CHAPTER 1

The Social Ecology of Human Development

The characteristics and behavior of all living organisms arise from a complex interaction between genes and the environment. This gene-environment interaction occurs not only within the genome of any species across historical time, but also within the lifetime of any particular organism. Among species, random mutations inevitably occur in the process of DNA replication and over time regularly introduce changes into its genome. These genetic changes may increase, decrease, or have no effect on an organism's ability to survive and reproduce. Those changes that enhance the odds of survival and reproduction are likely to be passed on and be retained in the genome. Those that reduce survival and reproduction are not passed on and over time disappear. Mutations that have no effect on survival or reproduction remain, though generally at lower frequencies.

This interaction between genes and the environment constitutes the core mechanism of evolution and has been recognized since the time of Charles Darwin (1859). The realization that genes interact with the environment within the lifetimes of individual organisms is much more recent. For many years, scientists had a rather static view of genetic inheritance, in which specific genes were passed on by parents and duly inherited and expressed by their progeny, irrespective of environmental conditions. Genes were invariably revealed biologically and the principal debate was over which was more important—genes or the environment—in accounting for observed traits and behaviors in the phenotypes of living organisms (Ceci and Williams 2000).

In recent years, however, this static view has given way to a more dynamic model in which the environment itself determines whether and how specific genes are expressed (Ridley 2004), a phenomenon known as epigenetics (Allis et al. 2007). As a result, current scientific debates tend not to be over which is more important—genes or the environment—but about how genes and the environment interact to bring about the expression of certain inherited proclivities. The focus of current work in both the biological and behavioral sciences has thus shifted to gene-environment interactions (Rutter 2006). The environment not only shapes behavior through learning and physiological conditioning, but also by determining which certain genes get turned on or off, and hence, expressed or not (Costa and Eaton 2006). Scientists have now documented instances where the environment has changed an organism's genetic structure to create a new genotype that is passed on to progeny through a process known as methylation (Suzuki and Bird 2008; Champagne 2012).

Environmental circumstances are especially important in understanding outcomes among human beings, given the complexity of their genome and the importance of learning in shaping their behavior. Unlike most organisms, however, the critical environment for human beings is not physical, but social. Since the emergence of *Homo sapiens* around two hundred thousand years ago, human adaptation has primarily been through culture rather than through genetics (Massey 2005a). Prior to the advent of the genus *Homo*, our ancestors occupied a very restricted environment both geographically and climatically, one essentially confined to the savannahs of East Africa. With the arrival of *Homo sapiens*, however, culture became the primary mechanism of adaptation and human beings quickly came to occupy virtually every ecological niche in the globe (Cavalli-Sforza, Menozzi, and Piazza 1994).

Human beings do not interact directly with the physical environment, but through the intervening filters of culture and society; and since cultural practices and societal institutions are socially transmitted, the critical environments for understanding the expression of human traits and behaviors are thus social. It is within specific social contexts that learning occurs and human proclivities play out. In order to explain human outcomes, therefore, one must consider the social ecology of development—the series of social environments that people come to inhabit at different stages of the life cycle (Bronfenbrenner 1979).

Everyone is born into a kinship system, of course, and the family is the

first social environment all human beings occupy. Newborn babies are helpless and would quickly perish without constant attention from family members, mostly the mother, but also the father, siblings, grandparents, and sometimes even more distant relatives. As children age and approach adulthood, they grow progressively less dependent on the family and more dependent on other social spheres such as neighborhoods, schools, and peers (Bronfenbrenner 1973). As adults, of course, humans face a social environment defined by a variety of macro social structures—governments, corporations, and other major social institutions—but the capabilities that humans deploy in adapting to contingencies in the macro social environment are largely determined before adulthood through interactions that play out within micro social spheres.

The social settings experienced during childhood and adolescence are especially powerful in shaping the physical, cognitive, and social capacities of human beings (Eliot 1999). In contemporary postindustrial societies, the key social settings for human growth and development are the family, the school, the neighborhood, and the peer group (Bronfenbrenner 1979). Together they are the four fundamental social contexts within which human capabilities are nurtured and ultimately expressed (Bronfenbrenner 2001). In addition, human beings have created an additional sphere, one in which they may or may not spend significant amounts of time while coming of age: religion, whether a church, a temple, or a mosque. The experience of interacting socially with coreligionists may offset or exacerbate the positive and negative effects of growing up in the four other settings.

SPHERES OF SOCIAL INFLUENCE

To grow, develop, and survive, all organisms must extract resources from the environments they experience. If human children are to grow, develop, and reach full adult potential, the social spheres they progressively inhabit—families, neighborhoods, schools, peers, and sometimes religious congregations—must provide access to key material, emotional, and symbolic resources (Kelly 1995; Gamble 1999). The critical material resources for developing human capabilities in contemporary societies are wealth and income, which determine access to food, clothing, shelter, medicine, recreation, and education. The key emotional resources are warmth, affection, and physical contact, which social scientists have long shown to be fundamental to healthy social maturation (Harlow and Harlow 1986; Montague 1971; Davis 1999). Sym-

bolic resources include markers of status, prestige, social standing, and esteem, constructs that though intangible nonetheless have powerful effects on well-being across a variety of dimensions and developmental transitions (Link et al. 1997; Rosenfield 1997; Zittoun 2006).

Access to necessary and sufficient resources is particularly important during phases of the life cycle when humans are biologically programmed to undergo specific developmental changes (Heckman 2006). Physical growth does not occur linearly from birth to adulthood, for example, but in distinct phases concentrated at ages zero to four and twelve to eighteen (Stützle et al. 1980). Although insufficient nutrition slows growth at any age, if it occurs during one of these critical developmental phases severe stunting typically results, and the shortfall in growth cannot be undone after the developmental window has closed, even if food later becomes abundant (Mann and Truswell 1998). The same is true for cognitive growth, except that in addition to nutrition and other physical resources, cognitive growth depends critically on the richness of the social environment (Doyle et al. 2009).

Unfortunately, as in the physical environment, resources in the social environment are not distributed equally; and to the extent that critical resources are deficient in any of the social spheres inhabited by human beings while growing up, we can expect their growth, development, and overall well-being to be compromised. Differences in access to material, emotional, and symbolic resources within families, schools, neighborhoods, peers, and religious settings translate directly into differences in human capabilities and well-being. In the United States, sharp inequalities in access to resources are well documented across all five of the foregoing social spheres.

