulses even when they are elicited by projective techniques.

This interpretation gains some additional support from a recent study by Tooley (1966). Comparing high school girls, college girls, and adult women on TAT responses, she found the high school girls to be relatively flamboyant in expressive style except in the area of heterosexuality. In addition, the high school girls, more than either of the other age groups, avoid the theme of pregnancy in response to a picture that normally elicits it.

To summarize our interpretation of the psychological manifestations of adolescent sexual maturation: Increases in specifically sexual behavior at the onset of puberty indicate that sexual maturation is reflected in increasing sexual motivation. Sexual activity does not increase so markedly among girls as it does among boys, nor does it reach as high a level, probably because the increasing intensity of sexual motivation arouses more restraining anxiety among girls. Both boys and girls become more sensitive to sexual connotations in stimulus objects, but only boys seem free enough of anxiety over sex to indulge in more sexual fantasy at adolescence. It is this differential level of anxiety which, we feel, clarifies the lower incidence of direct sexual expression in girls. Of course, both boys and girls are subject to higher levels of anxiety about sex at adolescence, and even among boys, this anxiety may repress any striking increase in the level of sexual fantasy.

We should point out that all the data we have cited were collected from American subjects. It is altogether possible that in cultures where norms governing sexuality are more permissive, sexual maturation would not generate so much anxiety.

Intellectual Development

Throughout adolescence most youngsters continue to improve their intellectual performance—a growth which continues beyond adolescence into the early twenties. At least two independent studies document the fact that the peak of general intellectual performance is reached after the adolescent years. The curves in Figure 2 were generated by data from the Army Alpha Test administered by Jones and Conrad (1933) in

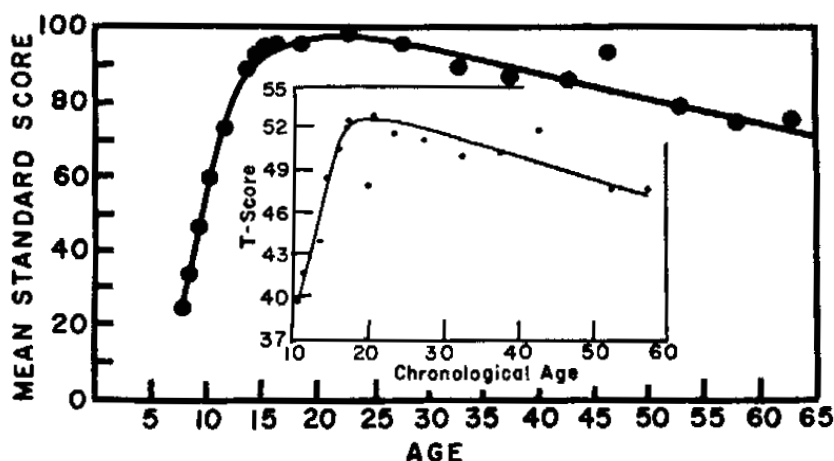


FIGURE 2.

Curves of General Performance Over the Lifespan

[Insert from Jones, H. E. *The growth and decline of intelligence*, *Genet. Psychol. Monogr.*, **13**, 1933. The larger curve adapted from Wechsler, D. *The measurement of adult intelligence*, 4th ed. (Baltimore: Williams and Wilkins, 1938, p. 31) by Horrocks, J. E. in *The psychology of adolescence*, 2nd ed. (Boston: Houghton-Mifflin, 1962, p. 454).]

the early 1930's and by the Wechsler-Bellevue set of tests in the 1950's (Wechsler, 1958). Both show decelerated growth through adolescence, the peak being reached in late adolescence in the 1930 data and after adolescence in the 1950 data. However, at least one study reports finding an adolescent spurt in intellectual growth (Boyne and Clark, 1959), so the problem requires further research.

The curves for specific intellectual abilities differ only slightly from these curves of change in general ability, some peaks being reached earlier than others. For example, peak performances on common-sense items, analogies, and numerical completions are reached in the late teens, while the best performances on arithmetic problems and following oral directions are turned in at about age twenty, and vocabulary continues to improve further on into adulthood. This pattern may indicate that certain specific abilities are more closely tied to maturation, while others depend more heavily on continuing education and experience.

There is some evidence that intellectual capacity improves at least in part through maturation rather than solely because of continued training. First, youngsters who reach adolescence early are slightly brighter than those who reach adolescence late (Freeman, 1936). Second, post-menarchal girls have been found to score higher as a group on intelligence tests than do premenarchal girls of the same age (Stone and

Barker, 1937). Nevertheless, the relationship between physical growth and intellectual development is slight.

Moreover, the stability of intelligence scores is not particularly disturbed by adolescence. Bradway (1944) compared test scores gathered from 138 children, first when they were from two to six years old, and again ten years later. About three-fourths of their scores changed 10 points or less; the correlation between the two sets of scores was .67. Correlations of intelligence scores taken at the onset and at the end of adolescence range in the .70's and .80's (Anderson, 1940).

Piaget detects an important development in intellectual capacity at adolescence (Flavell, 1963). Whereas the preadolescent is limited to concrete thinking, tied to present time and present objects, the adolescent becomes capable of formal thinking, which may include not only the concrete and present but also the possible and future. Formal thinking is thinking with abstractions, and it recognizes structures of relationships between abstractions in the realm of the theoretical and hypothetical. According to Piaget, this basic advance in intellectual development makes possible adolescents' increasing concern with philosophical issues of life and reality, and their ability to plan and dream far into the future. It is also the root of a resurgence of egocentrism which Piaget observes among adolescents, a renewal based on a mature form of an infantile belief in the power of one's thoughts to change reality.

There are no clear sex differences in the level of intelligence or in the rate of intellectual development. However, some cultural differences in sex-roles seem to be reflected in the scores on specific abilities. "In general, girls during the adolescent years appear to excel in the more verbal type of tests, while boys appear to excel in quantitative and scientific content tests" (Horrocks, 1962, p. 467). This pattern differs from the preadolescent years, when girls seem to excel in all mental abilities (Ames and Ilg, 1964; Kagan, 1964).

FAMILY ROLES

The classic statement of adolescence places biological change—the accession to sexual maturity—at the center of a larger interpersonal and social ring of effects. In this view, the child's sexual maturity brings with it a need to detach from the family and to develop, with the aid of the peer group and other supports, a set of standards and behavior controls that is distinctly the adolescent's own—in the sense that it carries its own force, aside from external reinforcement, and that it accommodates his newly acquired sexual possibilities. The need for autonomy may be

cast in the language of social role changes: the adolescent, no longer within purview of the parents, and mobile in the adult world, must assume the burden of self-regulation. Or one may emphasize the intrapsychic necessities as in psychoanalytic theory: the child is driven to leave home because of the danger that old affectional relationships in the family will become tainted by the reemergence of sexuality with its incestuous implications, or because the child's sexual maturity will be endangered by the regressive pulls of old object ties. Whatever the emphasis, all theories of adolescence agree that this is the time when the child must cut and run, when he must disentangle himself from the family network and become his own man—emotionally, behaviorally, in his values and controls.

And traditionally, the autonomy issue at adolescence has been conceived as a struggle: father against son in a contest for dominance, child against mother in a softer but more difficult and enveloping struggle for self-definition and integrity, the child managing a departure only by means of a rebellion, masked or starkly staged, muted or strident.

Let us state at the outset that research findings, by and large, do not support the traditional view. In the large-scale studies of normal populations, we do not find adolescents clamoring for freedom or for release from unjust constraint. We do not find rebellious resistance to authority as a dominant theme. For the most part, the evidence bespeaks a modal pattern considerably more peaceful than much theory and most social comment would lead us to expect. "Rebellious youth" and "the conflict between generations" are phrases that ring; but, so far as we can tell, it is not the ring of truth they carry so much as the beguiling but misleading tone of drama. We think the discrepancy here—between the objective evidence and much of contemporary thought about the period—has occurred because theories about adolescence have often developed from observations of one or another of two highly visible but small and atypical segments of the adolescent population: the acting-out delinquent subgroup, and the upper-middle-class, sensitive, introspective adolescents who find the transition to adulthood unbearable and seek professional help. But the modal pattern, the way of most American youngsters, is neither to act out nor to suffer the strains and conflicts, the guilts and anxieties of neurosis. It seems, rather, that the normal, the average, the modal youngster, makes his bid for autonomy gradually and appropriately, and that his requests meet reasonable consideration and deference from parents who ally themselves (more or less gracefully) with the child's need to grow.

The role change required of the child in the family at adolescence is

this: he must continue to be a son (or daughter) and meet the obligations this role imposes, while at the same time abandoning the role of dependent child and gradually assuming the position of independent, autonomous adult. This shift, with its dual implications, is obviously more complicated than many role changes. To move from nonworker to worker, or from nonvoter to fully enfranchised citizen—these changes may be problematic, may require new skills and carry the difficulties of any new learning that involves the self. But they do not make the same complicated and intricate demands to change certain aspects of role behavior while maintaining in a state of exquisite stability certain other behaviors that seem, at least, intimately tied to the things that must change. Nor does becoming a worker or voter—instrumental and realistic—imply the same regressive hazards that are a part of more expressive and emotional family role changes. Nevertheless, most adolescents do make the transition, and apparently without excessive conflict.

What does empirical research have to say about the tropic movement of adolescents toward autonomy? In this section we will look at data on changes in dependency and autonomy that occur during adolescence, the areas that crystallize autonomy concerns at various stages within the adolescent period, the response of parents to growing independence, and some of the conditions and factors that affect both the pace and pattern of this development. In considering research on the growth of autonomy during adolescence, we will need to be explicit about the particular way in which autonomy has been measured and the sense in which the term is used.

Findings from national studies (Douvan and Adelson, 1966) indicate that behavioral autonomy increases sharply during adolescence. Table 3 summarizes data on dating, job-holding outside the home, access to independent funds (from work or allowance), and choice of leisure companions outside the family. The largest age change occurs in dating, but substantial shifts occur in all of the behaviors. Most American girls have money of their own even at eleven, so there is not a lot of room for age change on this item. Only one item of behavioral autonomy—primary commitment of leisure to friendship rather than family relationships—fails to show a majority by eighteen, and in this item we touch closer to emotional autonomy from the family than in any of the other behaviors.

But when we look beyond relatively superficial freedom of movement to more subtle and emotional aspects of autonomy, we find changes occurring during adolescence to be more modest. Children, and particularly girls, do not abandon emotional ties to the parents with anything

TABLE 3. INDICES OF BEHAVIORAL AUTONOMY FOR GIRLS AT ELEVEN AND EIGHTEEN AND FOR BOYS AND GIRLS AGED FOURTEEN TO SIXTEEN*

Item	Change in girls from 11 to 18		Girls 14 to 16 (N = 822) %	Boys 14 to 16 (N = 1045) %
	(N = 206) from %	(N = 148) to %		
1. S dates or goes steady	4	94	72	59
2. S has a job outside home	34	60	56	47
3. S has some independent funds	63	84	74	
4. S spends most of free time with				
a. friends	22	46	32	
b. family	68	44	56	

* The data for boys are incomplete because some questions asked in the study of girls were not included in the boys' study.

like the ease with which they shift companions. Apparently adolescents are happy enough to settle for ritual signs of independence (holding jobs, having money, dating, and sharing leisure with friends) and to let the more critical problems of detachment rest and wait (Bowerman and Elder, 1962; Douvan and Adelson, 1966).

In Table 4 age trends are summarized for a number of aspects of emotional autonomy. These include conscious evaluation of the importance of friendship and family relationships; choice of advisers, confidantes, and ideals from outside the family; incidence and areas of disagreements with parents. Overall, the differences reveal some growth in emotional autonomy. But the differences are in some cases small, and in many cases indicate that even at eighteen the modal pattern among girls is family oriented and compliant. A majority of eighteen-year-olds choose their adult ideals within the family; comply, on a projective question, with a parental request to give up a job and return home; and resolve another projective conflict, between a commitment to parents and pressure from peers, in a parent-oriented way. Even where a majority at eighteen take the more autonomous position, about a third of the girls indicate that the emotional bond to the parents remains preeminent (i.e., they choose parents as confidantes and accept without cavil parental restrictions in a projective situation). Where comparison is possible, we find girls slightly more advanced than boys in the transfer of emotion to extra-family relationships, but we will see later that this does not necessarily reflect increasing independence in critical areas.

Gradual changes occur during adolescence in what has been called

TABLE 4. INDICES OF EMOTIONAL AUTONOMY FOR GIRLS AT ELEVEN AND EIGHTEEN AND FOR BOYS AND GIRLS AGED FOURTEEN TO SIXTEEN

Item	Change in girls from 11 to 18		Girls 14 to 16 (N = 822) %	Boys 14 to 16 (N = 1045) %
	(N = 206) from %	(N = 148) to %		
1. S thinks friendship can be as close as family relationship	53	71	61	42
2. S disagrees with parents about:				
a. Ideas	12	46	34	
b. More than one issue out of six	54	59	56	
3. S would take advice of friends on more than one issue out of six				29
4. S chooses adult ideal				
a. outside the family	22	48	38	36
b. within the family	66	52	55	45
5. Projective: Response to request from lonely mother to give up good job and return to hometown				
a. reject request	8	26	18	
b. comply, conditionally comply	78	59	66	
6. Projective: Response to parental restriction				
a. accept, reassure parents	51	38	36	
7. Projective: Response to conflict between parent-peer pressure				
a. parent oriented	78	61	63	
8. S chooses as confidante				
a. friend	5	33	26	
b. one, both parents	67	36	45	
9. Part in rule making				
a. S has some part	45	64	58	
10. Attitude toward parental rules				
a. Right, good, fair	47	56	56	

NOTE: The data for boys are incomplete because some questions asked in the study of girls were not included in the boys' study.

"moral autonomy," that is, self-government in issues of impulse control, of correct behavior, of right and wrong. Kohlberg (1958), sampling boys at ten, thirteen, and sixteen years of age, shows that thought about moral problems tends to move from a premoral level to a morality based on conventional role conformity, and then to a morality based on self-accepted moral principles. Douvan and Adelson (1966) find a similar

trend toward moral autonomy in boys, but not in girls. (See the chapter by Kohlberg in the first volume of this series for a larger discussion of moral development from childhood through adolescence.)

So adolescence witnesses some emotional detachment from the family. We are struck, however, by the relatively modest degree of change and wonder whether continued emotional attachment reflects parental refusal to accommodate autonomy stirrings, or whether the adolescent's urgent need for emotional escape has been overdrawn. Our search of the data leads us to consider the latter the more viable and realistic conclusion.

As the youngsters see it, certainly, parents are interested and concerned about them, and reasonable in their expectations and requirements. In projective stories and in responses to both projective and direct questions, the majority of boys and girls portray parents as concerned and guiding but not harsh or extremely restricting (Douvan and Adelson, 1966; Rosenberg, 1965). Similar results were reported when Elder (1962) assessed types of parent-adolescent interdependence by asking adolescents direct questions about their relationship to each parent. In a large sample, he found that types of interdependence ranged from extreme parental domination to a complete absence of parental control, but that the most common level of control was a democratic structure in which the adolescent was allowed considerable opportunity to make his own decisions under the final supervision of his parents.

What, then, are the conditions and forces that lead to the development of autonomy? What factors predispose a child to delay the change in family relations or to fall into one of the numerous corruptions of emotional autonomy (e.g., rebellious resistance, defensive independence covering strong but hidden dependency needs) that we hear so much about in discussions of delinquency and in therapeutic practice with neurotic youth?

The family conditions that encourage and support autonomy are parental warmth and concern, a democratic level of control, consideration and consistency in rule enforcement (Bronfenbrenner, 1961; Elder, 1965). A democratic level (or style) of parental control produces autonomy in the adolescent; autocratic or very lenient parents more often have children who are low in self-confidence and either dependent or rebellious (Douvan and Adelson, 1966; Elder, 1962). Bowerman and Elder (1962) describe democratic control as a situation in which the children are involved in making their own decisions and experience reasoning and explanations in their interaction with parents. Elder concludes that "both opportunities for learning skills of responsible inde-

pendence and training for this role of self-reliance [are] essential conditions for the development of competent autonomy" (1963, p. 64).

Autonomy and self-direction are consistently found among those adolescents whose parents allow and encourage their children to detach themselves gradually from the family (Douván and Adelson, 1966). The more autonomous children portray parents as concerned and guiding but not restrictive. According to their children's reports, these parents more often allow their children some voice in making rules that govern them, and they more often expect autonomy from their children—more than the parents of dependent or rebellious adolescents. In direct questions, children from equalitarian homes more often say they have disagreements with their parents, and in projective stories they more often picture a boy questioning a parental restriction directly. Their stance toward their parents is most clearly marked by that easy assumption of certain rights that must, we think, stem from a history of being treated like an independent person.

The dependent and rebellious—who are not entirely separate groups, by any means—say that the most important thing their parents expect is obedience, respect for authority. They rarely admit disagreements with parents at a conscious level, yet in the projective series and certain other situations, they show signs of a deeper and more corrosive hostility toward the parents. They more often say a boy would break a rule to rebel against his parents, that they do not have any adult ideal, that a boy who misbehaved would not tell his parents about it, or would not tell unless the parents asked. They are dependent but alienated, and the pattern follows a family interaction in which parents dominate heavily and harshly and regulate the child in ways that seem to the child arbitrary and mysterious.

In part, the differences between these systems of control can be conceived as differences in the nature of the cognitive signals offered the child. The democratic family, in contrast to the autocratic, emphasizes appeal to thought: the child is offered clear limits and rules which his parents formulate and verbalize for themselves and the child. The child understands what the rules are, and his parents recognize deviations and can control them consistently. The importance of rule explanations to adolescent progress in autonomy and internalization has been supported consistently by the large studies in this area (Bowerman and Elder, 1962; Douván and Adelson, 1966; Elder, 1963; Miller and Swanson, 1958). One interesting exception to the association between rule verbalization and adolescent growth has been noted by Bowerman and Elder (1962): "Guidance and other types of verbal communication tend to produce dependency when combined with autocratic control."