Among families, for example, inequalities in wealth and income have risen dramatically since the mid-1970s (Keister 2000; Picketty and Saez 2003; Thompson 2012). These are quite strongly linked to disparities in the amount of parental attention devoted to children (Bianchi, Robinson, and Milkie 2006; Kendig and Bianchi 2008) as well to the quality and nature of that attention (Kohn 1989; Lareau 2003). Access to symbolic resources also varies systematically by family economic status, with markers that signal material disadvantage tending to trigger reactions of contempt, disgust, and avoidance by other social actors (Fiske et al. 2002; Cuddy et al. 2009).

Schools likewise differ dramatically in terms of the material resources at their disposal (Coleman 1966; Kozol 1991; Reimers 2001) and these differences are, in turn, associated with differences in proximate educational fac-

tors such as student-teacher ratios (Card and Krueger 1996; Darling-Hammond 1999; Finn and Achilles 1999; Rothstein 2004) and quality of instruction (Bowles and Gintis 1976; Willis 1977; Bourdieu and Passeron 1990). As with schools, moreover, neighborhoods also vary dramatically by economic status (Jargowsky 1997; Sampson, Morenoff, and Gannon-Rowley 2002) and this variation is similarly associated with differences in access to social support (Sampson and Graef 2009), security and safety (Sampson and Morenoff 2004), social efficacy (Sampson, Morenoff, and Earls 1999), civic action (Sampson et al. 2005), esteem (Sampson and Raudenbush 2004), and public order (Sampson and Raudenbush 1999). Indeed, indicators of neighborhood disadvantage display a very strong and persistent ecological correlation so that "bad" neighborhoods are characterized by multiple sources of disadvantage whereas "good" neighborhoods are typified by multiple sources of advantage, thus reifying the lines of stratification (Peterson and Krivo 2010; Sampson 2012; Sharkey 2013).

Although closely connected to schools and neighborhoods, peer networks are not necessarily coincident with either sphere, but like them vary widely with respect to social and economic composition to influence a variety of socioeconomic and health outcomes (Christakis and Fowler 2009; Small 2009; Martin 2009; Christakis and Fowler 2009). Finally, unlike the four fundamental spheres that virtually all people experience, religious congregations are voluntary and are thus more socioeconomically diverse (Schwadel 2009) than schools or neighborhoods, thus potentially offering low-status congregants a bridge to the material resources of higher status coreligionists, in addition to whatever emotional and symbolic resources church membership itself provides.

In the United States, access to critical material, emotional, and symbolic resources within different social spheres is not only structured by class, of course, but also by race and ethnicity. Among Hispanics and blacks, for example, rates of unwed childbearing and marital dissolution are significantly higher than among whites and Asians and rates of marriage are lower, yielding pronounced differences in the amount of parental time and resources potentially available to children (McLanahan and Sandefur 1994; Casper and Bianchi 2001; McLanahan 2004; Bianchi, Robinson, and Milkie 2006). Parenting styles also differ by race as well as class (Lareau 2000, 2003; Massey et al. 2003) and given continuing high levels of segregation in the United States, the quality of schools and neighborhoods also varies markedly by racial and

ethnic group (Massey and Denton 1993; Orfield and Eaton 1996; Sampson 2008, 2012). There is also considerable segregation among interpersonal networks on the basis of both class and race-ethnicity (McPherson, Smith-Lovin, and Cook 2001) and the high degree of racial segregation among American religious congregations is well documented (Emerson and Smith 2000; Haynes 2012), despite their relative economic diversity (Schwadel 2009).

Race historically has served as a "master status" in the United States, dominating class and other social dimensions in defining the status and welfare of groups and individuals within American society; but the hegemony of race over class began to shift in the latter half of the twentieth century (Wilson 1978). In part, this shift stemmed from a revolution in attitudes. Before the 1960s, a clear majority of white Americans were principled racists. Before the civil rights era, for example, two-thirds of whites favored racial segregation in schools, 60 percent endorsed segregation in neighborhoods, 55 percent supported segregation in employment, and 54 percent backed segregation in transportation. By the 1990s, however, white support for segregation had all but evaporated, levels of support for segregation in these venues falling to just 4 percent, 13 percent, 3 percent, and 12 percent, respectively (Schuman et al. 1998). Moreover, whereas before 1964 two-thirds of whites said they would not vote for a black political candidate, in 2008 Americans elected a black president with significant, though hardly universal, white support.

Accompanying this revolution in attitudes were two ancillary social transformations that also helped change the relative balance between race and class in determining social outcomes, one demographic and the other economic. After 1965, the revival of mass immigration radically altered the demographic structure of the United States. In 1950, 88 percent of all Americans were white and non-Hispanic and 10 percent were African American. By 2010, only 65 percent of Americans were non-Hispanic and white, 17 percent were Hispanic, 13 percent were African American, and 5 percent were Asian.

Over the same period, a political realignment brought about economic changes that undid the equalizing policies of the New Deal to usher in an era of rising inequality (McCarty, Poole, and Rosenthal 2006). As a result, the Gini index for household income inequality went from 0.386 in 1968 to 0.466 in 2008, a remarkable 21 percent increase over four decades (U.S. Census Bureau 2009). Inequalities of wealth are even more extreme than inequalities of income (Keister 2000; Wolff 2002; Frank 2007a), and recent

research clearly indicates that elected representatives are much more likely to act on the priorities of the affluent and wealthy than of the poor and middle class (Bartels 2008; Gilens 2012). As a result, the United States by 2010 was vastly more unequal than at any time since the 1920s.

In sum, because of immigration race was transformed from a dichotomy defined by a bright black-white color line to a more blurred continuum populated by a variety of groups of different hues, and through political realignment class was increasingly defined by a skewed distribution of income and wealth that produced bright boundaries between rich and poor (McCarty, Poole, and Rosenthal 2006; Frank 2007b). The changing meaning of race and the rising importance of class have necessarily increased the importance of race-class interactions in American society. With respect to neighborhood segregation, for example, black-white segregation steadily declined from 1970 to 2010 while Asian and Latino segregation held steady despite mass immigration, though given the large increase in the number and proportion of Latinos within urban areas, however, their isolation within neighborhoods rose sharply (Rugh and Massey 2013). Over the same period, segregation on the basis of socioeconomic status generally rose (Massey, Rothwell, and Domina 2009; Reardon and Bischoff 2011). As a result, some race-class groups, such as poor blacks, remain as spatially isolated as ever, whereas other groups (affluent blacks, for example) have become more integrated (Iceland and Wilkes 2006; Sampson 2012).

In considering the distribution of advantage and disadvantage across families, schools, neighborhoods, peers, and congregations, we therefore focus on race and class as key structuring factors. Put simply, we seek to determine how exposure to advantage and disadvantage within social spheres varies by race-ethnicity and social class simultaneously, and how this variation affects critical indicators of human development and well-being. We define race-ethnicity in terms of four broad groups that make up the prevailing taxonomy currently in use by government, industry, and the public: non-Hispanic whites, non-Hispanic blacks, non-Hispanic Asians, and Hispanics, henceforth simply whites, blacks, Asians, and Hispanics. We define class on the basis of household income quartiles, yielding four categories corresponding to the lower, lower middle, upper middle, and upper classes. Cross-classifying race-ethnicity by class yields a sixteen-cell social space we henceforth label the race-class distribution.

The fact that access to resources within social spheres varies by race and class and that this variation affects human outcomes and behaviors is hardly news. As noted, many studies have documented socioeconomic differentials between families, schools, neighborhoods, and peers. The influence of material resources on human well-being is so well established that indicators of family socioeconomic background are routinely included in statistical models used to study and predict developmental and behavioral outcomes, either as control variables or as theoretically specified determinants. It is also increasingly well documented that the socioeconomic composition of schools, neighborhoods, and peers exert independent influences on developmental outcomes (Wilkinson et al. 2000; Small and Newman 2001; Sampson, Morenoff, and Gannon-Rowley 2002; Sellström and Bremberg 2006).

Although considerable attention has been devoted to studying material inequalities across various social spheres, less attention has been paid to inequalities in access to emotional and symbolic resources, though these are also relevant to human growth and development. Here we endeavor, to the extent possible, to develop indicators of access to resources other than those that are material, working to define measures of access to emotional and social support as well as their opposite: exposure to disorder, violence, instability, and stigma.

In addition to broadening the measurement of inequality to incorporate nonmaterial features of the social environment, we also build on prior work by seeking to measure and study the interactive effects of inequality across different social spheres. It is not enough, we argue, simply to acknowledge the detrimental effects of exposure to disadvantage in families, schools, neighborhoods, and networks as main effects. Rather, to fully appreciate the effects of disadvantage experienced across multiple spheres simultaneously, we must consider potential interactive effects. Some groups are likely to experience high levels of disadvantage across all social spheres simultaneously, whereas others experience disadvantage in some but not all. It is well documented, for example, that poor whites are unlikely to live in neighborhoods characterized by high concentrations of poverty, whereas poor blacks are (Massey and Eggers 1990; Massey and Fischer 2003; Sampson and Sharkey 2008; Sampson 2012; Sharkey 2013). As a result, interactive measures must be incorporated into studies of the social ecology of human development. The full effect of disadvantages experienced in multiple spheres simultaneously is quite possibly much more than a simple sum of main effects.

STUDYING SOCIAL ECOLOGY

The ideal data needed to study the social ecology of human development would consist of a longitudinal survey that compiled detailed information on individuals and the various social environments they experienced at regular intervals from birth through childhood, adolescence, and into adulthood. If analyses exploring the additive and interactive effects of race and class are to be undertaken, moreover, the data would have to include oversamples of minority groups. Such a survey would require many years and a great deal of money to put together, of course, and the absence of such data explains the lack of a systematic account of the comparative social ecology of human development in the literature to date, despite the fact that the ecological model has been around for at least three decades (see Bronfenbrenner 1979).

Several contemporary surveys do enable investigators to follow subjects for certain portions of the life cycle—birth to childhood, childhood to adolescence, and adolescence to adulthood; but most of the sample sizes are not large enough to enable detailed analysis by race and class. One survey, however, follows a large number of subjects from adolescence into young adulthood and is based on a sample of sufficient size and complexity to allow reliable identification of detailed race-class groups, one that includes an unusual wealth of social, economic, and even biological data compiled at different levels of analysis. It thus provides an empirical foundation for a systematic analysis of the social ecology of racial and class inequality during a critical phase of human development: the adolescent transition to adulthood.

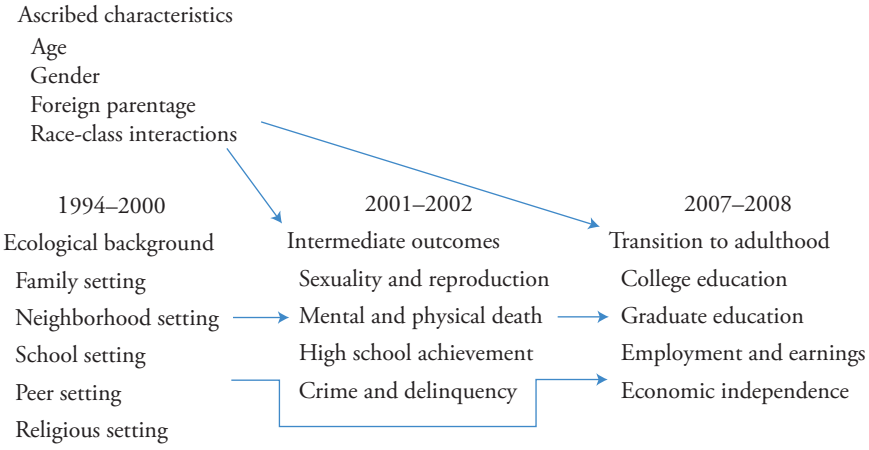
The Adolescent Health Survey, known popularly as Add Health, began with a baseline national sample compiled in 1994 and 1995, when respondents were age twelve to eighteen, and has so far carried out follow-up surveys one, two, seven, and thirteen years after the baseline. At the time we began this research, data from the most recent survey wave were not yet available and thus we conduct most of our ecological analyses using data from the first three waves. By the time the study was nearing completion, however, data from the fourth wave were released, and in the final chapter we use this information to analyze the final transition to adulthood, when most respondents were twenty-five or older. Specifically, we consider how variation in social ecological conditions experienced before Wave 3, and social and health outcomes attained by Wave 3, condition the transition to adulthood as measured in Wave 4, when the youngest respondents were twenty-four years old.

A detailed description of the Adolescent Health Survey is provided in appendix A. Briefly, the initial wave was implemented over 1994 and 1995 and focused on students attending grades seven through twelve, when most respondents were age twelve to eighteen. The school-based sample was designed to be nationally representative of adolescents attending middle schools and high schools in the United States during the 1994–1995 school year. The Wave 1 data come from five sources: an in-school survey of all students attending sampled schools; a more detailed in-home survey of a random subsample of these students; a survey of the latter's parents; a survey of administrators from sampled schools, and census tract data matched to the address of the adolescent's in-home interview. The second wave occurred a year later, in 1996, and consisted of an in-home survey of students interviewed in Wave 1 along with a telephone survey of school administrators. The third wave once again surveyed students included in Wave 1 using an in-home interview fielded in 2001 and 2002 when most respondents were age nineteen to twenty-six, and the fourth wave was carried out in 2007 and 2008 when they were age twenty-four to thirty-two.