Consistency of rules and rule enforcement has also held up across studies of both normal and deviant populations. More responsible autonomous adolescents think of their parents as consistent (Bowerman and Elder, 1962; Peck and Havighurst, 1960). Inconsistent rules and rule-enforcement more often characterize the families of adolescents who are nonautonomous and immature (Bowerman and Elder, 1962; Peck and Havighurst, 1960); impulse-ridden and defiant (Bandura and Walters, 1963; Bowerman and Elder, 1962; Douvan and Adelson, 1966; Rosenthal *et al.*, 1959; Rosenthal *et al.*, 1962); and delinquent (Glueck and Glueck, 1950; Martin, 1961; McCord and McCord, 1959; Nye, 1958).

While most adolescents show some movement toward greater autonomy, parental standards continue to play a dominant role in determining their ideas of right and wrong and in guiding their behavior of consequence. Boys through the age of sixteen still indicate that in personal decisions and moral conflict, their parents' standards and their own are more important than anyone else's, including those of their friends. Girls rely even more than boys on their parents' judgment, and they are more dependent on their peer group for validation of their self-concept (Douvan and Adelson, 1966; Solomon, 1961).

FRIEND AND PEER

The adolescent is propelled into friendship by the psychic conflicts of his age and by the ego task he faces. He must detach his impulse life from the family; he needs a new authority to substitute for parental authority as he works through individuated inner controls; he needs to establish an identity and inner definition of self that is legitimized and corroborated by the responses of some relevant public. He needs friends desperately, and the character of the adolescent's need gives friendship at this period its peculiar cast. Theoretically at least, adolescents cleave to peer-group norms as though any deviation—in dress or attitude or behavior—somehow threatened the inner integrity. Adolescent girls are notorious for both the intensity and evanescence of their alliances (Hurlock and Klein, 1934; M. C. Jones, 1948).

Children have friendships before adolescence.¹ Sullivan and other writers have, indeed, emphasized the preadolescent years as the critical period for friendship development. Before adolescence the child practices friendship skills, learns the rules of inclusion and exclusion, and builds peer-group allegiance. But during these years the child can come

¹ See chapters by Campbell and Swift in first volume of this series for larger treatment of peer relationships, especially in childhood.

and go between friendship and family relationships with no critical emotional distinctions marking the shift. He may be more dependent in the family and more controlled outside the family, but his emotional energy is distributed among his relationships. The critical developments at adolescence disallow the family as the scene of much of the child's emotional life. Regressive dangers in the family force him to relocate his love. The child is driven to friendship.

The role of friend is described most easily in contrast to family roles. Family relationships, in a sense irrevocable, are actively maintained by a mixed pot of motives that can include love, guilt, and love of combat. Friendships are assumed freely on the basis of mutual attraction between individuals. Guilt induction is not a central control mechanism in friendship as it often is in family interaction. This does not, however, mean that friendship carries no obligations. A friend is expected to be reliable, to invest himself and give of himself in the relationship, to be both tolerant and loyal, to respond to his partner as a whole person, and to respect his friend and his friend's vulnerabilities. These obligations (and the right to expect the same of the partner) allow and insure the interaction that characterizes friendship: an interaction in which each partner can reveal or expose the self without fear of loss or humiliation.

Friendship is enlarging in a way that family relationships are not likely to be. It is not based on old myths and it does not encourage the continuation of old, comfortable, regressive patterns. It demands sensitivity and allows experimentation with new behaviors and new self-images. It is a relationship peculiarly suited to the intrapsychic conditions of adolescence.

The difference between adolescent friendship and earlier ties can be seen clearly in developmental data on conceptions of and attitudes toward friendships. Between eleven and eighteen there are clear and continuous changes: from a concept of friendship as a parallel partnership focused on a common activity to a concept of mutuality in which the interaction itself claims focal interest; from no or relatively little emotional exchange to intense emotional interaction; from a relationship that cannot tolerate conflict to one that can contain and potentially resolve conflict. Among girls certain discontinuous changes are notable and point to the fourteen–sixteen year range as a particularly crucial time in like-sexed friendship: girls in this group are distinctive in their demand for loyalty and absolute security in friendship, in the strength of their need for similarity (or identity) between friends, and in their reluctance to exclude anyone from friendship (Douvan and Adelson, 1966).

Sex differences reported by Douvan and Adelson (1966) bear on

the centrality of object ties in feminine development. Girls are advanced in interpersonal development compared to boys; they respond to questions about friendship with more articulate answers and more mature conceptions than boys do. An index of interpersonal maturity related significantly to other measures of ego development in girls; maturity in friendship was not significantly related to general ego development in boys.

Friendship Behavior

Research on adolescent friendship has concentrated heavily in the area of friendship choice, and the findings here are similar to findings on marriage-mate selection. Friends tend to be of similar social-class background (Hollingshead, 1949) and from the same neighborhood (Smith, 1962). Within limits set by social background, similarity in certain personal characteristics has been found in mutual friends as compared to nonmutual pairs. Mussen and Conger (1956), reviewing the field, report the following factors to be important in the formation of mutual friendships: similarity in mental age, interests, moral knowledge and standards; and similarity in the degree of social maturity, sociability, and social intelligence; criticalness of self or others, neuroticism, and extroversion. These authors also comment on changes in bases of friendship formation during the adolescent period: "In early adolescence, students appear to be strongly influenced by similar preferences in games and sports, by ability to think of and to do exciting things, and by duration of acquaintance. In later adolescence, such factors as acceptability of friends to members of the opposite sex (particularly among girls) become important" (p. 504).

Analyses of the stability of adolescent friendship present an incomplete and somewhat confusing picture. Horrocks and his co-workers (Horrocks and Buker, 1951; Horrocks and Thompson, 1946; Thompson and Horrocks, 1947) have reported increasingly stable friendships throughout childhood and adolescence. Their measure of stability consists of requesting children to name their three closest friends and repeating the question two weeks later. With regard to two-week friendships, adolescents are measurably more constant than younger children. But even at eighteen only 73 per cent of them name the same person as best friend after as short an interval as two weeks.

Not only is a measure of stability which spans only two weeks narrowly limited, but also this measure leaves ambiguous the nature of the relationship that is being judged stable or unstable. The ambiguity is pointed up by the sex difference found in these data and in a similar study

by M. C. Jones (1948). Girls' relationships were found to be less enduring than those of boys. We know from other research that girls' friendships are both more intimate (Ausubel, 1954; Douvan and Adelson, 1966) and more often reciprocal (Ausubel, 1954; Flemming, 1932) than boys'. Since it is considerably less demanding to maintain casual relationships than it is an intimate friendship, the sex difference in stability may be simply an artifact of boys' less intense friendships. More precise measures of the nature of relationships seems crucial to a meaningful assessment of friendship stability. This work remains to be done.

The area that has received least attention in research on adolescent friendship is the daily interaction, the content and concerns of the relationship. A few excellent focused observational studies have produced insights about atypical adolescent groups like slum dwellers and Harvard men (Friedenberg, 1959; Goodman, 1960; Keniston, 1965). But the normal adolescent population has not been subjected to the same close and detailed observation. The studies by Becker, Geer, and Hughes (1963, 1965) on older adolescent groups and young adults combine insight and system and offer a model for the kind of theoretically relevant description so badly needed in this area. Unfortunately, no comparable description of the high school age group has appeared since Hollingshead observed the youth of Elmtown (1949).

Winch's model (1955) of similarity and complementarity in need structures, developed for analyzing marital patterns, also seems a promising approach for analysis of friendship patterns. One unfinished study of roommate stability among student nurses (Miller and Berman, 1965) has produced some provocative early findings. It seems that compatibility in roommate pairs depends on similarity in certain specific behavioral and attitudinal characteristics like heterosexual popularity and attitudes toward work and dating, and on complementarity in regard to certain less conscious and broader needs like passivity, dominance, and dependency.

Cliques, Peer Groups

Douvan and Adelson's findings indicate that the peer group assumes an important life of its own for boys—asserting influence through norms and claims on members' loyalty. The group as such supports boys in their move toward independence; they depend on this source of strength and reciprocate with fraternal loyalty. Girls, less provoked by inner striving for freedom, have less need for group support and tend rather to conceive a group as a setting in which to find close dyadic relationships. The whole area is marked by the crucial difference in the adolescent tasks of boys and girls: boys are dominated by needs for achievement

and independence; girls' concerns center on developing interpersonal skills and on the need for love. The two sex groups use social relationships differently to support and express these central concerns.

We have indicated that in important decisions and choices, most adolescents are likely to seek parents' advice and opinions rather than to turn to their peers (Douvan and Adelson, 1966; Solomon, 1961). But important decisions and choices represent a small proportion of the behavior of adolescents, and there are obviously less deliberate and less dramatic behaviors—the stuff of daily life—in which the values and norms of a peer group make their force felt.

The adolescent is vulnerable to evaluation by others and his perception of their evaluation sharpens as he grows older. Studies by Ausubel, Schiff, and Gasser (1952) and DeJung and Gardner (1962) both document the increasing accuracy with which youngsters perceive their sociometric status among their peers as they increase in age from nine through seventeen. Ausubel and his associates detect an interesting disruption in this development which DeJung and Gardner do not find: a temporary reversal at about the onset of puberty.

Coleman (1961) has demonstrated the force of peer values in determining sociometric ratings of students. He found that high school students develop value systems, outside the official academic values, centering on athletic skills, student activity, and social leadership. He has shown that students who do not meet the student-peer criteria and are not members of "the leading crowd" are generally aware that they are not, and sometimes wish they were. Under these circumstances, the non-elite have lower self-esteem than either members of the elite group or non-members who say they don't want to be members. Since adolescence is a time of matching inner continuities against the social reality of others' responses to the self, evaluation by any relevant group is bound to have an impact on this process. Studies of cliques suggest that the game of inclusion and exclusion is both fevered and deadly at adolescence. Younger children form groups and practice exclusion, but at adolescence the force of the identity quest invests these ritual forms with greater significance.

Clique formation at adolescence is based on similarity in background (e.g., social class, race), skills, and values. A number of studies have revealed the force of social class in defining clique lines (Coleman, 1961; Havighurst *et al.*, 1962; Hollingshead, 1949). Friendships may transcend class lines, and individuals may be included in cliques outside their own class, but the clique itself is always predominantly made up within class lines.

Inclusion in a dominant clique depends also on possession of skills

valued by the peer group (which values, in turn, may be urged on the society of peers by the dominant clique that personifies them). For boys, this means athletic skills and for girls, social-leadership abilities (Coleman, 1961).

A curious and provocative finding reported by Iscoe and Carden (1961) indicates that popularity among peers is related to conformity to sex-role expectations. Using experimental measures of field dependence (i.e., the degree to which an individual's perceptions are dependent on background factors as compared to focal stimuli) which had previously yielded stable sex differences in early adulthood (but not at younger ages), these investigators found that the popular boys tended to be field independent and most popular girls field dependent, compared to their less popular peers. Sociometric choices cluster around those children and adolescents who have incorporated the sex-appropriate behavior that will presumably distinguish the males and females in their group in adulthood. Tuddenham (1952) reported a similar finding based on ratings and questionnaire data. Viewing these studies in combination with Coleman's analysis, one is impressed with the imposing force of sex-role issues in forming dominant peer values during adolescence.

The dominant peer-value system in American high schools and colleges is anti-intellectual in content. Studies of high schools reveal the low value high school students attach to the scholar image and the difficulty bright and competent students face in accepting the image as their own. Scholarly boys do accept it increasingly as they progress through high school, but bright girls do not (Coleman, 1961; Tannenbaum, 1962).

At the college level, peer-group values are less exclusively and less strongly anti-intellectual, but they are nonetheless a far cry from the liberal and humanistic ideals that make up institutional goals as professed in college catalogues. Competitive athletics and social leadership hold their own as competing values. Even at an intellectually select school like Vassar, the values of the peer culture have been described as predominantly nonacademic (Freedman, 1956). It is tempting to see this as an anti-adult system rather than primarily anti-intellectual. According to this view, the peer culture says in effect, "We have needs and interests other than the ones that the established adult authorities recognize." We hesitate before this kind of generalization for two reasons. First, the adult culture is not demonstrably different from youth culture in value orientation. Hollingshead (1949) and others (Friedenberg, 1959; Havighurst *et al.*, 1962), observing the American high school, note that parents and even teachers, principals, and superintendents value athletics and extracurricular events at least as highly as they do the school's academic standing.

Our other reason for hesitating has to do with the enormous variation in social science generalizations about youth culture over the past thirty years (Grinder, 1964). Social scientists have moved from the view that the dominant function of youth culture is anti-adult expression, to the more popular current view that youth culture is a benign apprentice system that socializes children to responsible adult patterns. It may be that the youth culture has changed, but it seems equally possible that social scientists have mellowed. That the change is not entirely a function of new empirical findings is indicated by the fact that both views are represented among researchers who have current data in hand (Grinder, 1964; Keniston, 1965; Smith, 1962).

The peer culture—or primary groups that form within it—do often mediate demands from the adult world, and cushion the adolescent against the values and demands of that world. Sometimes the peer society functions as a demand sorter, cueing the adolescent as to which demands he must meet, and which he can ignore. An example of this in an older group comes from a study of medical students (Becker *et al.*, 1963). The authors note that medical students could probably not survive the uncoordinated and extravagant demands of the medical faculty if this programming of priorities did not develop.

Heterosexual Friendship and Dating

The preadolescent child spends his social hours largely in sex-segregated friendship and play groups. Around adolescence he begins his encounters and experiments with heterosexual social life. Just how and when the transition from unisexual to heterosexual socializing occurs remain somewhat obscure; the data are not consistent. Dunphy (1963) describes the transition for Australian youth as one in which the like-sexed groups of preadolescence begin to join into loose combines that offer a setting for heterosexual interaction while maintaining the support of the earlier like-sexed friendship groups. This coalescing of intact like-sexed groups also occurred in Elmtown (Hollingshead, 1949) and River City (Havighurst *et al.*, 1962). Only after a period of heterosexual group life did adolescents begin to pair off in dating.

Douvan and Adelson (1966) report critical changes in the nature of boy-girl interaction occurring in girls at fourteen. Girls under fourteen share active team sports with boys and make no very sharp distinction between activities appropriate for like-sexed and co-ed clubs. Beyond fourteen, girls share individual sports (swimming, golf, tennis) and social activities with boys, but not team sports, and they distinguish more sharply between all-girl and co-ed activities.

Broderick and Fowler (1961) report that children in one middle-class

southern city have extensive cross-sex social interaction as early as the fifth grade. They interpret this as a new pattern based on greater understanding and sharing of values across sex groups, and see in this development some danger of a reduction in the clarity of sex-role definitions. Burchinal (1964), however, has pointed out that the data reported by Broderick and Fowler on beginning dating are so at variance with findings from other studies that their sample, or the meaning of dating to these southern children, or both, must be regarded as deviant.

The normal age for beginning dating is fourteen for girls, fifteen for boys (Douvan and Adelson, 1966; Lowrie, 1951). Most observers agree that American children are dating earlier today (Broderick and Fowler, 1961; Burchinal, 1964) compared to twenty years ago, and the data available, though unsatisfactory from the point of view of sampling, support this conclusion (Smith, 1962). Claims that children begin dating in grade school are not, however, supported by most current data (Burchinal, 1964; Douvan and Adelson, 1966).

The function of the American dating system, often misconstrued by Europeans as courting behavior, is to reintroduce the child to the forms of heterosexual social life while to some extent protecting him from damaging failure or loss of self-esteem through a highly prescribed system of roles. Dating behavior is as ritualized as medieval courtly love, but has, at least in its early stages, much less to do with sex. The obligations of a good date include cheerfulness, the capacity to control moods and impulses, and good manners. Both high school and college students see dating primarily as a social relationship rather than a courtship pattern tied to mate selection and marriage (Lowrie, 1951). Even "steady dating" seems often to be unrelated to courtship. Burchinal (1964), reviewing research, concludes that steady dating for social reasons is probably as important and as common as steady dating that is marriage-oriented. Most adolescents who report steady dating in high school have no thought of marrying during high school; most of them have at least two steady relationships during high school; and most of the relationships break up, usually without serious harm to the partners.

What are the social gains to be had from dating? Among the most important is increased status and acceptance in the peer group. Both dating and steady dating are associated with extracurricular activity and higher prestige ratings. Steady dating, often thought to be the refuge of insecure adolescents, is, in fact, more commonly the pattern of particularly active and popular students (Burchinal, 1964; Douvan and Adelson, 1966).

Among girls, progress in dating is related to increasing maturity in conceptions of both heterosexual and like-sexed relationships. Girls who

are just beginning to date are defensive and suspicious in their attitudes toward boys, and they demand security and loyalty from their girl friends. As girls gain greater experience in dating (and presumably greater security), they show greater awareness of boys as people and more appreciation for the individuality of girl friends. Some examples may clarify these changes. In direct and projective questions, girls in the early dating phase emphasize the importance of the dating personality. They attribute popularity to specific skills like conversation and dancing, while older girls more often see popularity with boys as the result of sensitivity, understanding, and interest in the boy. The early daters stress the importance of "face" in a projective situation in which a girl's date shows an interest in another girl (i.e., they think the girl should "not let the boy think she cares, or is jealous"). They tend to manipulate the boy (e.g., they suggest that the girl might talk the situation over with the other girl). Older girls are less defensive and more likely to talk to the boy about their feelings (Douvan and Adelson, 1966).

By seventeen, virtually all American girls date, and some 30 per cent have formed a relatively steady relationship with one boy. The greater ease of their relationships with boys is reflected in reduced defensiveness, and it carries over to their relationships with other girls by reducing the intensity of their need for sameness and security in their like-sexed relationships (Douvan and Adelson, 1966).

A persistent popular concern in our society centers on the long-range effects of early dating and steady dating. Specifically, the question asked is whether acceleration in heterosexual development will lead to earlier marriages. Burchinal (1964) offers a tentative answer in his review of the field:

The relationship between young marriage and younger-than-average ages for initial dating offers a basis for . . . these apprehensions. On the other hand, although ages for initial dating have declined greatly since World War II, and going steady has become a more common experience, young marriage rates, after a sharp increase between 1940 and 1950, have remained relatively stable for the last decade (p. 632).

Despite great popular concern about adolescents' initiation into heterosexual patterns, and despite the relatively extensive research in the area, a great deal of ambiguity and obscurity remains. Burchinal suggests that more comprehensive and particularly more longitudinal studies are needed "to determine the various outcomes of different dating histories and patterns" (p. 632).