In the Add Health Survey, African American, Latino, and Asians students were oversampled, yielding sample sizes large enough for detailed analysis by race and class. As described in the appendix, the study design called for oversampling black students having a parent with a college degree, as well as Chinese students, Cuban students, and Puerto Rican students, in addition to the black, Latino, and Asian students who were identified and interviewed in the core sample. The core sample itself contained more than 1,500 students of Mexican origin in addition to Cubans, Puerto Ricans, and others. In general, then, Add Health does a fairly good job representing the black and Latino student populations, but the Asian population is likely to be dominated by the experience of the Chinese, who were oversampled despite being the largest component of the Asian population, and less representative of South Asians, such as Indians or Pakistanis.

The Add Health data are not ideal for studying ecological effects on development, of course, since the panel begins in adolescence rather than birth or early childhood. Given that ages zero to four are critical for children's physical, cognitive, and social development, a survey that begins in adolescence will not be able to capture many important ecological effects, especially family influences on infant and preschool development. Nonetheless, in addition to early childhood, adolescence constitutes the other critical phase of human

Figure 1.1 Conceptual Diagram for Analyzing Social Ecology of Inequality



Source: Authors' compilation.

growth and development (Stützle et al. 1980). Moreover, to the extent that social environments experienced in childhood are correlated with those experienced later in adolescence, as seems to be the case (Sharkey 2013), then the Adolescent Health Survey is likely to capture some share of the socially-induced variation in developmental outcomes introduced during earlier phases of the life cycle.

The basic design of our analysis is summarized in figure 1.1. We take as exogenous the ecological circumstances that respondents experience in adolescence, mostly around the time of Waves 1 and 2, when they were thirteen to nineteen, but in the case of neighborhoods including average characteristics experienced between Waves 1 and 3. In the next two chapters, we develop indices of the material, symbolic, and emotional resources respondents were exposed to in their families, neighborhoods, schools, peer networks, and religious congregations before Wave 3. We also take as exogenous the ascribed characteristics of age, gender, foreign parentage, race, and class, the latter two of which we measure interactively. We then consider how the foregoing factors influence development and well-being expressed at Wave 3, when respondents were age roughly nineteen to twenty-six, focusing in par-

ticular on outcomes related to reproduction, health, human capital formation, crime, and delinquency. Finally, conditioned on these intermediate outcomes, we consider the effect of ecological circumstances and ascribed characteristics on the transition to adulthood by Wave 4, which we define in terms of relative success in education and employment, and the consequent achievement of personal economic independence.

ARGUMENT AND ORGANIZATION

The ensuing chapters basically follow the conceptual diagram laid out in figure 1.1. Our core argument is that the United States is moving from a regime of powerful binary racial effects and weak class effects to one characterized by increasingly powerful class effects and diminishing though still very potent racial effects, which increasingly are expressed along a continuum rather than a dichotomy. As a result, both race and class need to be taken into account in characterizing the social environments experienced by Americans today. Because the pace of change with respect to race and class differs across racial groups and social spheres, moreover, class standing confers different sets of advantages and disadvantages to incumbents of different racial groups and different social settings. In other words, race-class interactions are often complex, and at present no single pattern of class privilege or penalty is invariant with respect to race or social context.

This book is data intensive, containing many complicated statistical models and detailed analyses. As a result, reading it straight through is a bit of a slog and readers may be overcome with data fatigue. One way around this difficulty might be to read chapters 1, 2, and 3 and then read the conclusions of chapters 4 through 8 and finish up by reading the whole of chapters 9 and 10. This exercise will convey the big picture of the book's basic arguments and findings without getting the reader bogged down in the minutia of data and analysis. Those readers interested in the gory details of multivariate analysis can then go back and read chapters 4 through 8 in their entirety, though doing so in one sitting is not recommended.

The chapters follow the logic summarized in figure 1.1. In chapter 2, we describe differences in access to material, symbolic, and emotional resources within the family sphere, first examining differences across major racial groups and then assessing this social sphere by race and class simultaneously. In general, taking class as well as race into account greatly increases the observed range of intergroup variation in access to resources. With respect to

average income, for example, the range across major racial categories is from $28,400 for black families to $50,800 for Asian families, white and Hispanic families falling between at $48,500 and $35,200, respectively. Taking into account class, however, the range increases by a factor of nearly four, going from an average of only $9,300 for lower-class blacks up to $97,000 for upper-class Hispanics.

Adult time and attention are obviously critical resources for the healthy development of children and adolescents, and our analysis reveals large differences by race and even greater variation by race and class. The key structural feature of family life that determines access to adult time, as well as other resources, is the presence or absence of a biological father. The share of adolescents whose father was never present between Waves 1 and 3 ranged from 15 percent among Asians to 61 percent among blacks, but taking into account class as well as race increased the range from 12 percent among upper-middle-class Asians to 76 percent among lower-class blacks. In the remainder of the book, we thus focus on race-class differences in access to resources.

The remainder of chapter 2 focuses on the family sphere and considers differences in access to material, symbolic, and emotional resources among white, black, Latino, and Asian adolescents who are lower class, lower middle class, upper middle class, and upper class, yielding a total of sixteen discrete race-class categories. Our principal method is to rank order these categories with respect to the resource in question and array them in a bar chart going from smallest to largest. Before examining actual race-class distributions in access to resources, however, we describe idealized bar charts of what the distributions would look like if they were determined purely by race with no class effects or purely by class with no race effects.

Access to some family resources (such as paternal absence) show relatively strong racial effects whereas others (income obviously) show relatively strong class effects. In most cases, however, we observe complex interactions between race and class that make it difficult to generalize about the simple effects of race and class taken by themselves. To characterize the family environment experienced by adolescents in America today, one thus needs to consider race and class simultaneously; and as noted earlier, doing so generally yields a much larger range of variation in access to resources than is visible when either variable is considered by itself. Often the race-class differences are huge. As noted, we observe a tenfold difference in adolescents' access to income within the family sphere, the range going from $9,300

among lower-class blacks to $97,000 among upper-class Hispanics. Likewise, the range in access to another material resource, health insurance, was also quite large, going from 46 percent among lower-class Hispanics to 80 percent among upper-class Asians. With respect to symbolic resources, the lowest level of prestige was observed among lower-class Hispanics, whose parental occupational status averaged just 26.1; the highest was for upper-class whites, whose average parental status was 47.1, 80 percent higher. Among symbolic resources, the gap was even greater in terms of access to human capital. Whereas 72 percent of upper-class adolescents had a college-educated parent, the share for lower-class Hispanic adolescents was just 15 percent, a gap of nearly 5 to 1.