THE STUDENT

From the day that he enters his first classroom, a youngster finds that the role of student is one of the two or three most important roles which he is called upon to play. Not only does school occupy about as much of his waking hours as his home life does, but it is as a student that most of the grown-up world outside of his family comes to know and evaluate him, and as a student that he meets many of his peers.

Important as it is from the very first, the most significant change in the student role at adolescence is in the degree to which it becomes a more serious, even urgent matter, especially for boys. Its shadow falls more definitely over the future and colors plans for further education and vocational choice. It is apparent to parents and youngsters alike that school provides the main path for social mobility in contemporary America. To hold your own and forge ahead requires first of all adequate or outstanding achievement; mediocrity as a student is a major obstacle to success. The adolescent school years are the time for decisions, and the junior and senior high schools are the proving grounds.

Youngsters are keenly aware of the importance of education for future success (Gold, 1963), and Adams (1964) has recorded increasing concern with school problems in the adolescent years especially on the part of boys, who mention school more often than any other place as the site of their biggest problems.

Parents also recognize the importance of academic achievement by their adolescent sons and daughters. Especially noteworthy is the mounting evidence that parents from lower social statuses regard education as important for their children, as do parents from higher statuses (Gold, 1963; Reiss and Rhodes, 1961; Sears, Maccoby, and Levin, 1957). Glenn (1963) has found that amount of education is the primary criterion for prestige among predominantly lower-status Negroes. Lower-status parents may not be very confident that their youngsters will achieve higher education and better jobs, but they earnestly aspire to these goals.

Unfortunately, for all their aspirations, lower-status parents do not nourish so well the motives and skills necessary to enable their youngsters to compete successfully with their higher-status peers. Research on the achievement motive reveals this, both directly and by implication. Working-class adolescents respond less consistently than middle-class adolescents to achievement cues, abstract standards, and verbal rewards (Douvan, 1956; Rosen, 1956). Findings on the antecedents of the

achievement motive point to the importance of a family pattern in which the father is respected as head of the family (McClelland *et al.*, 1953), and in which the child by adolescence is allowed some power to govern his own affairs and is guided in the use of this power by warm, permissive parents (Douvan and Adelson, 1966; Elder, 1962; McClelland *et al.*, 1953; Morrow and Wilson, 1961). Moderate concentration of power in the hands of fathers is associated with teachers' estimates that boys are responsible, that is well-behaved, students (Bronfenbrenner, 1961). These child-rearing patterns are known to be less common in the lower class (Douvan and Adelson, 1966; Elder, 1962; Rosen, 1956, 1961).²

Central, then, to adolescents is the role of student with its demands for satisfactory academic performance and a polite kind of deportment. This is the student role from the point of view of educators, parents, and grown-ups in general, and as it is understood by essentially all adolescents (Witryol, 1950): an intelligent, diligent, and compliant application to adult-prescribed educational tasks.

However, the school is not only an adolescent's place of work; it is also his club, where he goes to meet friends and to engage in a range of formal and informal extracurricular activities. The adolescent faces divergent demands as a student because he is at the same time expected to act like one of the gang by his schoolmates. Several studies (Coleman, 1961; Gordon, 1957; Remmers and Radler, 1957) indicate that while adolescents will not necessarily punish academic achievement, they favor a kind of application to the job of student which is neither too diligent nor too compliant. Coleman reports that most of the boys in his high school sample would rather be remembered as good athletes, and most of the girls, as social leaders, than as brilliant students. Remmers and Radler found that about one-third of the polled students thought that "learning how to get along with people" is the most important thing to learn in high school, compared to the 14 per cent who valued the acquisition of basic knowledge and skills.

All of the studies mentioned above agree about the relationship of sex and social status to adolescents' values. For example, Coleman's data indicate that higher-status adolescents admire the brilliant student not much more than their lower-status peers do. Boys value scholarship more than girls do, and their respect for it grows as they approach high school graduation; but even among senior boys, scholarship is not valued by as many as value athletic ability.

² See the chapter by John Clausen in this volume for further treatment of the role of family structure on achievement and achievement-related behavior.

Adolescents' feelings about school come mainly from two sources, then, corresponding to the dual roles they play in the school setting: (a) from their friendships and the status they achieve among their schoolmates; (b) from their achievement as students. For some adolescents, their relationships with teachers are also an important determinant of their relationship to school in general, and probably teachers condition most of their students' attitudes toward school to some degree. But relationships with teachers are not likely to be a major factor in determining school orientations. On the one hand, teachers are not named so often as the source of problems in school (Meissner, 1961; Remmers, 1962); and on the other hand, fewer than 10 per cent of adolescents choose a teacher as their adult model (Douvan and Adelson, 1966; Havighurst, Robinson, and Dorr, 1946).

Some adolescents certainly use a close relationship with a teacher to satisfy a specifically adolescent need. Feeling a growing danger in a total investment in their parents and sensing a wider world than their homes, some adolescents choose teachers as primary figures from whom to learn and after whom to model themselves. Teachers, along with grown-up relatives and close family friends, make up the limited set of adults with whom American adolescents consistently interact and who are thus available as adult models in addition to their parents.

Since their social life, their academic achievement, and occasionally their teachers provide the main sources of satisfaction with school, then it follows that more higher-status adolescents will be happier about their school experiences than will their lower-status peers. For lower-status youngsters as a group receive lower grades and fewer academic honors (Abrahamson, 1952; Coster, 1959; Gold, 1963); are less popular and participate less in extracurricular activities (Abrahamson, 1952; Coster, 1959; Langworthy, 1959); and are regarded more negatively by teachers (Becker, 1952). Students and teachers alike, regardless of their own social origins, seem to share middle-class values about the ideal student and schoolmate (Havighurst and Neubauer, 1949; Weckler, 1949), although some researchers have found that lower-status adolescents are more tolerant of interpersonal aggression among boys (Maas, 1954; Pope, 1953).

Of the high school students polled in the Purdue Opinion Poll (Remmers and Hackett, 1950), 79 per cent said that they liked school. This figure may be somewhat exaggerated, since it does not include school dropouts and students who were absent when the questionnaires were administered and includes only students in those high schools which

subscribe to the Purdue service, but it is likely that most adolescents do like school. Although they complain about their teachers (grouchy, unclear, or unfair) or about the subject matter (boring, difficult, useless), most of them believe that most of their teachers are at least adequate and some exceptionally good; and most of them say that at least a few of their courses are fun, interesting, or even stimulating. Since satisfaction is generally lower among lower-status youngsters, it is no surprise to find that they are most likely to reject the student role altogether and drop out.

The holding power of American high schools has been increasing steadily over the past decade, so that about 64 per cent of the students who had entered fifth grade in 1954 graduated from high school in 1962, compared to only 51 per cent who graduated in 1950. The dropouts are disproportionately boys from lower-status families (Bledsoe, 1959; Sofokidis and Sullivan, 1964). The majority of dropouts leave school officially as soon as they reach the legal age, sixteen in most states. Their attendance records suggest that many of them have all but officially dropped out before they turned sixteen.

If one asks the youngsters themselves why they dropped out, most of them say simply that they didn't like school (Johnson and Legg, 1944; Sofokidis and Sullivan, 1964), and they often cite difficulty with the work, or with teachers, or they mention financial reasons. On the other hand, data describing dropouts reveal that they are characteristically poor students (Cervantes, 1965; Cook, 1956; Kuhlen, 1952; Sofokidis and Sullivan, 1964); they do not usually participate in extracurricular activities (Cervantes, 1965; Sofokidis and Sullivan, 1964); and they are relatively unpopular with their schoolmates (Cervantes, 1965; Kuhlen, 1952). That is, the reason many adolescents dislike school enough to leave, knowing that leaving jeopardizes their future, seems to be that they do not meet any of the demands of the student role, neither the performance demands of adults nor the social demands of their schoolmates. They are especially likely to drop out if their relationship with their parents is so poor that their parents' aspirations and insistence cannot hold them in the face of pressures to flee from the classroom. Boys are especially vulnerable to pressures to drop out, since the student role is more central to their image of themselves now and in the future; and they are more autonomous from their parents. To continue to commit themselves to the role of student under these conditions would be to identify themselves as failures.

Even for many of the dropouts, however, the school-club retains some

of its attraction as a place to be. It is not uncommon to find the jobless dropouts hanging around the schoolyard, still "going to school" but not enough to hurt.

THE WORKER

The choice of an occupation is the task traditionally assigned to adolescence. During this era the child presumably becomes critically aware of the work life—of the need to choose a vocation toward which he can gear education and other instrumental activities, of the variety of work roles, of the relationships that bind adulthood, economic independence, and vocational responsibility into a tight value nexus. In fact, the extended preparation required for many jobs in our society has created a situation—at least in privileged sectors of the society—in which young men may enjoy most perquisites of adult status long before they are qualified to practice their chosen professions or are economically independent. Yet in socializing children, we still equate adulthood with adult work functions; and we urge children, particularly in adolescence, to see adult freedom and economic independence as synonymous and as tied to the acquisition of a job. Before high school and increasingly through the high school period, children are urged to choose a future work role and to begin preparing for it.

Douvan and Adelson's data from the national sample studies (1966) indicate that adolescents, particularly boys, have absorbed the culture's training. They think of job choice and job preparation as presenting the most crucial decisions they face. The vocational area mobilizes and focuses a great deal of adolescent concern.

In this section we will limit our discussion to adolescents' current work life, since the vocational area is covered in another chapter of this volume. Work-relevant motives and values have been discussed in the section on the student role and will be discussed later in the section dealing with the self and identity.

Job Experience During Adolescence

Evidence from a number of sources indicates that direct and successful work experience can be a highly significant support to adolescents through this period of personal change. It serves as a base for observing at least one aspect of the occupational world and helps to focus occupational interests for middle-class youngsters who face broad, and sometimes ambiguous, choices. One study (Slocum and Empey, 1956) of the occupational plans of high school seniors and college students found

that relevant work experience was cited as a source of influence in occupational choice more than any other factor (from 20 per cent to 50 per cent of all students in the various groups). Positive job experiences facilitate rehabilitation of delinquent boys (Haskell, 1960-61). One fifth of the fourteen- to sixteen-year-old boys and girls in a national study (Douvan and Adelson, 1966) list work experiences and success in work as a source of self-esteem, and the proportion increases to 35 per cent for girls seventeen and eighteen. The question that elicited these answers ("What do you do—at home, or at school, or with your friends—that makes you feel important or useful?") did not refer specifically to work, yet the job setting accounts for as high a percentage of responses as do either home-tied or school-related activities.

While their final commitment to a work role occurs in most individuals when adolescence proper is ending or has ended, the vocational issue assumes a central position in the life and concerns of youngsters during this stage. A large proportion of adolescent boys and girls commit some part of their out-of-school time to jobs. And evidence indicates that this job experience provides one important expression for the adolescent's need to establish his autonomy and competence. The occupational identity is especially crucial to the boy, and the processes of vocational development in adolescent boys have attracted a considerable research interest (see the chapter by Henry Borow in this volume).

THE CITIZEN

One of the roles an individual is called upon to play is "citizen" of his society. He is expected to feel loyal and patriotic and to obey his society's laws. In a democratic society, he is supposed to participate actively and knowledgeably in politics, at the very least by voting when given the opportunity. Ideally, he also devotes some portion of his time, effort, and resources to the common good.

Training children as citizens is one of the primary functions of American schools. The process begins in the earliest grades and continues through the high school years and beyond. The family is expected to support the school's efforts by bringing up good citizens; and as children grow toward adolescence, formal organizations like the Boys Clubs and the Campfire Girls contribute to the training in citizenship. By the time a youngster is an adolescent, he has had years of training and is expected to approximate adult citizenship behavior. Indeed, the data on political socialization which we review in this section reveal that for better or worse adolescents do resemble their elders in the role of citizen perhaps

more than in any other role.³ For this reason, we introduce this review of adolescents as citizens with some data on adult Americans.

Political Socialization

The context of the political behavior of American adolescents includes such facts as these: less than two-thirds of Americans of voting age turn out for presidential elections; only around 10 per cent contribute any money to political campaigns; only around three per cent work at all actively in a campaign (Campbell *et al.*, 1960). About three-quarters of American teenagers' parents consider themselves partisans of the Democrats or the Republicans, and their party identification is decisive for their voting behavior and for their political opinions. Only about one-third of adult Americans approach important political issues with even a guess about the current Administration's stand on that issue; some notion, however inaccurate, about party differences on these issues; and opinions of their own.

So while the ideology of "good citizen" prescribes political awareness and regular voting, adult behavior differs widely from the ideal. It seems that politics is either not central to an important citizen role or the citizen role itself is not central to American society.

Not that American youngsters are unpatriotic. In a sample of American high school students, 80 per cent agreed in 1952 that "There is hardly anything lower than a person who does not feel a great love, gratitude and respect for our flag" (Mainer, 1963). Indeed, development of pride in being Americans and of a firm allegiance to our country precedes adolescence. This allegiance is infused with and, in part, maintained by a religious affirmation (Easton and Hess, 1962).

But few teenagers take interest in political affairs, if their reading habits are any index of their interests. Less than five per cent of boys aged fourteen–sixteen reported reading material having to do with politics outside of their school work, and less than 14 per cent of the boys read newspapers. The figures among the fourteen- to sixteen-year-old girls are about the same, but about 25 per cent of girls aged seventeen and eighteen read newspapers and about eight per cent read about politics outside of school (Douvan and Adelson, 1966). While the survey of boys did not extend to boys over sixteen, we may assume that at least as great a proportion of older boys as girls develop interests in reading about politics, because Remmers and Radler (1957) find that,

³ For data on other aspects of citizenship, notably intergroup attitudes, see the chapter by Harold Proshansky in this volume.

among the high school students sampled in the Purdue Opinion Poll, boys are more politically aware than girls at every level.

A different measure of interest in politics shows a much greater proportion of interested teenagers. Remmers found that 65 per cent of ninth-graders, and 78 per cent of twelfth-graders said they followed the 1952 political campaign to some degree. (Neither the Purdue Opinion Polls nor the Institute for Social Research studies include school drop-outs. It seems reasonable to assume that their interest in politics would be lower than the interest of those still in school.)

In general, data on American adolescents' interest in politics suggest that something under 10 per cent show a continuing interest in political affairs but about 80 per cent, like their parents, are caught up every four years in a presidential campaign which draws their attention to politics.

Lack of interest in political affairs is reflected in adolescents' lack of knowledge about current affairs and about government in general. Studies by Dimond (1953), from 1945 to 1949, and by Greenstein (1965) in 1958 permit us to gauge the level of political knowledge among adolescents in Detroit and New Haven, respectively. Dimond found that Detroit youngsters could correctly answer an average of 30 items on a 60-item recognition test of important current national, state, and local figures and events. For example, virtually all the students could identify Harry S. Truman as the (then) President of the United States, but only 38 per cent of the high school boys and 35 per cent of the high school girls knew that the legislation recently defeated by a United States Senate filibuster was a civil rights bill. Junior high school students were less knowledgeable than high school students. Dimond concludes, "The knowledge of current affairs possessed by the pupils tested by the study was meager" (p. 169). Dimond attributes a marked decline in knowledge among adolescents from 1945 to 1949 to a slackening of interest in news generally after the end of World War II.

Greenstein reports that in New Haven 66 per cent of the eighth-graders have "a reasonably accurate understanding" of what the President and their Mayor do; 63 per cent, of what Congress does; 43 per cent, of what their Governor does; and 37 per cent of what their State Legislature does. Many more eighth-graders are knowledgeable than younger children, and we may presume that political knowledge grows somewhat more widespread as youngsters progress through adolescence. However, the data on knowledge among adults (Campbell *et al.*, 1960) suggest that the ceiling is not far above these eighth-graders.

The combination of a high level of patriotism with low levels of politi-

cal interest and political knowledge seems to make American adolescents confused and inconsistent on political matters. For example, Mainer (1963) reports that 62 per cent of a Purdue Opinion Poll sample felt that "some politicians place too much emphasis upon the principle 'America for Americans'" while 73 per cent of these same teenagers opposed any relaxation in the limitations on foreign immigration into this country. A series of studies of teenagers' views on civil liberties (Heath, Maier, and Remmers, 1958; Remmers, 1963) reveal strong libertarian tendencies in some respects (78 per cent deny police the right to hold persons in jail without telling them of any formal charges against them) and anti-libertarian tendencies in others (74 per cent assert that the police or FBI may sometimes be right in giving a man the "third degree" to make him talk). Although there is evidence that more politically knowledgeable adolescents hold more firm and consistent beliefs in the Bill of Rights, there is no evidence that twelfth-graders are either more knowledgeable or more consistent than ninth-graders (Horton, 1963).

Knowledge about political parties, or even a clear concept of what a party is, does not seem to be necessary for a youngster to declare his allegiance to a party. Most American children declare their allegiance to their parents' party by the time they are ten years old (Easton and Hess, 1962; Greenstein, 1965). The proportion increases through adolescence, Noguee and Levin (1958) finding that about 70 per cent of Boston University students who cast their first vote in the 1956 election adhered to their parents' party. Havemann and West (1952) report that 58 per cent of a national sample of college graduates identified with the same political party as their fathers; among those who reported that their fathers identified with a party, 85 per cent followed their fathers' preference. From 70 per cent to 80 per cent of a national sample of adults reported that they follow their parents' political party preferences (Campbell *et al.*, 1960).

Changes in party preference do occur, however, and we consider now the conditions under which changes occur among adolescents—although we suspect that most of the changes take place after individuals have left adolescence and have directly experienced changes in their social environment independently from their parents. Middleton and Putney (1963) found that, when college students perceive their parents as not interested in politics, their emotional closeness to the parents bears no relationship to their agreement with the parents' political views. When students believe that their parents are interested in politics, on the other hand, their closeness is directly related to the degree of agreement with

their parents' politics. Two related interpretations of these data may be made: when young adults know their parents are interested in politics, they can use this sphere to express their filial loyalty or hostility; or, when they themselves have become interested in politics through their parents' influence, then the partisan role becomes an important part of their statement about their relationship to their origins.

Various researchers have reported that geographic or social mobility leads to shifts in political orientation among adults. However, relatively few adolescents experience such changes independently from their parents. The experience which most nearly approximates such a change is moving from home to residence on a college campus. We have already seen that this change does not generally produce a change in party preference. Sometimes, however, students find themselves on a campus where political affairs are of central concern. Newcomb (1943) describes such a situation in his study at Bennington College. We may conclude from his findings that when students are drawn into associations with students and faculty for whom politics is of major concern, and when their home environment offers little resistance because of lack of concern or closeness, many students will shift in their political orientation and party preference.

Maccoby, Matthews, and Morton (1954) contribute data on the effects of both social mobility and relationships to parents as they affect new voters' allegiance to their parents' party and political values. New voters who report that their parents controlled them rather strictly when they were younger were more likely to desert their parents' party than those who report a moderate degree of parental control. When new voters held occupations of higher status than their fathers, they were more likely to shift from their parents' Democratic allegiance to the Republicans, the dominant party in the social stratum which they were entering. Downwardly mobile or static new voters did not shift so much. In general, however, Maccoby and her associates found that most new voters allied themselves with their parents' party and accepted what they perceived were their parents' political values.

Whether adolescent shifts in political orientation are predominantly shifts to the political left or right is in doubt. Among students at Boston University who shifted in party loyalties, changes occur about equally in both directions (Nogee and Levin, 1958). At Bennington, shifts in political orientation were mainly to the left (Newcomb, 1943). In their survey of students on 16 different campuses, Middleton and Putney (1963) found that students "are far more likely to move to the left of their parents than to the right." We suspect that movement one way or

another depends heavily on the political climate in which the shift occurs, indeed, which generates the shift. If college students who shift from their parents' views move largely toward the left, it is probably because the political climate on college campuses is left of the political views held in most of the homes from which students come.

Where comparisons of males with females can be made (Greenstein, 1965; Hyman, 1959; Remmers and Radler, 1957), the following generalizations are possible: males are more knowledgeable and interested in political matters than females, and they are more likely to shift from the parents' party preference and political orientation.

Where age comparisons are possible (Douvan and Adelson, 1966; Greenstein, 1965; Hyman, 1959; Remmers and Radler, 1957), it seems clear that political interest, knowledge, and initiative increase with age, more so among males than females, and that greater increments occur prior to and in early adolescence.

Another aspect of political consciousness develops during adolescence along with increasing political interest, knowledge, and party affiliation, namely, a consciousness of a *political community*. Adelson and O'Neil (1966) interviewed 120 suburban Michigan youngsters, aged eleven to seventeen, asking them to participate in the formation of a hypothetical government. They conclude:

With advancing age there is an increasing grasp of the *nature and needs of the community*. As the youngster begins to understand the structure and functioning of the social order as a whole, he begins to understand too the specific institutions within it and their relations to the whole. He comes to comprehend the autonomy of institutions, their need to remain viable to sustain and enhance themselves. Thus the demands of the social order and its constituent institutions, as well as the needs of the public, become matters to be appraised in formulating political choices.

THE BELIEVER

It is appropriate to follow the section on adolescents as citizens with one on adolescents as believers. First, most Americans probably feel that a belief in God and adherence to some faith is a characteristic of a good citizen. Atheism smacks of Communism. Second, the church is the institution through which many Americans enact their citizenship and by which they are integrated into their communities. Third, the development of adolescents as believers seems strikingly parallel to their development as citizens in several important respects. How adolescents acquire the faith of their parents or discard it, and what part this faith

plays in their lives, resembles closely their acquisition and enactment of the citizen role.

Here we review the literature on the extent, nature, and functions of religious belief in adolescence and suggest some of the conditions for change.

The great majority of adolescents believe in God. Kuhlen and Arnold (1944) found that about 84 per cent of youngsters aged twelve to eighteen "know there is a God," while another 11 per cent "wonder about it," and 5 per cent do not believe in God. Remmers and Radler (1957) report that 83 per cent of their sample of youngsters in grades 9 through 12 believe that "God knows our every thought and movement."

Whether there is any real desertion of religion with growing maturity during adolescence is in doubt. For example, Kuhlen and Arnold's data show a decline in the proportion of firm believers, from 94 per cent at age twelve to 79 per cent at age eighteen, more of the eighteen-year-olds becoming agnostic rather than atheistic—but Remmers and Radler find no such shift.

Somewhere between 60 per cent and 70 per cent of adolescents go to church at least once a week, and two studies agree that there is a slight decline in regular church attendance among older adolescents (Remmers and Radler, 1957; Rosander, 1939). The Remmers and Radler data suggest that while fewer older adolescents attend worship service regularly, more of them participate in church affairs through youth groups.

M. C. Jones (1960) has found a marked increase from 1935 to 1959 in church-going and interest in religion among adolescent girls, and some small increase among boys.

The church which adolescents attend is overwhelmingly the church of their parents, especially their mothers. Bell (1938) and Remmers and Radler set the proportion between 80 per cent and 90 per cent.

While substantial proportions of adolescents believe in God and attend church services and church affairs regularly, and while there is little change in these proportions over the course of adolescence, older adolescents may hold a different concept of religion from the one they held when they were just entering adolescence. Data on this point are, however, contradictory. Kuhlen and Arnold record an increase of 11 per cent from age twelve to age eighteen in the proportion of youngsters who believe that "God is a strange power working for good, rather than a person." On the other hand, neither Dimock (1937) nor Remmers and Radler detect a decline in the personification of God. Kuhlen and Arnold also report sharp declines over ages twelve to eighteen in the

proportions who believe in God as rewarding good and punishing evil, in hell as the eternal abode of the sinner, and in the literalness of the Bible. These data suggest that if there are any changes at all in the nature of religious beliefs or religious practices during adolescence, the trend is slight. Hollingworth (1933) suggests that such changes are not related specifically to adolescence but rather to intellectual maturity, pointing out that they occur as often among intellectually gifted eight-year-olds as among average twelve-year-olds.

Youngsters grow more tolerant toward the religious beliefs of others as they grow into adolescence. According to both the Remmers and Radler and the Kuhlen and Arnold data, fewer late adolescents equate goodness with believing in God or adhering to a specific religion. Here, too, as in the case of changes in the concept of God, it is likely that intellectual maturity and perhaps increasing appreciation of the diversity in the world around them account for these changes.

There are almost no systematic data on the relationship between moral and ethical behavior and religiosity, and no data we have found trace this relationship through adolescent development. Hartshorne, May, and their associates report no relationship between religious behavior and cheating behavior among children eleven to fourteen years old in their *Studies in Deceit* (1930). Similarly, Ross (1950) concludes that his sample of postadolescent YMCA members did not seem to relate their religion very much to other aspects of their lives. On the other hand, regular church attendance is negatively related to juvenile delinquency (Wattenberg, 1950). Church attendance may, however, be symptomatic of a kind of relationship between an adolescent and his family and his community which inhibits delinquency, rather than an inhibitor in itself.

Some observers conclude from the data on increasing church attendance and interest in religion in recent years that adolescents are growing more committed to religion. In our opinion, however, data like Hartshorne and May's and Ross's suggest that most adolescents' relationships to their religion are similar to most of their relationships with their grandmothers: both come with the family and are supposed to be respected on account of their age, but neither is really stimulating or relevant.

There are exceptions to this general picture, youngsters for whom the role of believer is central to their identities. Studies of religious conversion provide the best data available for understanding the place religion plays in their lives. The data on conversion—the sudden, highly emotional commitment to believing—agree that conversion is almost exclusively an adolescent phenomenon (Clark, 1929; Starbuck, 1899). Nei-

ther of the two classic studies indicates what proportion of adolescents experienced conversion when the studies were made, because in both studies subjects were largely limited to those who had experienced a distinct religious awakening which resulted in a sustained religious commitment. The peak years for sudden conversion among these individuals were thirteen or fourteen for the girls and fifteen or sixteen for the boys.

Gradual "religious awakening" is also most likely to occur during adolescence. People have a more difficult time fixing the date of the beginning of this experience because it is not so striking an event as conversion. When Starbuck collected his data at the close of the last century, the age curves for religious awakening corresponded closely to those for conversion. However, Clark's study thirty years after produced curves which peaked sharply at a younger age, at about twelve years old. Both Clark and Starbuck found few subjects who reported making their strong commitment to the role of believer before or after the adolescent years.

It is not difficult to find problems of adolescence reflected in the emotions immediately preceding conversion. Most of Starbuck's subjects recalled feeling depressed and anxious and overwhelmed by a sense of sin. The researcher was so struck by the frequency with which his respondents wrote of feeling unintegrated and at odds with themselves, he concluded that the central psychological function of conversion (and religious awakening as well) was to restore a sense of wholeness to the individual. Some of Clark's subjects thirty years later reported similar feelings but the incidence of strong emotions of any kind was under 30 per cent.

We find the theme of identity running through Starbuck's and Clark's data on conversion. At a time thirty-five to sixty-five years ago when the role of the believer was more central to the ideology of our society, it offered itself as a possible focal point for the individual adolescent. Were he to choose to become a Christian, in a sense in which the very words "become a Christian" are seldom understood nowadays, the adolescent would find his family, other adults, and his friends reflecting his new role to him positively; he would also find in his new role a fairly clear set of guides for his thought and behavior which would provide strong external support for impulse control. He could be an identifiable someone who was comfortable.

Since the turn of the century, the role of the believer seems to have lost its power as a unifying alternative for adolescent identity. Clark's data from the 1920's suggest that this decline had begun by then. More of his subjects seem to have become committed as a matter of conformity

rather than through a choice made in crisis. As we have noted, more of them committed themselves at a younger age, at the beginning of puberty, and fewer of them in an emotional turmoil.

In our day, the role of believer is like the role of the citizen in that both enjoy widespread public legitimacy but lack the potency to command commitment and serve as an integrating part of personality. The role of believer seems to be more potent to regulate surface behavior when we compare the regularity of church-going to poll-going, but the evidence suggests that it seldom goes deeper.

It is likely that adolescents abandon belief under conditions similar to those which we have detected for political estrangement. That is, believing is an important issue to their parents; their relationship with their parents is poor; and they find support for abandoning belief, especially among their peers (Putney and Middleton, 1961).

If this is true, then we should find in counter-conversion, or militant abandonment of belief, conditions which more closely match political conversion. One study (Vetter and Green, 1932) suggests that this is so among a sample of male members of the American Association for the Advancement of Atheism questioned in 1931. This study found that atheists perceived their parents to be of more than ordinary piety: "College students (compared to Association members) rating their parents . . . described far fewer of them as being 'rigid' in their religious observances." No data are presented which allow us to assess the atheists' relations with their parents. The evidence is clear, however, that the sample contains a high percentage of political rebels: 42 per cent of the atheists deserted the party as well as the religion of their parents.

The role of the believer is relevant to our understanding of adolescents even today. It probably continues to serve an important integrating function for some adolescents. Even where it does not serve such a function among most adolescents, their relationship to religion in a society which prescribes it may be symptomatic of their personality organization. Strunk (1958) reports a moderately high correlation between a positive self-image and an index of religious behavior among 136 high school juniors. The index of religious behavior is by no means a measure of piety or religious morality; it is more likely an index to feeling at one with the mainstream of society.

SELF AND IDENTITY

In this final section, we summarize and integrate the material which has gone before. However, this process of integration raises new issues and requires us to introduce new materials, even in our summary. For from

the process of integrating his component roles with one another, with his changing physiology, with his unique temperament and style, and with his unique life history, emerges the adolescent's concept of himself.

Self, then, is a configuration with characteristics of its own, more than the sum of its parts. For example, we will here distinguish the central from the peripheral components of self, and we will consider the forces that make some components of self more central than others. This will lead us quickly to a discussion of the sex role in adolescence, which up to this point has not been granted its own focus. We will also review the literature on the stability of adolescent self-concept, which is a way of questioning whether there is much of a self in adolescents at all. Finally, we will discuss adolescents' feelings about themselves, that part of the total configuration of self which is self-esteem.

Before moving ahead to integrating our materials in part around the concept of *identity*, we do well to invoke a cautionary note from Erik Erikson about the use of the term.

. . . Usually the term is used without explanation as if it were obvious what it means; and, indeed, faddish as the word has become, it has also come to mean to many something both profound and unfathomable.

Social scientists sometimes attempt to make it more concrete. However, if they do not quickly equate it with the strangely put question, "Who am I?", they make such words as "identity crisis," "self-identity," or "sexual identity" fit whatever they are investigating. For the sake of logical or experimental maneuverability (and in order to keep in good academic company) they try to treat these terms as matters of social roles, personal traits, or conscious self-images, shunning the less manageable and the less obscure (and often more sinister) implications of the concept (Erikson, 1966, p. 146).

It is clear that the social scientists who authored the present chapter are to no small degree guilty of the errors of which Erikson warns. We have attempted to make "identity" more concrete, and our treatment of the construct has been for the sake of logical and experimental maneuverability; and in the process, we have not come to terms with that something both profound and unfathomable which we sense. Our objective, somehow to organize a portion of the systematic empirical work in adolescence, sets these unavoidable limits.

We have, however, been mindful of the essential dimensions of identity as Erikson uses the term: of the "subjective sense of an invigorating sameness and continuity"; of the "something which can be experienced as identical in the core of the individual and yet also identical in the core of a communal culture"; of a "complementarity of an inner synthesis in the individual and of role integration in his group." These dimensions of

the construct have infused our choice and organization of materials throughout, and here they become more explicit.

Stability of Identity

In the midst of all the changes of adolescence—changes in the child's body and changes in the social demands and expectations he encounters—what happens to the individual's self-concept? We can expect change and instability—indeed, one can reasonably wonder whether there will be anything stable enough to be considered a self-concept. The self at this stage is highly vulnerable to the evaluations and opinions of others (Friedenberg, 1959; H. E. Jones, 1943) because of the unsteady, shifting internal grounds. The adolescent's concept of self is subject to radical and rapid alterations—in response to external social cues (Blos, 1962; Freud, 1937) and internal mood shifts. It is a departure from earlier forms in at least two respects: the adolescent defines himself in psychological and social (rather than physical) terms more commonly than younger children do. And at adolescence, the child is often for the first time able to distinguish the self as subject from the self as object, to see the self as changeable, and to determine to make it over in accord with some ideal conception. These developments can be seen in responses to the question "What would you like to change about yourself if you could?" Eighteen-year-old girls give many more responses than eleven-year-old girls, and in particular they give more responses dealing with personality characteristics rather than physical or situational features. Boys also list more changes, especially internal personality changes, as age increases from fourteen to sixteen (Douvan and Adelson, 1966).

While adolescents more commonly think of the self as changeable compared to younger children, nevertheless their self-concepts hold fairly stable. Engel (1959) reports that the self-concepts of 172 middle-class junior high and high school students correlated .78 after an interval of two years. Self-concept in this study was measured by a rank-ordering of personal traits for relevance to the self. With only a fair degree of short-term test-retest reliability (.68) in this self-concept measure, the correlation over two years is even more impressive. How stable the self-concepts of Engel's adolescents are compared to the self-concepts of younger children or adults we do not know, for we have no comparable data. There are no differences in stability between the older and younger students in Engel's sample. Piers and Harris (1964) compared the stability of self-concept over a four-month interval among third, sixth, and tenth graders and found no age differences. Piers and Harris' correlations at all three age levels were, like Engel's, in the .70's.

These data indicate that self-concept does not fluctuate widely through

adolescence. Adolescents undergo drastic maturational changes, are subject to some sharp changes in their social roles, and many experiment with different personal styles; but all this change seems to fall short of touching the core of their self-descriptions.

Centrality in Self

A large number of studies have investigated the bases of adolescent self-concept, and we have some information on the nature of the core of their self-descriptions. An overview of the data suggests that the sex-role is likely to be at the core of an American adolescent's identity. Kagan and Moss (1962) have demonstrated the imposing effect of traditional sex-role definitions on the form of development from childhood to adulthood. Their findings indicate that the degree of stability of particular personality traits is highly contingent on their correspondence to traditional sex-role conceptions. Characteristics conceived as feminine (e.g., passivity, dependency) show a high degree of stability from childhood to adulthood in females but not in males. Similarly, aggression is highly continuous in males, not in females. Boys and girls who are equally dependent in childhood diverge at about adolescence in response to differential social pressures. The boy feels sex-specific pressure to become independent and manly; the girl, on the other hand, can (and preferably will) continue to be passive-dependent because of traditional concepts of femininity.

Two separate studies indicate the importance of an adequate sex-identity to adolescent health. Mussen (1961) found that high masculinity among adolescent boys is related to other indices of psychological health such as self-esteem and to positive and rewarding relations with fathers. In Douvan and Adelson's national study of adolescents (1966), a similar measure of traditional feminine interests among girls related strongly to other areas of ego functioning. Girls who score low on feminine orientation are less developed socially, less poised and graceful in interacting with adults; they have a lower level of social energy and a more restricted time perspective than the highly feminine girls. Analysis of girls' vocational plans and aspirations indicates that they are infused with feminine needs: to help others, meet people, find an attractive social setting in which to find potential husbands. However ambitious or modest a girl's job plans, they serve implicitly the same nonvocational agenda.

Sex-identity was found to relate to the conception of self as consistent from situation to situation among college undergraduates, although the nature of the relationship is different among males compared to females (Heilbrun, 1964). The relationship among the young men was straightforward; those who described themselves as more masculine felt more

self-consistency. Among the young women, however, higher self-consistency was related either to strong feminine or strong masculine self-concepts; those who described themselves as moderately feminine tended to describe inconsistent selves. One interpretation of these data, in terms of the concepts guiding this review, is that the university environment offers essentially two salient roles to a co-ed: student or girl friend. A young woman can come down solidly on either of these and move about the campus acting consistently according to these role demands, the former more masculine and the latter more feminine. Or she can vacillate between the two and feel at odds with herself, for the role of woman-student has not been clearly defined.

Conscious concern about sex-role resolutions is clearly common among girls at least by college age (Goldsen *et al.*, 1960; Komarovsky, 1953). This great concern with feminine goals reflects the fact that identity for the girl is tied closely to the identity of the man she marries, but it also results from the fact that by college age girls are aware of the conflict between other more individual goals and the culture's definition of femininity. Add to all of this the fact that feminine resolution is not a matter of individual choice or action, that it depends on the girl's *being chosen*—and one wonders only that girls do not have greater anxiety about it. For boys, the case is somewhat different. Identity for them has at least two nuclei—the self-as-worker and the self-as-male. The culture requires the boy to settle both issues, and does not define them as conflicting goals.