We also observe stark contrasts in the degree of access to emotional resources. In addition to the huge spread in father absence already noted, we also observe a large range in child-to-adult ratios within the household, which go from 0.87 among upper-class blacks to 1.54 among lower-class blacks. The emotional burdens that inevitably come with family life are also borne unequally. Whereas only 1 percent of upper-middle-class Asian adolescents and 4 percent of upper-class white adolescents experienced a death in their immediate family before age eighteen, the figure was 13 percent for lower-class blacks and 14 percent for those in the lower middle class. Likewise, only 1.5 percent of upper-middle-class Asian fathers had ever been incarcerated by Wave 1, whereas the figure was 27 percent among lower-middle-class blacks. Families also differed significantly, though less sharply, with respect to their emotional tenor. On our scale of family sternness lower-class Asians stood out with a high value of 19.9 compared with 15.9 among lower-class blacks. Lower-class Asians also stood out for their lower access to family mentors, only 16 percent saying that an adult family member had made a difference in their lives, versus 37 percent of lower-class blacks.

As these statistics indicate, the Add Health Survey offers a great wealth of information about conditions in the family sphere; but it also includes an impressive amount of data on circumstances in other ecological settings. Chapter 3 uses these data to characterize the neighborhood, school, peer, and religious environments inhabited by adolescents in different race-class categories. In these environments, as well, we uncover a great deal of variation in access to material, symbolic, and emotional resources. In terms of material resources, the least privileged race-class group experienced 4.2 times more neighborhood disadvantage than the most privileged group and 1.5 times

more school disadvantage. In terms of emotional resources, the least advantaged race-class category experienced 1.7 times more neighborhood inefficacy than the most advantaged category, 1.3 times more school inefficacy, 1.2 times more school disorder, and 2.4 times more peer violence. They were likewise 76 percent less likely to report a neighborhood mentor, 66 percent less likely to report a school mentor, and 50 percent less likely to report a peer mentor, but nine times more likely to have a suicidal friend.

These extremes were not evenly distributed among adolescents, but were concentrated in certain race-class categories, leading to the accumulation of advantages and disadvantages across social spheres. In general, lower-class blacks tended to be at the bottom and upper-class whites at the top with respect to most ecological resources. In twenty-five specific comparisons of indices across five social spheres, poor blacks displayed the most disadvantaged score in five cases, and in sixteen of twenty-five cases scored within 20 percent of the least privileged group. In contrast, in six comparisons, upper-class whites evinced the most advantaged score and in fifteen of twenty-five cases they were within the top 20 percent.

Having documented how race and class condition exposure to advantages and disadvantages across social spheres in early waves of the Adolescent Health Survey, the next four chapters assess how unequal ecological circumstances affect adolescent decision-making at the time of Wave 3, around 2001 and 2002, when respondents were age nineteen to twenty-six and just moving into young adulthood. Chapter 4 focuses on sexuality and family formation, studying how circumstances experienced in different family, neighborhood, school, peer, and religious environments affect sexual activity and partnering, paying particular attention to reproduction that prior research has shown to be socially risky in terms of its socioeconomic consequences, namely teenage and unwed childbearing.

We found that African American reproduction is characterized by a high likelihood of early sexual debut, a young age at first intercourse, and a relatively low likelihood of union formation, either through cohabitation or marriage. The low probability of marriage and cohabitation combined with high rates of sexual activity means that most sex among African Americans occurs outside stable unions, and the early age at first intercourse and the extremely low probability of marriage means that black women experience a prolonged risk of unwed childbearing, one that is not strongly affected by class or explained by ecological circumstances. Although the greater likelihood of teen-

age childbearing and the higher likelihood and earlier age of first intercourse among black women disappear once ecological circumstances and other background variables are controlled, the high likelihood of nonmarital childbearing is not, despite the fact that black women are more likely than others to use contraception. It is the virtual disappearance of marriage as a viable social institution and the rarity even of cohabitation in the black community, combined with the early initiation of young African American women into sex, that explain high rates of unwed childbearing across all classes of young black women in the United States.

At the other extreme are Asians, who display a low likelihood and late age of entry into first intercourse, a high likelihood of contraception use, and a low probability of cohabitation, which together yield extremely low rates of unwed and teenage childbearing. As with blacks this distinct pattern of reproduction does not vary systematically by class and is not explained away by controlling for ecological conditions. Blacks and Asians, it seems, have evolved two very different patterns for socializing people into sex, union formation, and childbearing.

Whites and Hispanics generally exhibit patterns of sexual activity, union formation, and childbearing that lie between the two extremes established by blacks and Asians, with Hispanics tending toward the former and whites the latter, except that both groups display a clear class gradient, such that the likelihood of first intercourse drops, the age of first intercourse rises, and the probability of cohabitation falls as class standing increases, yielding a similar class gradient with respect to risky childbearing. Thus the odds of nonmarital and teenage childbearing are greatest in the lower class, less in the lower middle class, less still in the upper middle class, and least in the upper class.

In general, family socioeconomic status does not play a major role in conditioning the process of reproduction, and material circumstances in schools and neighborhoods also carry relatively little weight. Sexuality, union formation, and childbearing among young Americans are more tightly connected to emotional resources in the family sphere. Women who grew up in an emotionally distant, cold, and stern family environment were less likely to initiate sex, do so at a later age, and are more likely to use contraception. They were also less likely to marry or cohabit, or to have children under any social auspices, either inside or outside marriage or before or after the age of eighteen.

Experiencing the death of a parent or sibling is a traumatic emotional burden that significantly lowers the odds of childbearing. Coming from an inef-

ficacious neighborhood characterized by a low level of trust and mutual support also acts strongly to increase the age of first intercourse and depress childbearing. Social inefficacy in the school setting likewise lowers the odds of unwed fertility among young women, though it does increase the likelihood of cohabitation and sexual debut. In general, however, coming of age in an emotionally austere family and anomic neighborhoods and schools discourages formation of sexual unions, entry into either formal or informal romantic partnerships, and childbearing.