Throughout the preceding sections, we have noted important sex differences in the centrality of various roles to adolescent identity. We have seen that their role as son/daughter is important to both boys and girls, but that girls remain more dependent on their parents and boys tend to establish a degree of autonomy more quickly. Data confirm the psychoanalytic hypothesis that it is more crucial to an adequate self-concept and psychological health for boys to establish a positive relationship with their fathers, and girls, with their mothers (Andry, 1960; Dignan, 1965; Gold, 1963; Mussen, 1961).

The relative centrality of the roles of peer-friend and student also differs between the two sexes. The centrality of personal achievement to self-concept in boys, and the importance of personal attractiveness and popularity to girls appear repeatedly in the findings of Douvan and Adelson (1966). When asked what makes them feel "important and useful," for example, the boys refer to work and achievement; girls more often to acceptance, popularity, and praise from others. Similarly, the achievement theme appears in the worries boys report, while girls more commonly worry about peer acceptance and popularity. When the

chance to be a big success is pitted against security, most boys choose the opportunity to achieve. The achievement issue is not simply less important for girls, it is different. Girls are not without their golden dreams, but these dreams are not of personal achievement or success; their personal goals are to attract and to hold love.

We have already reviewed Coleman's data (1961). While the bright student image never becomes the most highly valued for either sex group, boys say they would like to be remembered as good students increasingly as they move through the high school years, and girls continue to undervalue the scholar image. Boys near the end of high school begin to tie school into a concept of the vocational future, and competence in school takes on greater significance for them. The athlete-scholar received more sociometric choices than any other group in Coleman's study. The girl nearing high school graduation focuses future planning on marriage, and popularity continues to hold a central position in her value structure. As she gets closer to marriage and feminine fulfillment, academic values decrease in relevance.⁴

Social position interacts with sex to determine the relative salience of the student and peer-friend, probably not because of the social value of the position itself but because of the motives and skills learned in different social settings. Since middle-class adolescents are better equipped to perform as students, their success encourages them to think of themselves more as students.

Self-Esteem

As adolescents develop the capacity to regard themselves as objects, they increasingly evaluate themselves. This attitude toward themselves has both conscious and unconscious elements, as all attitudes do, but the study of unconscious elements of self-regarding attitudes has been limited by lack of instruments to measure them, although some beginnings have been made (Friedman, 1957; Shore, Massimo, and Ricks, 1965). So studies of adolescent self-esteem have focused on the conscious level.

The level of an individual's self-esteem depends most heavily upon the evaluation he makes of the central components of himself and their integration. His own evaluation, in turn, depends mainly upon the evaluation reflected to him by the people who matter to him, by the standards of his reference groups, and by the effectiveness of his self in helping him reach his goals. The continuing influence of adolescents' parents is evident here again. If an adolescent perceives that his parents are concerned

⁴ Further discussion of sex-role identification, in adolescence and earlier, can be found in the chapter by Jerome Kagan in the first volume of this series.

for him, then his evaluation of himself is likely to be higher (Rosenberg, 1965).

Since the core of self differs between boys and girls, it follows that their self-esteem depends upon different components. Most girls derive a sense of esteem through social, interpersonal adequacy. Boys can establish their sense of value in more varied ways—by direct sexual expression, by independence and autonomy, by asserting competence to achieve in any one of a number of competitive fields (athletics, a career-line, intellectual activity, leadership in school affairs, responsibility in a job). Girls' greater dependence on specific social validation of their femininity means that dating, acceptance, and popularity are more critical to them than to boys (Douvan and Adelson, 1966; Kagan, 1964; Phelps and Horrocks, 1958). Popularity becomes a proof of feminine worth, a guarantee of future marriageability.

Results of an analysis of mobility aspirations among adolescents bear on the relationship between competence and self-esteem in the boy. Boys who aspire to upward mobility—who appear from all available evidence to be a highly competent group—also show a strong sense of self-esteem. They are rated by interviewers as poised and self-confident. And they indicate a realistic, self-critical attitude in answer to the question about changing themselves. Downwardly mobile boys, who are by all available measures less competent and less achievement-oriented, more often wish for changes in the self that are so extensive or so central that they indicate self-rejection. Interviewers rate these boys much lower on poise and self-confidence (Douvan and Adelson, 1966).

In data for girls, there are no clear and simple ties between achievement-competence in the work sphere and self-esteem. But interpersonal skill and a developing concept of feminine adulthood relate closely to measures of self-esteem (Douvan and Adelson, 1966).

Rosenberg's large study of adolescent self-esteem (1965) also highlighted its ties to achievement and interpersonal skills, although his analysis did not separate boys from girls. Self-esteem was measured here by a 10-item scale and related closely to achievement in school and to occupational expectations. Subjects with low self-esteem much less often thought they had the qualities and characteristics required for success in the jobs of their choice. Low self-esteem is also strongly, though complexly, related to interpersonal competence. Adolescents with low self-esteem tend to describe themselves as withdrawn, excessively sensitive, and suspicious. They tend to provoke problems with peers and so to confirm their fears and suspicions about the social world.

A variant form of low self-esteem—a swaggering verbal self-con-

fidence combined with low scores on measures of ego strength—characterizes boys from divorced families living with their mothers (Douvan and Adelson, 1966). The authors interpret such extreme self-assurance as a defense against anxiety about masculinity. These boys tend to reject adult masculine models and they are markedly rebellious toward adult authority.

Engel (1959) also identified adolescents with "defensive-positive" esteem and found that their psychological adjustment was as adequate, according to MMPI measures, as the adjustment of boys and girls with undefensive, positive esteem; both of these groups measured as better adjusted than youngsters with low self-esteem. Engel's data also demonstrate that low self-esteem is an uncomfortable attitude for adolescents to maintain toward themselves: more negatively than positively evaluated identities shifted after two years, and these shifts were characteristically to "defensive-positive."

Engel's data indicate that self-esteem increases as youngsters grow through adolescence. Piers and Harris' data (1964) illuminate the course of self-esteem from preadolescence: third-graders and tenth-graders have on the average equally high levels of self-esteem, but sixth-graders have significantly lower self-esteem than either the younger or older groups. These two studies suggest that the fairly sudden beginning of adolescent change is unsettling to youngsters, but that most of them manage to adapt to the change increasingly well as they mature, some only by a process of distortion that must be called defensive however successful it may be.

To summarize, self-esteem crystallizes at adolescence around respectable display of those characteristics which are most important, that is, those which lie at the core of self-definition. Centrality depends heavily on a society's prescriptions of what an adolescent should be, and American society conditions this prescription most heavily according to sex. Those youngsters who do not measure up may become anxious and show signs of disturbance. Most adolescents, however, learn to measure up, and many who are unable to, manage to conceal their shortcomings from themselves so that the modal level of self-esteem is comfortably high.

We are aware that the image of adolescence we have drawn here is bland compared to most of the literature on the subject. Where are the tensions, the crises, the muddled, befuddled, struggling, exasperating personalities lurching spasmodically through the teen years? When we contemplate the systematic empirical literature we find that most adoles-

cents really don't go through all that, and a good deal of the fervid romance is gone.

Part of this blandness is also a product of what is omitted from our review. We have not included the literature on psychopathology among adolescents or on juvenile delinquency, which is certainly an adolescent phenomenon. These two subjects have contributed most to the *Sturm und Drang* image of adolescence, though together the two groups make up only a small portion of American adolescents. We have attempted a description which more or less fits the great majority. Mental illness and delinquency among adolescents are subjects requiring special attention and are too broad for inclusion in this chapter. (Delinquency is the focus of the chapter in this volume by James Short.)

It should not be surprising that most adolescents manage to survive comfortably and that we survive with them. Erikson (1950) spells out the requirements a social system must meet to accommodate human development:

. . . it gives specific meanings to early bodily and interpersonal experience so as to create the right combination of organ modes and social modalities; it carefully and systematically channelizes throughout the intricate pattern of its daily life the energies thus provoked and deflected; and it gives consistent supernatural meaning to the infantile anxieties which it has exploited by such provocation.

In doing all this, a society cannot afford to be arbitrary and anarchic. . . . [It] cannot afford to create a community of wild eccentrics, of infantile characters, or of neurotics. In order to create people who will function effectively as the bulk of the people, as energetic leaders, or as useful deviants, even the most "savage" culture must strive for what we vaguely call a "strong ego" in its majority or at least in its dominant minority—i.e., an individual core firm and flexible enough to reconcile the necessary contradictions in any human organization, to integrate individual differences, and above all to emerge from a long and unavoidably fearful infancy with a sense of identity and an idea of integrity (p. 160).

Barring cataclysmic change and disorganization, most social systems provide for some form of adequate human development, American society no less than others and for our adolescents no less than for the rest of us.

Like the rest of us, all adolescents have problems sometimes and make problems other times. Like some of us, some adolescents have problems and make problems more of the time than not. And, for adolescents as well as the rest of us, the quality of our lives could be better, and hopefully we can make it so. If this contemplative look at the scientific litera-

ture has robbed adolescence of most of its frenetic quality, perhaps it may contribute to understanding the quiet romance between social organization and youngsters in the midst of great change.

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Body Size and Its Implications¹

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THE SIZE OF THE INDIVIDUAL after birth is a most conspicuous physical attribute, placing him in relation to his peers and affecting the opinions of his judges. In a culture such as ours that values sheer bigness, greater body size may be an economic as well as a social asset. The taller executive is looked up to both figuratively and literally. In adolescent society, greater body size opens avenues of prestige for the male, some of them socially sanctioned (for example, team athletics) and some of them frankly antisocial (as, for example, membership in street gangs). But body size can also be a handicap, as experienced by the too-tall girl and the prematurely oversized boy. In a society of smaller individuals, the tall stand out and their size may be a detriment rather than the reverse.

It is no accident at all that adolescents and adults tend to view their size as more nearly approximating the norm. It can be disruptive to view one's body as dimensionally too different from that of the group. And, while greater body size and mass may be adaptively neutral where calories are in unlimited supply (as is true in the Western world today), both caloric restriction and protein deficiency can favor the genetically small, those capable of maintaining satisfactory growth in the face of continued nutritional deprivation.

Besides these generalizations about size in society, size also has its clinical importance. Departures from size expectancy during growth are possibly indicative of growth failures. There is now considerable interest in the therapeutic management of body size, in reducing the potential of the genetically tall and maximizing the potential of the genetically small. With recent advances in hormonal therapy, size is no longer just like the weather: it is now possible to do something about it (Bayley, Gordan, and Lissner, 1957; Foss, 1965; Roche, Towns, and Wettenhall, 1963).

¹ The size prediction multipliers, parent-specific age-size tables, and like and unlike sex parent-size correlations newly reported in this paper are supported in part by Research Grants HD-00868 and FR-00222 from the United States Public Health Service.

SIZE AS MEASURED BY STATURE

The most commonly used measure of body size is stature—that is, height, or most explicitly how tall the individual stands when fully erect. Technically, of course, stature, or standing height, is inferior to recumbent length which can be much more exactly determined with minimal diurnal variation and with far less positioning error. All practical experience favors recumbent length as a measure of body size. Certainly it is mandatory for the very young, highly desirable until the school years, and a more satisfactory measurement at all ages even through senility. (For technical references, see Damon, 1964; Palmer, 1932; Steggerda, 1942.)

Yet while all experience favors recumbent length over the simple measurement of stature, both custom and expediency favor "stature," at least for older children and adults through the middle years. Thus, whether the measurement of stature is taken with a yardstick and the Good Book, the conventional anthropometer as described in Martin's *Lehrbuch*, or a digital-readout Harpenden Stadiometer, the term "size" after infancy generally refers to stature.

The Limitations of Stature

Actually, the choice of stature is in many ways and for many purposes the wrong choice. As a reference standard for metabolic activity (i.e., the basal oxygen consumption) or creatinine excretion, or the potassium space, or caloric requirements, stature is demonstrably inferior to measures of the lean body mass, or even the simple measurement of weight. For example, basal oxygen consumption in normal and nonobese children is better expressed in relation to a weight standard than to stature, as Talbot, Wilson, and Worcester (1937) showed many years ago. As a reference standard even for ideal weight, as so commonly used, stature may not be the most effective. An inch of length primarily in the lower leg may have little contribution to tissues that primarily contribute to weight.

Compared with the familiar measure of stature, the bony chest breadth or some parameter involving the total frame size may be a more appropriate reference standard (Gray, 1928; Pryor, 1940), as is increasingly realized by workers in nutritional anthropometry (Garn, 1962a). This is true in adults to an extent now recognized in the revised Metropolitan Life Insurance tables giving "ideal" weights for various frame-size categories. Formerly based entirely on stature, as with the old medical-actuarial height-weight tables of 1912, new frame-specific reference standards for weight were finally introduced in the *Journal of the American Medical Association* in 1959.

Stature, moreover, does not have a fixed meaning. A given stature, say 170 cm, may be associated with a long trunk and short legs, or a short trunk and long legs. A given stature may be attained in various ways, and in various combinations of growth rate, timing and duration of the adolescent spurt, and completion of statural growth. There are almost as many ways of attaining an adult stature of 170 cm as there are individuals of that size. Studied at first hand, through the longitudinal method, and investigated by following the progeny of selected mating pairs, it is clear that stature as we commonly know it is in many ways a number, the end-product of the summed sizes of the segments of the body. The vertebrae, the intervertebral discs, the long bones, the size of the skull, and even the amount of tissue on the scalp of the head and the plantar pads of the feet affect what is commonly measured as "stature."

The History of the Stature Unit of Size

Despite these reservations, stature holds the interest and the simple measure of stature has the priority because stature is the end-product we have long trained ourselves to see. We live in a world size-dictated by the distance from the soles of our feet to the tops of our heads. Our furniture, our homes, and our motor vehicles are keyed to standing height and the size of its flexible components. The interest in stature has also stemmed from military quarters. The Romans preferred their legions of uniform size, to please Italic esthetics and to impress the Barbarians. Esthetics dictated the choice of mercenaries: size selected the Swiss Guards; in the earlier days of musketry, uniformity of military ranks became more than an exercise in orderliness. The tallest could shoot from a standing position, over the heads of the semistanding intermediates and those over the shortest, who fired from a kneeling position. So, from military necessity and military experience we have gained much knowledge of, and many of our preferences for, the measurement of stature. But from military surveys and military reports we have somewhat biased data on stature, with shorter individuals commonly excluded prior to induction, and the tallest socioeconomic groups often inadequately represented. Unless there is truly universal military service, such that the well-to-do and well-educated are proportionately represented and such that there is no artificial attenuation of the lower part of the stature curve, military data do not adequately indicate body size, nor do they effectively indicate the magnitude and extent of secular trends.

As an indication of how our children have grown, military data have their limitations. But the Napoleonic Wars taught us a major first lesson about the determinants of size. For years it was known that recruits from some French provinces were short and recruits from other prov-

inches were tall. But as the Corsican marched, as the state of agriculture in Europe deteriorated, and as supplies became disrupted, so did the stature of recruits decline (Quetelet, 1835). Recruits measured at the beginning of, at the end of, and well after the Napoleonic Wars taught us that stature (genetically determined in part) had a major nutritional component. This was the first "natural experiment" bearing on the meaning of stature. Later studies on the relationship between stature and social class gave evidence in exactly the same direction. Oxford students stood a whole head higher than those Englishmen of lesser education. Truly the literate classes were bigger in all directions. The benefits of clergy could be measured in inches and weighed in pounds.

Secular Changes in Stature

We in America often credit Bowditch (1877) with discovering the "secular" change in stature, that is, the increase in body size that has taken place generation after generation, with time out for successive wars. But in France and Belgium the "secular" change in stature was already known. It was inherent in Quetelet's data in his famous essay, *Sur l'homme* (1835). People have been getting bigger and they are continuing to get bigger, and the end is not really in sight (Boas, 1892, 1896, 1912a, 1932; Bowles, 1932; Greulich, 1957; Hunt, 1958; Meredith and Meredith, 1944; Trotter and Gleser, 1951) except for truly well-nourished groups (Bakwin and McLaughlin, 1964).

Now the secular increase in stature could have various bases. It could be in part an artifact, attributable to changes in the sampling procedures, as Santiago Genoves (1965) suggests. It could, in theory, have a genetic basis, due to the breaking up of genetic enclaves (outbreeding) and the formation of new genotypic combinations (heterosis). Such a view is in slight part supported by an investigation of the progeny of exogamous Swiss migrant couples (Hulse, 1957). To the largest extent, however, the increase in stature that has taken place all over the world may be attributable to the vast improvement in health and nutrition. Not only has the caloric intake increased, and with it the protein intake, but hypovitaminoses have been largely eliminated in Western Europe, North America, Australia and New Zealand, and the advanced countries of Asia. The dysenteries of infancy have been eliminated, childhood diseases have been controlled, intestinal and liver parasites have come under control. Child labor has been limited and early marriage prohibited. Calories in have increased, calories out have decreased, and the whole quality of nutrition has improved (Takahashi, 1966).

Rather than looking to reduced endogamy as the explanation for the

secular trend in stature, one only has to view studies in England and elsewhere which document the results of improved medical care and nutritional supplementation. (See Acheson and Fowler, 1961.) Programs like those of the Institute of Nutrition of Central America and Panama (INCAP) are producing secular trends by instituting programs of immunization, parasite control, and protein-calorie supplementation.

Changes in the Children of Immigrants

As a special case of the secular trend, described earliest by Boas (1912a, b), we have the increases in the stature of the children of immigrants, a phenomenon of particular interest to those of us in America. The children of immigrants, and to a lesser extent the grandchildren of immigrants, have caught the secular trend of stature and carried it far, duplicating in one or two generations—by transcending cultures—changes that they might otherwise have achieved in five or more generations on the old sod. Perhaps the greatest such increase has recently been demonstrated for first and second generation Italians in Boston by Damon (1965). What happened in migrating from Naples to Boston or from Tokyo to San Francisco has been to jump across levels of caloric intake, nutritional supplementation, improved disease prevention, and superior maternal and child care (Greulich, 1957). In so doing these immigrants to our shores have done much to provide a second type of natural experiment. They remind us—and their children continue to remind us—that the statures we see in nature have a genetic component, they have a nutritional component, and they have a disease-component; and what we see and measure represents a combination of the three (Lasker, 1946).

Stature as a Measure of Size

Stature, then, may seem to be a limited choice in many ways. Technically, it is inferior to recumbent length. Functionally, it is a complex of segmental body measurements. Genetically, stature appears to be a polygenic complex, though in rare cases a single-gene substitution can be responsible for extremes of human stature, as in dwarfism. As a reference standard for physiological studies, stature is not the best single reference value, particularly in extremes of body build or in extremes of human tissue composition (Garn, 1962a).

Yet stature has manifest advantages and so it continues to be used most extensively. It is a simple body measurement. It can be taken with inexpensive equipment in the field or in the clinic. It is an accurate measurement with due care and attention. It can be measured with a RMS (root

mean square) replicability of approximately ± 1 centimeter, well under one per cent of adult length. Moreover, certain of the theoretical disadvantages of stature listed above actually constitute operational advantages in practical use. The "buffering" effect of the complex of bones, joints, and discs—each with its own individual growth patterns—iron out those spurts and starts that can be demonstrated for the component segments. Stature is most easily understood, and it relates to a most meaningful dimension of the human body. It is the operational basis of many of the newer sizing systems employed by the armed forces and the catalog trade as well as sizing systems intended for school and classroom equipment. Finally, stature is certainly the most used single measurement of size and growth. For stature we have an unparalleled collection of metrical information relating to millions of human beings all over the globe, directly for the past two hundred years in many different countries and indirectly for the genus *Homo* over the past million and a half years of our generic existence.

SIZE PREDICTION AND ITS LIMITATIONS

Measurements of body size from early infancy through adolescence and adulthood are used in various ways. The average size of children in one group may be compared with the average size of children in another group to determine the growth-retarding effects of nutritional deficiency or recurrent ill-health or the growth-promoting effects of dietary supplementation or improved standards of medical care. The size of a child suffering from some endocrine or metabolic disorder may be compared to group "norms" at the time of diagnosis and at recurrent intervals during the progress of therapy. Or initial size data on a particular investigated group may be used in *semilongitudinal* fashion, to determine whether increased growth or "catch-up" growth has taken place. In this particular example the subject group, be it a clinical assemblage or a natural population, serves as its own control, showing whether growth during the period of therapy exceeds growth during the pretherapy or "control" period. Alternatively, size data may be employed simply to categorize individuals or groups, in connection with studies of motor behavior in infancy, mental development in childhood, reading facility or reading readiness, or adjustment to new and novel situations.

One rather specialized but increasingly important use of size data has to do with size prediction. Given a child of a specified age, and knowing his stature at that age, how tall will he ultimately become? Parents of short boys and parents of tall girls are particularly concerned about the

ultimate size of their offspring. There may be interest in controlling size attainment, by bringing about earlier union of the epiphyses or bone caps (when this is technically possible) or by delaying growth completion by hormonal intervention in certain types of precocities. As a research problem, a clinical endocrinologist may want to ascertain whether the final effect of a specific hormonal therapy is to increase size and final stature or only to speed up the time of its attainment. In the treatment of hypopituitary dwarfs or children suffering from cardiac defects, the endocrinologist or cardiac surgeon may want to compare probable size attainment (as derived from longitudinal incremental data) with individual size attainment, thus evaluating the ultimate effects of treatment. All of these practical objectives called for systems of size prediction, systems based on the growth behavior of groups and individuals within groups (Adams, Lund, and Disenhouse, 1954; Engle *et al.*, 1958).

The Theory of Size Prediction

Now the theory of size prediction is simple. It is based upon the demonstrable fact that the size at any given age in childhood and adolescence bears a predictable *average* relationship to final size or size at mature age, say the eighteenth year. It is further based upon the fact that age-to-mature-age size correlations are positive and increase in magnitude as final body size approaches. Thus, it is possible to predict final size from size at age eight, ten, or twelve within limits that represent improved predictability over the best uninformed guesses. (For references, see Bayer and Bayley, 1959; Bayley, 1943, 1946; Bayley and Pinneau, 1952; Garn and Rohmann, 1966; Gray, 1948; Meredith, 1936; Roche, 1965; Roche, Towns, and Wettenhall, 1963.)

There are various ways of preparing size-prediction tables and of computing size-prediction formulas. One obvious expedient—where serial, longitudinal data are available in quantity—is to categorize or group children according to size at some early age and then to ascertain, from the coded data, the ultimate attained size of each such group. Such an approach, technically the best, unfortunately requires a very large number of children in each age-size category, preferably at least 100 children in each group, and therefore between 1,200 and 2,400 children in all. Since none of the longitudinal studies in this country has so far followed as many as 500 children from birth completely through maturity, it follows that such complete empirical “prospective” size-specific stature-prediction tables do not in fact exist.

A second useful approach to stature prediction, less empirical and

with different working assumptions, is based on the notion of "channel-wise" progression. If it may be assumed that the child in the 60th percentile at age eight will still be in the 60th percentile at age eighteen—that the tall remain tall and the short remain comparably short—then stature at a later age can be projected from stature at an earlier age.

Perhaps the simplest approach to size prediction involves the percentage relationship between body size at a given age and size at age eighteen. By way of example, six-year-old girls are approximately 70 per cent of final size, at age eleven they are approximately 90 per cent of final size, and so on. Given such average percentage relationships between size at a given age and final body size, it is a simple matter to calculate a series of multipliers for stature prediction, one for each age used.

Tables for Size Prediction

Using, then, information on the percentage of final height commonly attained at a given age, in calculating the simple multipliers, it is possible to set up a table of values for stature prediction. All one needs to know is (a) the measured size of the child, (b) the age of the child, and (c) the appropriate age- and sex-specific multiplier as given in Table 1 of this chapter.

TABLE 1. FELS MULTIPLIERS FOR STATURE PREDICTION OF BOYS AND GIRLS OF AVERAGE PARENTAL STATURE

MULTIPLIER	AGE	MULTIPLIER
<i>Boys</i>		<i>Girls</i>
2.46	1	2.30
2.06	2	2.01
1.86	3	1.76
1.73	4	1.62
1.62	5	1.51
1.54	6	1.43
1.47	7	1.35
1.40	8	1.29
1.35	9	1.23
1.29	10	1.17
1.24	11	1.12
1.19	12	1.07
1.14	13	1.03
1.09	14	1.01
1.04	15	1.002
1.02	16	1.001
1.01	17	1.001
1.00	18	1.00

To use, select the multiplier appropriate for age and sex, and employ the measured stature at that age to predict stature at age eighteen. Wherever possible, substitute "bone age" for chronological age in order to obtain an improved estimate of final size. The later the stature prediction is made, and the more it depends upon bone age rather than chronological age, the better the stature estimate will be. For the rationale, and discussion of other methods, see text.

The multipliers given in Table 1 were newly calculated from the Fels Longitudinal data, exclusively for children of average or slightly above average summed parental size, that is, near the 169–172 cm midparental value. Having selected the children on the basis of midparental stature, mean stature for the children of each age was obtained by sorting the IBM cards. Then from the mean age-specific stature, the appropriate multipliers were calculated as described above.

Table 1 provides a simple way of estimating final stature for children of *average* parental stature. There are limits to this method of approach as described in the next two sections. In particular, children of extreme midparental sizes will not necessarily be of the same percentage of final size at a given age. Still, if the midparental value for a given child falls between 167 and 175 cm and the child's maturity level is within the ± 0.5 SD limits (i.e., T45–T55), the simple multipliers given in Table 1 are as effective as more complicated approaches to size prediction.

Using Skeletal Age in Size Prediction

An obvious limitation of this simplest size prediction system stems from the fact that chronological age is imperfectly related to physiological age. A child may be ten years old chronologically but only eight years developmentally. He will probably grow for a longer time period than the average. Another child may have the same chronological age of ten years but a developmental age of twelve years. He, in turn, has a shorter future span of growth. Though they have the same chronological age and may be of the same initial stature, the expected growth (or final size) of these two children is vastly different.

Such common differences in developmental age limit the effectiveness of the simpler stature-prediction methods. Any system that depends solely on chronological age and attained size tends to underestimate or overestimate at the extremes of physiological development. So a measure of developmental age is needed to improve the accuracy of stature prediction. The most commonly used measure of developmental age is skeletal age or "bone age" as ascertained from a postero-anterior hand radiograph (Greulich and Pyle, 1959). Though hand age is itself subject to limitations (Garn, Silverman, and Rohmann, 1964), substituting *skeletal age* for chronological age greatly changes stature predictions.

For subject W. G., age eight years and present size 48 inches, we would predict a stature of 67 inches at eighteen years of age on the basis of present age and size. Using his bone age (six years), however, we would predict a final stature of nearly 72 inches. In similar fashion, a final stature of 60 inches would be predicted for his sister on the basis of age (eleven and one-half years) and size (54 inches) alone. Substituting

bone age (nine and one-half years) for chronological age, we obtain a new and far larger estimate of final stature, namely 64 inches. Effectively, various modern approaches to stature prediction, such as those of Bayley and Pinneau (1952), make use of skeletal age in addition to attained stature. They make use of two partially independent bits of information, namely, stature at a given age and the expected duration of growth (Bayer and Bayley, 1959; Foss, 1965; Greulich and Pyle, 1959, appendix).

Further Limitations of Size Prediction

Though the substitution of bone age or "skeletal age" for chronological age greatly improves size prediction, truly precise predictions of ultimate size, accurate within ± 2 cm, are still difficult to obtain. It must be realized that an estimate within this order of magnitude is considerably closer than the chance estimate of ± 6 cm.

For many ascertainable reasons, stature prediction has the limitations described above. First, the majority of children do not grow neatly along percentile lines. Size at a given age is only a partial indication of size at any later age; this is especially true for children of extreme parental size combinations. Further, a given child may grow faster than the average at an earlier time and slower than the average later in childhood or adolescence. The age at onset of the adolescent spurt, the magnitude of that spurt, and the duration and magnitude of the period of post-spurt growth are not neatly predictable or not now predictable. They vary enormously.

The substitution of bone age or skeletal age for chronological age materially improves size prediction. This is true even if the hand alone is employed as the reference standard for skeletal status. Actually, stature prediction would better be based on the developmental status of the lower leg, for the lower extremity contributes disproportionately to total size attainment, and the hand itself may be an imperfect indication of status of development in the femur, tibia, and fibula (Garn, Silverman, and Rohmann, 1964).

In projecting human stature, then, the following generalization should be borne in mind. The later the projection is made, the more it makes use of skeletal rather than chronological age, and the more nearly the child conforms to the characteristics of the group, the better the prediction. Conversely, the earlier the size prediction is made, the more it depends on chronological age alone (or early skeletal age estimates), and the more the child deviates from the averages for the group, the poorer the size prediction will necessarily be.

SIZE STANDARDS FOR CHILDREN

It is by no means difficult to find size standards (or stature standards) for children or adolescents. Textbooks on child development commonly contain them, pediatric books include them, and compendia on growth provide a variety of such size standards. Drug houses and food manufacturers further distribute tables of body size to doctors and nutritionists. Various such tables include the old Baldwin-Wood tables, the Stuart or "Boston" tables, the Iowa tables, the Fels Institute tables, the Oregon tables, and others. In some cases, "new" tables of body size have been constructed by pooling the old tables, intentionally and carefully as done by Stoudt, Damon, and MacFarland (1960), or somewhat inadvertently as accomplished in some of the recent handbooks on human growth. (For references, see Altman and Dittmer, 1962; Baldwin, Wood, and Woodbury, 1923; Clark, Sydenstrecker, and Collins, 1924; Meredith, 1949, 1951; Richey, 1937; Rueda-Williamson, 1964; Sontag and Reynolds, 1945; Stoudt, Damon, and MacFarland, 1960.)

Now any table of size standards must be reasonably up-to-date. This is difficult to achieve, for the secular change in stature has been considerable, approximating 1 cm per decade or one inch every thirty-two years since the turn of the century. The Baldwin-Wood tables are really fifty years old. The Stuart tables were first published thirty years ago and the Fels Institute tables of 1945 are based on a combination of Ohio children born between 1929 and 1944 and Richey's (1937) data on children born one to two decades earlier. It follows, then, that many of the stature tables currently in use or offered for use are now effectively obsolete. Combining such tables, as has been done in handbooks, offers no increase in "accuracy" and does no more than to serve an average of old data in deceptively new tabular form.

Appropriateness of Size Standards

Besides the problem of obsolescent age-size standards, which is a serious problem today, there is the greater problem of appropriateness. Theoretically, size standards should be both up to date *and* applicable to the group in question. In practice, we have no size standards for American colored children or for children of Chinese or Japanese ancestry. (See Garn, 1965; Krogman, 1948.) Indeed, we lack basic information on their size, growth, dental, skeletal, and sexual maturation. The pediatrician, the public health worker, the nutritionist, and the school nurse must of necessity temper their judgments with a large measure of experience when working with such nonstandard groups. Commonly, the

Iowa City standards or the Boston standards are employed for non-whites and then interpreted in ways that seem reasonable to the local user.

In underdeveloped nations, in parts of the world for which locally applicable size standards are not yet available, two expedients are now in common use. One expedient is to employ American size norms, the Iowa City norms, or the Boston norms, according to the worker's place of graduate training. It is in some cases assumed that these American size standards are truly applicable; that is, every local population would attain North American size values if adequately nourished and given proper medical care. In other cases such an assumption is not made; rather it is assumed that these standards merely provide a uniform basis of comparison.

The other expedient, where locally applicable size standards do not exist, is to select—among the size standards available in the literature—tables that are reasonably appropriate or seemingly appropriate for the new subject population. So we find the Gomez Standards for Mexican Children applied to Turkish youngsters by Joel Wray. It is not assumed that the Gomez standards for size are fully applicable to Turks. It is merely assumed that they are more reasonable than Iowa City or Eugene, Oregon values for the population in question (Garn, 1965).

In practice, therefore, age-size standards are variously used, from those that are truly current and group-specific to those that are clearly obsolete and of questionable applicability to a given population. For certain purposes, individually-specific size standards would be of maximum utility; while in field and survey situations, inappropriate or at best partially appropriate normative standards for size may still have to be used. Lineage-specific, age-size standards for children will be presented later in this chapter after developmental and behavioral correlations of body size are discussed.

THE CORRELATES OF BODY SIZE

Body size from infancy through adolescence carries with it a variety of physiological, developmental, and behavioral correlates. For constant age, taller individuals have a larger basal oxygen consumption and in consequence they eat more because they need more. Taller children, like taller adults, have larger bones and in consequence their needs for calcium and phosphorous during growth must be proportionately larger. Taller children are also slightly but consistently advanced in a variety of developmental measures. Skeletal age tends to be advanced in taller children. Taller children are also slightly but consistently advanced in the

number of teeth present at a given age (Cattell, 1928) and in the extent of calcification of the teeth as radiographically determined (Garn, Lewis, and Kerewsky, 1965).

Why the developmental correlates of size exist is not totally clear. To some extent they are a function of social stratification and socioeconomic group differences such that the more favored are both taller and developmentally advanced. To some extent, even within family lines, it can be shown that the physiologically more mature children are taller *because* they are more mature. Further, the mechanisms connecting tallness to dental development are by no means clear, particularly since the formation and eruption of the permanent dentition are to the very largest extent unrelated to most environmental influences.

The Cause of Variations in Size

It should be pointed out here that there is no consistent explanation for variations in size in adulthood, nor is there as yet a satisfactory explanation for the mechanisms responsible for size variations in childhood. Granting that superior nutrition results in greater growth, the *mechanisms* by which this occurs are not known. Granting the genetic nature of stature, the mechanisms by which the genes make for variations in the length of the body and the size of its individual components are still not known.

One theory is that bigness is achieved through greater secretion of the growth-stimulating hormone (GSH) of the anterior pituitary. This is a reasonable theory, and it is in partial accordance with observational data. Hypopituitary children, lacking or partially lacking the growth stimulating hormone, do fail to grow. Hyperpituitary children do in fact achieve giantism. At the present time, however, there is no adequate measure of normal variations in growth hormone levels, either in the blood or in the urine, nor are indirect indicators as alkaline phosphatase adequate for the purpose. With progress in the immunological approach to the measurement of growth-stimulating hormone, the possible relationship between variations in growth-stimulating hormone and statural differences may become clearer (Rimoin, Merimee, and McKusick, 1966).

Alternatively, differences both in size and in rate of growth may be a function of the bones *themselves* rather than in the amount of stimulating or trophic hormone. This is technically referred to as the target-organ theory. It refers to the notion (supported by observations on certain kinds of dwarfism) that variations in response of the target-organ, or end-organ, rather than the stimulating hormone are involved. Clearly, there is a pressing need for an understanding of the mechanisms through

which variations in size are attained and through which ultimate size attainment is determined.

Body Size and Behavioral Correlates

In addition to the more obvious developmental, metabolic, and endocrine correlates of body size during the growing period, a large number of mental and behavioral correlates have also been reported (Abernethy, 1936; Ljung, 1965; Tanner, 1960, 1962). Though the magnitude of the correlations is generally low, for the most part they are systematically in the expected direction. Taller children tend to walk earlier (Norval, 1947). Boys and girls with a larger lean body mass tend to be advanced in gross motor development. A variety of studies report that "reading readiness" is positively correlated with stature. And most measures of "intelligence" appear to be loosely associated with body size during the growing period. Differences in nursery school behavior similarly relate in part to variations in the fat-free or lean body mass. (See Douglas, Ross, and Simpson, 1965; Ljung, 1965.)

Explanations for the behavioral correlations with body size are both numerous and varied and it is unlikely that all of the reported behavioral correlations have a common causal basis. A random sample of children represents a wide range of socioeconomic classes involving variations in caloric adequacy, medical care, parental attention, and parental encouragement. In the more complex behaviors, as represented by the introversion-extroversion continuum or dominance-submission scales, it is not improbable that larger body size gives a child initial advantage that he may then capitalize upon. Typed as a strong man, or leader, the large child may incorporate such successes into the system of devices he utilizes to deal with the world.