Chapter 5 takes up the issue of health, considering how ecological circumstances get "under the skin" to influence the mental and physical well-being young men and women. We begin by considering how the incidence of various risky health behaviors differs by race and class. Contrary to common stereotypes, we found that the likelihood of consuming controlled substances with well-known negative health effects—cigarettes, alcohol, and hard drugs—is greatest among whites and least among blacks, with Hispanics and Asians falling between. Although social class influences the likelihood of substance abuse, it acts in different ways for different substances and varies by racial group. The odds of smoking, for example, fall with increasing social class among whites but rise among Hispanics, and class has no systematic influence on the smoking behavior of blacks and Asians. The likelihood of abusing alcohol and hard drugs, however, generally rises with class among whites, Asians, and Hispanics, but displays no consistent class pattern among blacks.

Although African Americans are least likely to abuse controlled substances, they are most likely to eat fast food and to engage in risky sexual practices that increase the risk of sexually transmitted disease (STD) infection, such as paying for sex or having intercourse with known drug users. Asians are generally least likely to engage in such behavior, and whites and Hispanics fall between Asians and blacks. Once again, however, class operates differently for different risk behaviors in different racial groups. Thus, fast food consumption falls with rising social class among whites, Asians, and Hispanics, but varies little by class among African Americans. Moreover, whereas risky sex becomes less likely as class standing rises among blacks, Hispanics, and whites, it displays no class pattern among Asians.

Although respondents to the Adolescent Health Survey were in the prime of early adulthood at the time of the third wave and generally in good health, we nonetheless found that the likelihood of engaging in risky health behav-

iors was connected to poor health outcomes. Regular smoking, for example, increased the likelihood of reporting a limitation on physical activity and decreased self-reported health, and drug use reduced mental health and was associated with higher levels of depression. Having sex with a risky partner was also associated with greater likelihood of physical disability, greater body mass, and not surprisingly, STD infection.

Whereas blacks were least likely to report a limitation in physical activity and generally rated their health as better than other groups, they were also most likely to evince a high body mass index, to report ever having an STD, to be more depressed, and to expect an early death. Moreover, these health effects varied less by class for blacks than for other groups. Among whites and Hispanics, the incidence of negative health conditions generally fell as class standing rose but Asians often evinced a u-shaped pattern, with extreme values in the lower and upper classes and moderate levels in the middle classes.

The distinctive behavioral patterns of African Americans with respect to health are generally not attributable to their ecological circumstances. If anything, taking account of the generally more disadvantaged ecological circumstances experienced by blacks tends to accentuate the distinctiveness of black behavioral patterns, both positively (not abusing drugs, alcohol, or cigarettes) and negatively (eating fast food and engaging in risky sex). Although the health-related behaviors of blacks may be independent of their social context, however, their actual health outcomes are not. Once ecological conditions are controlled, their physical condition and self-assessed mental and physical health are no different than those of other groups. The one exception is the likelihood of STD infection, which tends to be quite high in the upper middle and upper classes even after the application of controls.

Hispanics, likewise, are less prone to smoke than whites even after taking ecological circumstances into account, but most of the other race-class effects on health behaviors and outcomes are reduced to marginal significance or disappear entirely once ecological circumstances are controlled. Although Asians display no greater tendency toward risky health behaviors once ecological differences are controlled, upper and lower-class Asians nonetheless are still more likely to report a physical disability and display a stronger tendency toward depression, whereas lower and middle-class Asians rate their health more poorly, even after controls. Among whites, however, the various class gradients observed in basic tabulations generally disappear, fall to marginal significance, or reverse sign in the presence of ecological controls.

Among ecological circumstances, we found that material and symbolic resources within the family sphere generally had weak or nonexistent effects on health behaviors and outcomes, with the notable exception of access to health insurance, which lowered the likelihood of smoking, raised the age at which smoking begins, reduced the likelihood of hard drug use, increased the incidence of physical disabilities, and mitigated poor health, depression, and the perception of low life chances. Growing up with a stepparent increased the likelihood of smoking, and coming of age with a single parent raised the odds of drug abuse, but other effects of family composition were marginal or absent. The only effect of income is to increase the age at which smoking begins and lower the tendency to expect an early death. Higher parental occupational status actually increased the risk of drug abuse.

Aside from access to insurance, health behaviors and outcomes are more strongly connected to emotional than to material circumstances within the family, family sternness and paternal incarceration having particularly strong and ubiquitous effects. The more remote and stern the emotional style in the family of origin, the lower the likelihood of smoking, alcohol abuse, drug taking, and risky sex, and the less likely respondents are to report an STD, poor health, symptoms of depression, and the prospect of an early death. Independent of family emotional style, paternal incarceration raises the odds of smoking, alcohol abuse, hard drug use, fast food consumption, and obesity while increasing body mass. The mass incarceration of black men thus has strong health implications for their children, and other family members were no substitute for absent fathers. Young people who said they relied on another mentor in the family were more likely to abuse alcohol, eat fast food, evince a physical limitation, and rate their health as poor.

A second critical sphere of influence in terms of health was peer setting. Exposure to peer violence greatly increased the odds of smoking, drug abuse, and having risky sex and raised the perceived likelihood of an early death. The emotional blow of a friend's suicide attempt also increased the likelihood of smoking, abusing alcohol, using hard drugs, engaging in risky sex, having a physical disability, and evincing obesity. Not surprisingly, therefore, having a suicidal friend also increased the tendency of respondents to rate their health as poor, report depressive symptoms, and perceive a low chance of making it to middle age. Reliance on a peer mentor increased the risk of smoking, alcohol abuse, and physical disability.

Although not as consistently strong or significant as conditions in the fam-

ily emotional and peer environments, neighborhoods and schools also displayed a number of powerful effects. Material disadvantage within neighborhoods was associated with greater body mass, a higher expectation of early death, and a higher rate of obesity, and an elevated risk of STD infection. However, contrary to prevailing perceptions, neighborhood disadvantage lowered the relative likelihood of alcohol and drug abuse and reduced the degree of depression. Material disadvantage within schools likewise lowered the odds of smoking and alcohol abuse, but social inefficacy within neighborhoods did act to increase physical disability, depression, and expectation of an early death, and inefficacy within schools raised the odds of smoking, drug use, and STD infection and increased perceptions of poor health and a likely early death.