Nevertheless, there is reason to believe that some of the size-behavior correlates are in fact developmental in nature, representing a faster rate of behavioral development in those children who are ahead physically. More recent studies show a residual correlation between stature and test scores of children in Great Britain even among children of the same sex, age, stage of sexual development, social class, and size of family. However, to quote Douglas and his associates (1965), "... the correlation is not simply explained by an advancement in physical development being associated with an advancement in intellectual development."

The Pubertal Spurt in Size and Intelligence

As long ago as 1922, Murdock and Sullivan advanced the notion of an adolescent "spurt" in the rate of mental growth, analogous to the well-

known adolescent spurt in stature. In more recent years, this idea has been advanced by Tanner (1962) and investigated in England, Scotland, Canada, and Sweden. Boyne and Clark (1959) have reported secular changes in *both* stature and intelligence; and their British data are in accordance with Canadian reports (Binning, 1958) and a recent Swedish monograph by Ljung (1965) who studied "practically all the pupils in their respective year group in Sweden."

The rationale behind an adolescent spurt in "intelligence" paralleling the spurt in stature is not clear. The fact that there is a spurt in stature in almost all boys and in the majority of girls does not of itself indicate that the brain must behave like the bones. Indeed, it may be observed that intellectual potential is not diminished in the panhypopituitary dwarf, nor is there any present evidence that intellectual activity is increased in the hyperpituitary child, or in the sexual precocities.

Granting that there is an adolescent spurt in intelligence, paralleling the spurt in stature and possibly involving changes in the brain itself, there remains to be seen whether this has a steroidal basis or not. Testosterone-treated boys and estrogen-treated girls would help to answer this question.

Muscle Mass and Age at Walking

As an example of the complexity of relationships between physical and behavioral variables, one may report a relationship between leg muscle mass and age at walking. Infants with large leg muscle masses (as determined radiographically) stand up and walk earlier. Infants with small leg muscle masses stand up and walk later (Garn, 1962b, 1963). This overall relationship is partially independent of body size per se as it is also independent of other Gesellian parameters at the same age level. While it might be argued that the relationship between leg muscle mass and walking or standing is the simple result of physical activity, the fact that muscle mass at six months is *predictive* of walking versus non-walking or standing versus nonstanding at one year suggests that the relationship is developmental rather than directly causal in nature.

Two-Generational Studies of Size and Behavior

Most relationships between size and behavior in infancy and childhood pose the inevitable cart-or-horse problem, the same problem that attends relationships between size and maturation. Are more muscular boys bigger simply because they are more mature (hence, developmentally older) or do genes for earlier maturation also make for bigger size? Are

correlations between size and behavior purely developmental, or are genes for size actually involved? Would parents of different sizes, within the same socioeconomic class, produce progeny who differ in the rates of psychomotor or intellectual development?

It is possible to circumvent this problem by going back one full generation, categorizing the parents in terms of various parameters of size, and then examining the behavioral progress of the children so sorted. This is a classic approach in the genetics of animal behavior as extensively reviewed by Fuller and Thompson (1960). It can be applied to numerous parental size parameters, among them the familiar measurement of stature and the less familiar measurement of the bony chest breadth (representing the lean body mass).

Considering parental stature first, there is evidence for a relationship between parental stature and the psychomotor behavior of their progeny at six, twelve, and eighteen months. Taking fathers and mothers first separately, and then together (the combined-parent or "midparental" stature) and some 91 items in the total of the Gesell spectrum, the number of significant point biserial correlations is close to twice expectancy. There is some evidence, therefore, that taller parents, within a particular socioeconomic group, have infants who are slightly advanced in specific Gesell items (Hull, 1966).

Alternatively, taking the bony chest breadth of the parents (as measured on postero-anterior chest radiographs), it is clear that the parental bony chest breadth relates to Gesell, Merrill-Palmer, and even early Binet performance. Where both parents are above average in bony chest breadth, the progeny are not only notably larger from birth on, as characterized by greater body weight and far larger lean body mass, but they are systematically advanced in psychomotor, form board, and even language proficiency (Garn *et al.*, 1960; Kagan and Garn, 1963).

It is not implied that the children of taller parents are "smarter" at six, twelve, or eighteen months; nor is it to be claimed that the progeny of parents with large fat-free masses are inherently more "intelligent" as reflected by their Gesell, eighteen-month Merrill-Palmer, or thirty-six-month Binet scores. The indication simply is that greater body size in either the horizontal or the vertical direction is attained through a faster rate of growth, and this faster rate of physical growth is associated with more rapid acquisition of the skills and abilities measured by the tests in question. So apart from nutrition, social experience, and parental stimulation, size per se does relate to behavioral development, in part because greater body size is attained by a higher rate of growth.

PARENT-SPECIFIC SIZE STANDARDS

Returning to size per se, it should be obvious that all massed-data "average" size standards, whether group-specific or not, or contemporary or not, suffer from the same major disadvantage. They are scarcely child-specific, that is, they do not apply well to individual children. Children come from a variety of parental mating types, and it is obvious that the children of tall parents and the children of short parents will be but poorly fitted by average values that fail to take parental size into account.

Though this statement is self-evident, it is best given substance by picturing two children from the Fels Longitudinal Studies. One, a girl (subject 356), is the child of very tall parents. Father and mother taken together average 181 cm—well above the nationwide male average of 175 cm. The other child (subject 371) is a boy, the child of very short parents. Together they average 164 cm—below the nationwide average for women alone. One might expect the girl to exceed the female norm and the boy to fall well below the age-size norm for the boys.

As shown in Figure 1, these children grow exactly as might be expected. The daughter of tall parents (subject 356) greatly exceeds the normative median for girls at all ages. Parent-specific size values are clearly needed for her. The boy, subject 371, the son of short parents, is well below the average for boys. His size has been a source of some concern to his physician since he was a tot, even though the physician is himself an outstanding authority on child growth, and an early contributor to *Child Development*. For subject 371, parent-specific size standards for statural growth would have been distinctly useful. Clearly, there is a large proportion of children, the progeny of tall parents and the progeny of short parents, for whom conventional age-size standards are inappropriate and, in fact, deceptive.

Preliminary Parent-Specific Age-Size Standards

Despite the obvious need for parent-specific age-size standards for boys and girls, such have not been previously available. A parent-specific age-size table broken down into but two or three parental size categories would require a minimum of 200-300 boys and girls measured at each age, and 400-600 parents measured too. Given two sexes, 36 half-year age intervals, and the above minimum sample size at each age, at least 14,400 boys and girls would have to be measured and 28,800 mothers and fathers. Since the task of collecting and measuring over 14,000 boys

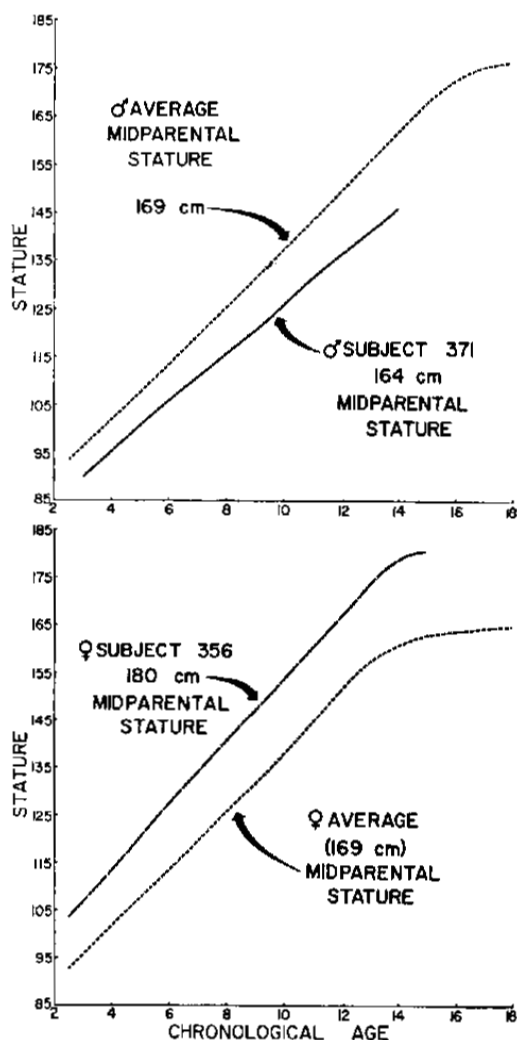


FIGURE 1. Statural Growth of Two Children of Extreme Parental Size

The boy, shown in the upper part of Figure 1, is the progeny of two parents of short stature, with a midparental average of 164 cm. This subject (Fels No. 371) is short for his age, far below the average. On the other hand, subject No. 356, the daughter of tall parents, is well above the age-size average for girls. These two cases exemplify the need for parent-specific age-size standards. Where parental size is known, such standards are a vast improvement over the conventional average approach. See also Garn and Rohmann (1966, Fig. 12).

and girls and the nearly 29,000 parents would be formidable in a purely cross-sectional context, the nonexistence of parent-specific age-size standards for children up to now is rather readily understood.

However, the longitudinal approach in this instance comes to our rescue. Having stature data on children taken at exact age intervals within narrow tolerance limits (Garn and Shamir, 1958), and having parental size data as well, it is a comparatively simple matter to sort the prepunched size data of children categorized according to parental size, and so to produce parent-specific age-size standards for growing children.

A part of such a table, newly constructed for the purposes of this review, is given in Table 2. Parental size here refers to the midparent value (the average of the paternal and maternal statures) as originally suggested by Galton eighty years ago. Parental stature here refers to stature measured early in the fourth decade; only three midparent size categories are tabulated, for reasons of simplicity. These are the 163 cm (short) midparent value, the 169 cm (median) midparent value, and the 175 cm (tall) midparent value.

As shown in Table 2, the use of parental size adds an important new parameter to age-size standards for children. Even at one year of age, the children so categorized are a centimeter or more apart. At age

TABLE 2. PARENT-SPECIFIC AGE-SIZE TABLES FOR BOYS AND GIRLS OF THREE SELECTED MIDPARENT VALUES

BOYS				GIRLS			
<i>Parental Midpoint</i>				<i>Parental Midpoint</i>			
<i>Age</i>	<i>163 cm</i>	<i>169 cm</i>	<i>175 cm</i>	<i>Age</i>	<i>163 cm</i>	<i>169 cm</i>	<i>175 cm</i>
1-0	73.1	75.1	77.1	1-0	73.0	74.0	74.6
2-0	85.4	87.4	88.9	2-0	84.0	85.5	88.2
3-0	93.2	96.0	98.3	3-0	90.4	93.8	96.5
4-0	99.5	103.1	106.3	4-0	96.8	103.9	103.8
5-0	105.6	110.0	112.7	5-0	103.5	109.1	111.0
6-0	110.9	115.4	118.7	6-0	110.2	115.0	117.3
7-0	116.2	121.3	124.6	7-0	116.5	120.2	124.0
8-0	121.6	126.8	130.4	8-0	122.4	125.8	130.2
9-0	126.9	131.9	136.0	9-0	128.6	131.4	136.6
10-0	132.5	137.4	141.5	10-0	135.1	136.9	143.1
11-0	138.5	143.0	146.8	11-0	141.6	143.4	149.6
12-0	144.7	148.4	152.4	12-0	147.8	150.3	155.8
13-0	151.0	154.9	159.6	13-0	154.2	157.0	161.7
14-0	158.8	161.6	167.8	14-0	158.8	160.4	165.9
15-0	165.8	167.9	174.7	15-0	159.8	162.2	168.4
16-0	169.4	172.8	176.6	16-0	160.5	163.4	169.7
17-0	170.9	175.4	177.8	17-0	160.8	164.0	170.9
18-0	171.5	176.2	178.6	18-0	161.0	164.3	171.8

The values shown are based on fully longitudinal analyses of the statural growth of more than 500 children representing in excess of 12,000 observations in all. The midparent value, here the average of paternal and maternal statures, refers to parental size at age thirty. To use, determine the midparent stature and present age of the child in question, reading out in the sex-appropriate column.

SOURCE: Fels Parent-Specific Size Tables for Midparent Categories shown smoothed and arranged by James Eagen. See Garn and Rohmann (1966).

eighteen the difference is 2.4 cm (approximately one inch) or more. Were extreme parental size categories included as in the original tabulation from which this table is abridged, the differences would be even more dramatic. But the sample size is insufficient to justify including the extreme parental size categories here.

Further Applications of Parent-Specific Size Standards

While the parent-specific size standards for children given in Table 2 are applicable to American-born children of the middle socioeconomic classes (lower middle to upper middle) of Northwestern European ancestry and well nourished, as judged from subcutaneous fat measurements, the applicability of these standards is potentially wider. In field situations, as in nutritional surveys, where stature standards do not yet exist, the values given in Table 2 offer the possibility of being child-appropriate to a degree not conventionally possible. They have been applied, retrospectively, to several groups, including the Aleut of Umanak and Atka in the Aleutians, for whom parental stature is individually available. For the Aleut children stature estimates based on parental size and using the appropriate Fels midparental size categories came remarkably close to observed individual size data.

New parent-specific size standards for children based on contemporary cross-sectional data and with parental size carefully measured (not reported) would be the ideal solution. It would be an immense undertaking, however, as mentioned above. A practical expedient might be to combine data from extant longitudinal studies (Harvard, Fels, Denver).

SIZE, CHROMOSOMES, AND SEX

At nearly all ages, as shown in Table 2, the human male is taller than the female, a point misconstrued in some elementary texts. At equal maturity levels, holding physiological age constant, sex difference in stature is even greater. Males are considerably taller than females at comparable levels of maturation and the fat-free weight is then far greater in the male (Fomon, 1966; Owen *et al.*, 1966). The 7 per cent sexual dimorphism in body size that may be seen after sexual maturity, the 3 per cent to 5 per cent sex difference in tooth size, and the 30 per cent sexual dimorphism in the adult lean body mass have their beginnings well before birth.

Final differences in size have their origin in pituitary timing and in the type and amount of steroid mediation. The male continues to grow for a longer time than the female, and the magnitude of the steroid-mediated adolescent growth spurt is generally larger. The total muscle mass and

particularly the muscles of the upper back and shoulders are disproportionately responsive to androgenic (masculinizing) steroids. But many size differences, such as those in the size of the permanent teeth, which form in the jaws prepubertally, owe nothing to the later mechanisms of hormonal differentiation.

The sexual dimorphism in body size prior to puberty most likely has its origin in the Y chromosome, that small chromosome which apparently contains little but genes affecting size and sex. Y-containing chromosomal types, the normal XY and the XXY, and to some extent the XXXY, appear to be taller than the non-Y chromosomal types, the XO, the normal XX, the XXX, and so on. Thus it is reasonable to believe that the difference between the normal XY (male) and the normal XX (female) has to do with genes on the Y chromosome. However, it also may be observed that the XO chromosomal type (Turner's syndrome) is generally smaller than the normal XX even in prepubertal life. To some extent, as suggested by a recent paper of Gorlin, Redman, and Shapiro (1965), early maturation and abnormalities of development increase with the number of chromosomes (XXX, XXXY, etc.).

Contrasting the long legs, narrow shoulders, and broad hips of subjects with Klinefelter's syndrome (XXY) with the short legs, broad shoulders, and narrow hips of Turner's syndrome (XO), Shimaguchi and associates (1964) suggest that the X chromosome includes genes affecting body build and body length. Tanner and his colleagues (1959) comment on the role of the X and Y chromosomes in skeletal maturation and therefore final size. However, the haploid XO is more than just a subject who never matures. There are multiple developmental defects wherever the number of sex chromosomes is less than or greater than two. So the extent of X and Y determination of the sexual dimorphism in size and development can only partially be ascertained by comparing the haploid XO with the XX and XY and those diploid chromosomal types with the polyploid XXY, XXXY, etc.

Parent-Child Size Similarities and Their Chromosomal Bases

Apart from the sexual dimorphism in size, which currently may be attributed to the Y chromosome in part, it is possible to estimate the extent to which sex chromosomes are involved in the determination of normal body size from various parent-child and sibling size correlations. Father-son and brother-brother stature correlations represent a test of Y-linkage. Father-daughter and sister-sister correlations provide a test of X-linkage (for fathers and daughters have the paternal X chromosome in common).

However, viewing complete parent-child size correlations, such as are

given in Table 3, it would appear that the bulk of variance in stature is determined by autosomal genes, that is, genes on the 22 pairs of chromosomes that have nothing to do with sex. Father-son correlations are not uniformly higher than mother-son correlations, and so on. There is a suggestion, in the shifting magnitude of correlations after puberty, that X-mediation may perhaps be involved in part but autosomal inheritance is still largely indicated. (See also Garn and Rohmann, 1966.)

In other parameters of human physical development, notably ossification timing and tooth calcification, the X chromosome seems to be disproportionately involved (Garn *et al.*, 1965; Garn and Rohmann, 1962). Tanner and associates (1959) have compared normal males (XY), Turner's syndrome (XO), and Klinefelter's syndrome (XXY) in an attempt to ascertain the role of the X and Y chromosomes in maturational timing.

However, the data newly presented in detail in Table 3 show the difficulty of demonstrating other than autosomal mediation of normal variations in stature at the present time. While the fact that father-daughter correlations exceed father-son correlations after age thirteen would implicate the X chromosome in part, exactly the same trend holds for the mother. That is, the mother-daughter correlations also exceed the mother-son correlations after age thirteen, and here the maternal contribution (an X chromosome in either case) is presumably equal. Accordingly, then, it is reasonable to say that the bulk of genes affecting stature within a sex are located on the autosomes, but that some measure of X-mediation appears to be superimposed. (See also Fisher, 1918; Hewitt, 1957.)

THE NUTRITIONAL MODIFICATION OF BODY SIZE

The proposition that body size can be modified by nutrition during growth needs scarce qualification today. It can be documented from the prenatal period through the completion of epiphyseal union. It can be shown experimentally in laboratory animals (Dickerson and McCance, 1961; Platt and Stewart, 1962) and it can be shown by a multitude of natural experiments, including famines, in man. It can be shown in relation to nutritional status, rating separately the caloric intake, the protein intake, and intake of fat-soluble vitamins. It can be shown in relation to socioeconomic status, where such status reflects the caloric reserve. The nutritional modification of stature and body size can also be demonstrated in malabsorption syndromes, where available nutrients are unable to pass through the gut. Regulating the amount of food available, within broad limits, regulates body size (Acheson, 1960).