In general, the religious sphere had only modest effects on respondent health behaviors and outcomes. Religious involvement lowered the likelihood of smoking and alcohol abuse and increased health and perceived survival chances. Having a religious mentor, meanwhile, reduced the rate of smoking and alcohol abuse. Religiosity itself was associated with greater depression, however. This association does not necessarily mean that religiosity causes depression. Indeed, it is quite likely that depressed people seek solace in religion. The accumulation of multiple disadvantages across social spheres increases the likelihood of fast food consumption, lowered self-assessed health, and increased depression.

All in all, our results suggest that young people's health is driven primarily by family emotional circumstances and conditions in the peer environment, and show strong effects also in the school and neighborhood settings, weaker effects in the religious sphere, and, with the exception of access to health insurance, relatively weak effects with respect to family composition, material resources, and symbolic resources. In chapter 6, we took the foregoing health outcomes as predetermined and considered their effects on human capital formation along with the effects of family, school, neighborhood, peer, and religious circumstances, focusing on the production of cognitive skills and high school achievement.

An important input into learning and cognitive skill formation is a young person's degree of focus and attention. Consequently, its absence, a syndrome known as Attention Deficit and Hyperactivity Disorder (ADHD) has become the focus of increasing research in cognitive science. In our analyses, we found that the expression of ADHD was most strongly predicted by condi-

tions in the peer environment. Exposure to peer violence, having a suicidal friend, and relying on a peer mentor all act to increase ADHD. The expression of ADHD is also influenced by conditions in the neighborhood and family spheres. Relying on a neighborhood mentor is associated with greater ADHD, as is reliance on mentors in the family and peer settings. In terms of attention deficit and hyperactivity, relying on a peer, family, or neighborhood mentor thus yields a worse outcome than having a school-based mentor or no mentor at all. Within the family sphere, growing up in a stepparent household is also associated with greater ADHD, but ADHD is sharply reduced by access to health insurance.

Cognitive skill formation is very strongly affected by ecological conditions within all the social spheres. We measured cognitive skills using the Peabody Picture Vocabulary Test (PVT) and found that within the family sphere, PVT scores are increased by access to health insurance, by access to the symbolic resources of parental education and prestige, and by the experience of a death in the family, but are reduced by a stern emotional style. Exposure to material disadvantage within schools and neighborhoods and the accumulation of disadvantages across spheres also act strongly to reduce PVT scores. In contrast, social inefficacy in schools and neighborhoods appears to increase verbal intelligence, as does a relative scarcity of young single males in the neighborhood. We interpret these findings to mean that limited opportunities for socializing translate into fewer distractions and greater cognitive skill. Socializing is a competing use of adolescent time and energy and detracts from cognitive skill formation. We also found that having a mentor improves verbal intelligence, whether the mentor originates in the family, neighborhood, school, peer, or religious spheres. PVT scores improve with greater religious involvement but not religiosity per se. It is thus social capital rather than spiritual capital from the religious sphere that is implicated in cognitive development.

Grade performance in high school is not surprisingly enhanced by having a high status, college-educated parent and coming from a two-parent household with health insurance, but grade point average (GPA) is unrelated to emotional resources within the family. Within the family, academic performance is more tied to symbolic and material resources. GPA is strongly improved by having a school or religious mentor and by greater religious involvement. As with verbal intelligence, grades are enhanced by social inefficacy and a relative absence of young unattached males in the neighbor-

hood, again suggesting that socializing and learning are competing activities for most adolescents. Unlike the PVT score, however, GPA is reduced by social inefficacy at school, suggesting that warmth, caring, and support in this social sphere are central to academic achievement. Grade achievement is also sharply lowered by exposure to peer violence and by exposure to multiple disadvantages across spheres.

Another important educational outcome is the proportion of courses that were failed in high school. The risk of course failure is generally predicted by the same family characteristics as GPA, being greater for respondents from single-parent families and lower for those having a college-educated parent and access to health insurance. The risk of course failure is also raised by exposure to material disadvantage within schools and neighborhoods and to violence in the peer network, and is negatively predicted by access to a mentor within the school or religious sphere, and by greater religiosity and involvement in the religious sphere, again underscoring the salience of social over spiritual capital in the formation of human capital.

We found that in terms of the likelihood of high school graduation, ecological effects are mostly indirect, operating through the proportion of courses failed, which unsurprisingly quite strongly predicts the odds of graduation. The strongest direct ecological effects on high school completion are the positive effect of access to health insurance and the negative effect of exposure to peer violence. Thus access to health insurance stands out as a remarkably important determinant of cognitive skill formation and scholastic achievement, with very strong and highly significant effects for all of the cognitive and academic outcomes we considered. The recent health-care reform, if it indeed succeeds in expanding coverage, may thus yield important societal benefits by raising the rate of human capital formation in the United States. Social capital also plays an important role, effects consistently significant not only in the religious sphere but also in the peer environment. We found that exposure to peer violence, which one might consider to constitute negative instance of social capital, impedes the formation of human capital among adolescents by increasing ADHD, reducing GPA, raising the rate of course failure, and reducing the odds of graduation.

Holding constant ecological and mediating circumstances largely eliminates the performance gap displayed by African Americans of all classes with respect to indicators of high school achievement, but does not eradicate their consistently lower scores they earn on either the PVT or the ADHD index.

Much the same pattern prevails among Hispanics. Among Asians, taking into account ecological circumstances does not account for the lower ADHD and PVT scores and higher GPAs they generally exhibit. Only among whites does controlling for ecological conditions and mediating circumstances tend to eliminate class differences with respect to cognitive skill formation and high school achievement.

Chapter 7 completes our analysis of social and economic factors that mediate the transition to adulthood by considering the tendency of different race-class groups to engage in criminal behaviors and degree of criminal justice involvement. Proclivities for crime and delinquency are not spread evenly within most populations, of course, but are heavily concentrated among certain demographic groups—-specifically males age twelve to twenty-nine with a peak in criminality in the late teens and early twenties (Steffensmeier et al. 1989). Although for biological reasons young men are at greatest risk of exhibiting antisocial and criminal behaviors, not all young men succumb to the elevated risks associated with high levels of testosterone and delayed development of the prefrontal cortex and the actual expression of crime and delinquency over the life cycle is substantially under social control.

Simple tabulations of levels of involvement in violent and nonviolent criminal activities and criminal justice reveal that Asians generally show lower levels of both violent and nonviolent crime and lower-class Asians exhibit lower levels of contact with the criminal justice system. Apart from these generalizations, however, few systematic patterns emerge. Baseline statistical models predicting nonviolent criminal involvement show that most other race-class groups exhibit the same degree of involvement as upper-class whites, with certain nonsystematic exceptions—such as lower- and upper-middle-class whites, lower-middle- and upper-class Hispanics, and lower-class blacks—all of whom exhibit lower proclivities toward violent crime. With respect to violent crime, the differences are even fewer, with the exception of the higher rates of violent criminal behavior exhibited by lower- and lower-middle-class African Americans. In terms of criminal justice involvement, the only significant difference is for lower-class Asians, who display lower levels of involvement than everyone else.

Once ecological and mediating circumstances are taken into account, race-class differences with respect to the degree of violent and nonviolent criminal involvement diminish even further. Other things equal, upper-class Asians and Hispanics display less involvement in nonviolent criminal activi-

ties, but these are the only significant race-class effects. Among the ecological determinants of criminal involvement, conditions in the peer environment have the strongest and most consistent effects. Our models show that exposure to violence among peers very sharply increases the expression of both violent and nonviolent crime as well as criminal justice involvement. In addition, having a suicidal friend also increases the propensity to engage in both kinds of criminal activities, and relying on a peer mentor increases the degree of criminal justice involvement.

Outside the peer group, the next most consistent effects occur within the family sphere. Although family sternness is modestly associated with lower levels of involvement in nonviolent crime, it has no effect on the tendency toward violent crime or criminal justice involvement. Not surprisingly, a strong predictor of criminality is paternal incarceration. Having a father who has been imprisoned or jailed increases the expression of both violent and nonviolent criminal behaviors, suggesting that mass incarceration may increase rather than reduce the intergenerational transmission of criminal behavior by removing an important authority figure from the household. Moreover, turning to other family members does not seem to help, in that reliance on a family mentor is also associated with a higher degree of contact with the criminal justice system.

We observe few strong or consistent effects in social spheres outside the family. Social inefficacy in the school setting is generally associated with greater involvement in nonviolent crime, having a school-based mentor is associated with higher levels of criminal justice involvement, and greater religious involvement lowers the degree of contact with the criminal justice system. In the end, however, expressions of violent and nonviolent crime are most strongly connected to conditions in the peer and family spheres.

Although controlling for ecological and mediating circumstances decreases the degree of race-class variation in the expression of criminal behaviors, it accentuates differences in the degree of criminal justice involvement. Other things equal, most race-class groups exhibit the same proclivity toward violent and nonviolent crime as upper-class whites, and absent any adjustment for ecological or mediating conditions, they also display the same level of criminal justice involvement. Once ecological circumstances and mediating conditions are taken into account statistically, however, whites below the upper class display significantly lower levels of criminal justice involvement, as do lower-, lower-middle-, and upper-middle-class Hispanics, and lower-

class blacks and Asians. Put another way, if upper-class whites did not enjoy so many ecological advantages, they would exhibit far higher rates of criminal justice involvement. We conclude that white skin color and upper-class status continue to confer privileges in American society by reducing the likelihood of entanglement with the nation's judicial system.

Chapter 8 shifts ahead to 2007 and 2008, when Wave 4 of the Adolescent Health Survey provides information on respondents age twenty-four to thirty-two and most had completed the transition to early adulthood. In assessing this transition, we focus on the likelihood of completing college and graduate education as well as achieving gainful employment. We define a successful transition to adulthood as achieving economic independence by the time of the fourth wave. We predict the likelihood of college completion, employment, and dependency from ecological circumstances experienced before Wave 3 and intermediate outcomes achieve at Wave 3. In doing so, we are able to measure the long-term direct effects of exposure to circumstances in family, neighborhood, school, peer, and religious settings on the odds of achieving a successful transition to adulthood, as well as the indirect effect of ecological conditions through their influence on intervening conditions such as unwed parenthood, health, education, and delinquency.

In terms of direct ecological effects, a successful transition to adulthood is most powerfully and consistently predicted not by income or composition within one's family of origin, but by access to health insurance. Full access to health insurance while growing up increases the likelihood of graduating from college, earning a graduate degree, and being employed even as it significantly boosts earnings and lowers the likelihood of receiving public transfers. Other ecological factors are important in determining specific adult outcomes, but none have the same across-the-board effects as access to health insurance. Thus parental prestige, parental college attainment, neighborhood inefficacy, and school disorder increase the odds of college graduation, as do having a family or school-based mentor, but these factors do not have consistent influences across other domains of adult independence. Having a father incarcerated before Wave 1 decreases the odds of college graduation and increases the likelihood of adult dependence. The probability of receiving public transfers in adulthood is also strongly predicted by experiencing multiple disadvantages across social spheres during adolescence. Once ecological circumstances and mediating variables are held constant, few race-class differences in economic independence remain, with the main exceptions being the

greater proclivity of lower-middle- and upper-middle-class blacks to work part time and the greater proclivity of lower-class and upper-middle-class blacks to receive public transfers.

Chapter 9 summarizes results from the preceding chapters by assessing the cumulative influence of ecological advantages disadvantages across social spheres and modeling their effects as they operate both directly and indirectly through mediating outcomes to determine the likelihood of making a successful transition to economic independence. We accomplish this task by undertaking a counterfactual analysis. After observing what happens to lower-class blacks and upper-class whites as they grow up subject to the influences of their respective social ecologies, we ask what would happen if each were to grow up experiencing the social ecology of the other.

We find in all cases that switching ecological exposures in this fashion yields substantially improved outcomes for lower-class blacks and more deleterious outcomes for upper-class whites. The overall pattern of results indicates that the gap in well-being between blacks at the lower end of the income hierarchy and whites at the top of the hierarchy would mostly be eliminated if conditions within family, school, neighborhood, peer, and religious spheres could somehow be equalized, essentially eliminating differentials with respect to health, cognition, education, criminality, delinquency, and college graduation. Notable exceptions to this generalization occur with respect to unwed and teenage childbearing, where strong racial differentials persist despite taking into account differences in ecological circumstances and intervening developmental outcomes. Moreover, given this persistent racial gap in nonmarital and early childbearing, the gap in welfare dependency, though substantially reduced, is by no means eliminated.

By way of summary, the final chapter offers a broad justification and rationale for the ecological approach we have adopted and for its use in attempting to understand how race and class interact within America's social ecology to generate inequality in the contemporary United States. After summarizing the huge range in exposure to ecological advantages and disadvantages that adolescents face in American society, and how this variation in exposure is structured simultaneously by race and class, we go on to identify those ecologies that are most critical in promoting human growth development and thereby ensuring a successful transition to adulthood. Finally, we outline the most important ecological mechanisms that contribute to the creation and perpetuation of racial and ethnic inequalities in the United States today.