Prenatally, body size can be modified by maternal nutrition up to a point. In famine situations, the body size of the newborn is reduced if the maternal caloric intake falls below 1,500 calories per day (Antonov, 1947; Smith, 1947a,b). Neonates in starvation areas and where protein-

TABLE 3. PARENT-CHILD STATURE CORRELATIONS

	<i>Fa-Da</i>		<i>Fa-So</i>		<i>Mo-Da</i>		<i>Mo-So</i>		<i>M-P Da</i>		<i>M-P So</i>	
	<i>N</i>	<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>	<i>r</i>
Birth	115	.14	135	.14	128	-.06	146	.15	114	.05	134	.18
0.12	147	.12	163	.17	162	-.01	176	.13	146	.07	161	.19
0.25	151	.24	169	.05	171	.16	184	.08	150	.25	167	.07
0.50	161	.29	171	.33	181	.14	187	.26	160	.28	170	.38
0.75	160	.32	169	.07	182	.29	185	-.02	159	.38	168	.04
1.00	165	.34	177	.36	186	.23	194	.27	164	.34	175	.42
1.50	161	.36	173	.09	180	.22	188	.15	161	.37	170	.14
2.00	158	.36	168	.37	179	.28	183	.30	158	.40	166	.45
2.50	158	.42	161	.39	175	.35	175	.33	158	.49	160	.47
3.00	153	.20	167	.37	172	.13	182	.32	152	.21	166	.45
3.50	149	.38	162	.41	165	.34	173	.37	149	.46	161	.51
4.00	150	.38	163	.36	166	.30	172	.36	150	.44	162	.48
4.50	143	.38	166	.40	157	.35	172	.36	143	.47	165	.50
5.00	141	.35	163	.38	158	.33	172	.35	141	.44	162	.48
5.50	135	.38	160	.37	150	.36	167	.37	135	.47	158	.49
6.00	136	.36	162	.36	150	.32	169	.36	136	.44	160	.49
6.50	126	.37	158	.36	141	.32	163	.40	128	.45	156	.51
7.00	127	.39	155	.34	140	.28	161	.34	127	.43	153	.47
7.50	121	.38	152	.38	134	.29	155	.36	121	.43	150	.50
8.00	116	.39	146	.39	129	.27	151	.35	116	.42	145	.50
8.50	107	.40	146	.37	119	.25	151	.34	107	.42	145	.48
9.00	108	.40	142	.37	119	.24	148	.34	108	.42	141	.48
9.50	106	.36	134	.36	116	.22	138	.33	106	.38	133	.46
10.00	105	.34	130	.36	114	.19	134	.35	105	.35	129	.47
10.50	106	.30	121	.38	113	.16	126	.35	106	.34	121	.48
11.00	100	.30	115	.39	107	.11	118	.33	100	.28	114	.48
11.50	99	.31	112	.40	104	.10	116	.35	99	.29	112	.49
12.00	95	.33	110	.40	100	.15	114	.31	95	.32	110	.46
12.50	91	.35	110	.38	95	.20	114	.29	91	.35	110	.45
13.00	91	.37	105	.36	96	.21	109	.28	91	.38	105	.42
13.50	87	.40	102	.35	91	.32	106	.25	87	.45	102	.40
14.00	85	.37	100	.34	89	.34	104	.27	85	.45	100	.41
14.50	82	.40	95	.31	86	.40	99	.34	82	.50	95	.42
15.00	80	.40	94	.32	84	.43	99	.36	80	.51	94	.43
15.50	74	.49	87	.33	77	.48	91	.33	74	.59	87	.41
16.00	76	.46	84	.34	79	.48	87	.36	76	.58	84	.45
16.50	69	.48	85	.37	73	.49	89	.45	69	.59	85	.50
17.00	69	.47	80	.33	73	.49	83	.41	69	.58	80	.46
17.50	64	.48	75	.35	67	.50	79	.46	64	.60	75	.47
18.00	65	.49	77	.33	69	.51	80	.38	65	.61	77	.46

This table which summarizes like-sexed and unlike-sexed parent-child size correlations at half-year intervals through eighteen years is based upon complete serial-longitudinal size data from the Fels studies. The fact that father-son correlations do not exceed mother-son correlations argues against Y-linked inheritance, and the fact that father-son correlations are of the magnitude that they are represents evidence against X-linkage. Taken together, it appears that size is largely determined by autosomal genes and that somewhat less than 50 per cent of size variance is accounted for by genes held in common by the child and both parents. For details, see text. See also Fisher (1918) and Hewitt (1957).

calorie malnutrition is common are smaller than are the newborn in Northwest Europe, the United States, New Zealand, and Australia. Still, depriving the mother has relatively less effect on her baby than might be suspected because of the peculiarly "parasitic" nature of the maternal-fetal relationship (Smith, 1947b).

Knowing this, the inability to control fetal size by adjusting the maternal caloric intake during pregnancy is better understood. There was a time when we tried to prevent overly large babies by dietary control measures. We established the twenty-pound rule, which is, that the mother should not gain more than twenty pounds during any single pregnancy. We now know that the twenty-pound rule has a cosmetic effect (keeping the mother from gaining excess fat during pregnancy) but it does not materially reduce the size of the infant at birth.

But if limited dietary attempts to manipulate birth size are relatively ineffective, intrauterine control of prenatal nutrition can still be demonstrated. Twins, particularly those monozygotic (single-egg) twins sharing a common placenta, are individually smaller than might be expected for their gestation length. Both monozygotic and dizygotic (separate-egg) twins compete for nutrients prenatally: in one sense twins are "starved" newborn. The same may be shown in some developmentally mature but extremely small full-term infants whose placental growth has been restricted and thus incapable of providing a full flow of nutrients. That such prenatal nutritional limitations may have a permanent effect is suggested when the smaller monozygotic twin at birth remains the smaller twin throughout life, i.e., the "runt" effect.

After birth and through the time of weaning there are numerous limitations on body size. In underdeveloped areas undergoing acculturation, the bottle-fed baby may be at a major disadvantage, for the "milk" is often highly diluted reconstituted milk and sanitary measures are nonexistent. The infant may thus be deprived nutritionally and subject to multiple diarrheas. In overdeveloped nations, on the other hand, the bottle-fed baby may become bigger than the breast-fed baby, the milkman having an endless supply compared with the mother. Now the point here is not bottle feeding versus breast feeding, but rather that the nutritional quality of the infant's diet affects the rate of growth. At the same time, we must consider the complex interaction of nutrition and infection (Scrimshaw and Béhar, 1961; Scrimshaw, Taylor, and Gordon, 1959). Growth of infants in many countries today is inhibited by diarrheas and other infections. At the same time, infants with suboptimal nutrition, particularly infants deprived of good quality protein, are more subject to diarrheas and other infections. So size in infancy is both di-

rectly influenced by nutrition and indirectly influenced by the diseases that malnutrition breeds.

Today, malnutrition and especially protein-calorie malnutrition (PCM) inhibit the growth of millions of preschool children in Central Asia, South America, Africa, Asia, India, and the Middle East (May, 1965). It is not infrequent in nutrition surveys to discover that such children in protein-calorie malnutrition areas average below the fifth percentile by recent American or English size standards or even below the first percentile. Such malnutrition has an economic basis, where calories and especially quality protein are in short supply. However, the problem is cultural as well. There may be excessive dependence upon a single cereal or root crop such as corn, manioc, or rice, each with its own characteristic limiting amino acids. Or, even where legumes and other crops abound, nutritional knowledge may be defective so that children are not given readily available foods that are necessary for their growth. In making the transition from the agricultural village to the industrial town, weaning may be premature, depriving the infant of good quality human milk protein and substituting a thin gruel of corn or a highly diluted watered "milk" with sugar added for calories. Vitamin-rich and protein-rich foods may be withheld from the preschool child under the mistaken notion that such "strong" foods are harmful. Small wonder that in such cultures and subcultures infant mortality is excessively high, those who survive are stunted and small, and both infants and children are particularly prone to infection, as described in the recent National Academy of Sciences conference on malnutrition in the preschool child (1966) and in the earlier conference volume on tropical health (National Academy of Sciences, 1962).

Malnutrition, Size, and Behavioral Delay

Recent studies on protein-calorie malnutrition (PCM) have suggested behavioral delay as well as delayed maturation and inadequate size attainment as a consequence. Children from protein-malnutrition areas of Central and South Africa are comparable to American children in psychomotor development during their first six months of life, or even ahead, but they tend to fall behind thereafter (Dean, 1954; Geber and Dean, 1957). Such behavioral delay is particularly pronounced in acute protein-calorie malnutrition, in the diseases known as *kwashiorkor* and *marasmus*. As studied in Mexico City and in Guatemala City, the degree of psychomotor delay is proportional to the degree of retardation in size. Some authorities have viewed this delay in the motoric, manipulative, and language development as indicative of major central nervous

system impairment (Brown, 1965; Dean, 1954; Geber and Dean, 1957; Scrimshaw and Béhar, 1961; Stoch and Smythe, 1963).

Now behavioral abnormalities may be produced in experimental animals by giving them a diet deficient in quality protein (Moore *et al.*, 1964). So the facts are clear enough. Attainment of various items on the Gesell schedule—creeping, crawling, standing, walking, drawing, using three words, pointing to parts of the body, and following the geometrical forms—may be delayed in geographical areas where protein malnutrition is common. Viewing a ward full of children hospitalized with kwashiorkor, one is impressed with their lethargy and their behavioral retardation. But the question is whether the behavioral delay is a simple function of the lethargy and malaise associated with acute illness, where the child has no real interest in his environment. Or it may be possible that the children with protein-calorie malnutrition are suffering from very real brain damage. It is possible that there is delayed cerebral growth in early kwashiorkor and marasmus. It is suggested, though by no means proven, that the consequences of protein-calorie malnutrition are both statural and psychological retardation, even persisting through adulthood (Stoch and Smythe, 1963) and involving deficient brain growth (Brown, 1965).

NUTRITION AND SIZE AT MATURITY

There is a jump in years from the preschool infant to the adolescent, and from malnutrition to overnutrition, but the same general principles apply. The poorer the state of nutrition, the smaller the size, the later the onset of sexual maturity, and the later the completion of growth. Thus, size and sexual maturity tend to be advanced in the higher socioeconomic groups and delayed in the lower. Similarly, menarche is earlier in fatter girls, in some cases by two or three years or more. Demonstrably, overnutrition as measured by obesity results in acceleration of the maturational process in both sexes. Fat children are more mature and bigger earlier (Garn and Haskell, 1960; Quaade, 1955; Wolff, 1955). While children can be stuffed into early maturity, as they can be starved into late maturity, it is not known how broadly these generalizations apply. Early maturing children are certainly bigger earlier, but they stop growing sooner. Starved children are late to mature but obviously may grow for a longer period of time. While there is compensatory growth, it has its limits; otherwise well-nourished and starved populations would tend to be alike in adult stature (Howe and Schiller, 1952).

The effects of nutrition on size are complicated. In man, malnutrition

is rarely just a restriction in calories. Many of the malnourished populations of the world are short on fats and especially short on animal protein. In the several Guatemalan villages we have studied in conjunction with INCAP, the caloric intake in four-year-old children is approximately a third less than that of age-matched children in the Fels Longitudinal series. (See Figure 2.) On the other hand, protein intake in these Guatemalan villages ranges below 50 per cent of what comparable children in Ohio have to eat. And finally, as shown in Figure 2, the intake of *animal protein* is particularly restricted in these Guatemalan Indian villages so that the children from the villages of Santa Maria and Santa Cruz average less than 10 per cent as much animal protein as do the children from Southwestern Ohio. It is the quality protein of animal origin much more than the caloric intake as a whole that appears to be the growth-limiting factor, and, along with being growth-restricting, protein deficiency predisposes the children in these areas to a variety of infectious diseases further complicating the effects of malnutrition per se. A program of protein-calorie supplementation now being carried out in the village of Santa Catarina promises to effect a "secular trend" in short order. (See *Federation Proceedings*, 1964, p. 338.)

Nutrition and Size

While it is dangerous to overgeneralize about growth mechanisms and the mechanisms that control body size, limited generalizations can be made. Caloric deficiency on the part of the mother, below levels we ordinarily find in our country, can reduce the size of newborn. Even with an adequate supply of mother's milk, infections during the nursing period can limit growth. Limited quantity and poor quality of the post-weaning diet, combined with parasitic infestations and recurrent infections thereafter, limit growth through the adolescent period and beyond. On the other hand, supernutrition certainly promotes maximum body size and early sexual maturation. Our children have virtually unlimited access to calories; their avenues for caloric expenditure have become limited; and childhood diseases and infections have far less impact because of immunizations, antibiotics, and superior medical care.

So in man we are now able to view both nutritional extremes as they affect body size. We can measure the impact of undernutrition and consequent infection on size in much of the world. In exploring the effects of malnutrition, and in the analysis of growth improvement following nutritional supplementation, we have a partial understanding of the mechanism of secular change in size. At the same time, we can document the auxogenic or growth-promoting effects of overnutrition and of supernu-

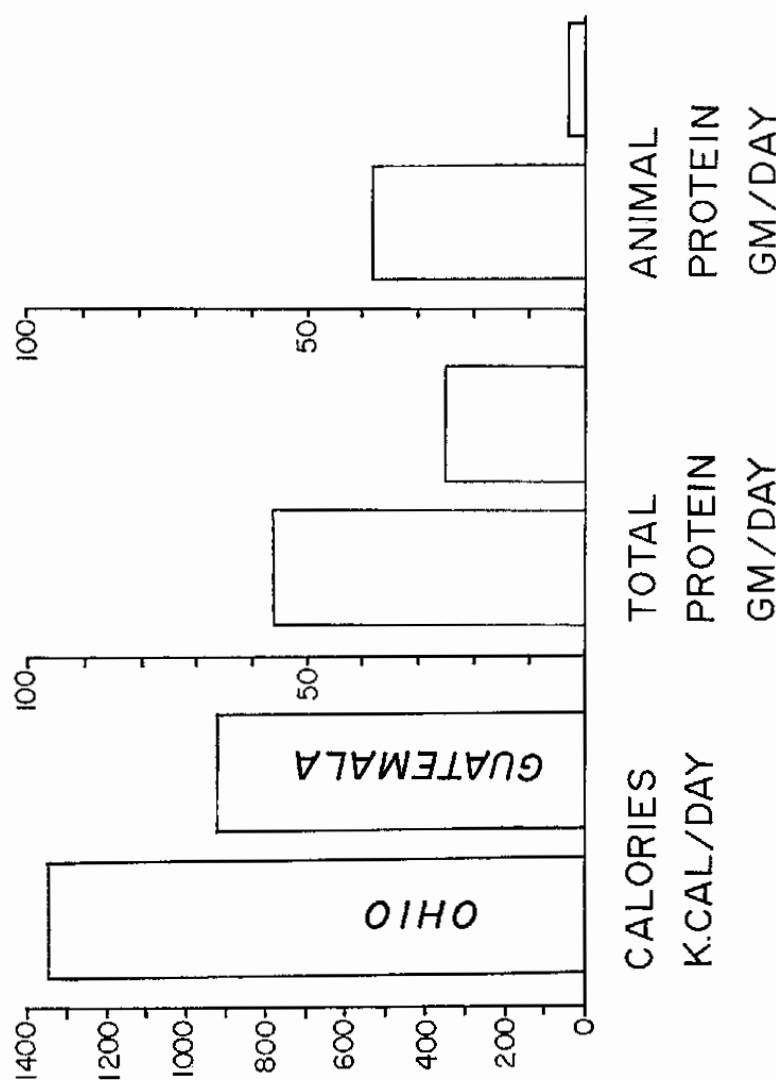


FIGURE 2. Comparative Daily Intakes of Calories, Protein, and Animal Protein in Four-Year-Old Children from Southwestern Ohio and from Two Mayan Villages in Guatemala

The Mayan Indian children consume 30 per cent fewer calories, 50 to 60 per cent less protein, and 90 to 95 per cent less animal protein. These data, abridged from cooperative studies by the Institute of Nutrition of Central America and Panama (INCAP) and the Fels Research Institute, provide a dramatic example of how nutritional parameters restrict body size. Here animal protein becomes the limiting factor, not just for growth but for actual survival (see text).

trition on our own children and adolescents, and we have begun to wonder whether greater body size and earlier maturation has been purchased at the expense of predisposition to cardiovascular and atherosclerotic diseases.

SUMMARY AND CONCLUSIONS

Despite methodological considerations, which favor recumbent length, and theoretical considerations (which view stature as a complex of independent axial and appendicular segments), stature—standing height—continues to be the most used measure of body size. In infancy and childhood, as in adolescence, stature has multiple correlates with physiological, metabolic, psychomotor, and intellectual performances not all of which are simply “developmental” in nature.

Over the past century, excepting wartime and depression periods, stature has increased, the more so for the least favored groups. As shown by nutritional experiments, this “secular” trend may be attributed to an increase in caloric intake, an improvement in nutritional quality, and a decrease in childhood diseases, including those associated with malnutrition. Today, areas of protein-calorie malnutrition are areas of statural stunting, apparent developmental delay, and (possibly) permanent brain damage.

The use of stature as a reference parameter is predicated upon the availability of appropriate norms or standards. Unfortunately, many such standards are twenty to fifty years out of date, and (for much of the world) rarely group-specific. In stature prediction, the use of “bone age” rather than chronological age greatly improves results. For individuals, parent-specific stature standards constitute a methodological advancement, especially for the children of tall parents and the children of short parents. A new parent-specific age-size table is given in this paper.

Apart from nutritional modifications, stature has an obvious genetic parameter, as shown from midparent versus child correlations approximating 0.5. Present data suggest that most of the genes affecting stature are located on the autosomes. The Y chromosome, however, appears to be responsible for the sex difference in stature and the far larger sex difference in the lean body mass. The mechanism of genetic mediation of stature is not known, though a timing effect (regulating the duration of growth) can be isolated as one determinant.

Of major interest to the behavioral sciences is the extent to which genetic and nongenetic factors affecting stature attainment directly and indirectly affect behavior.

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