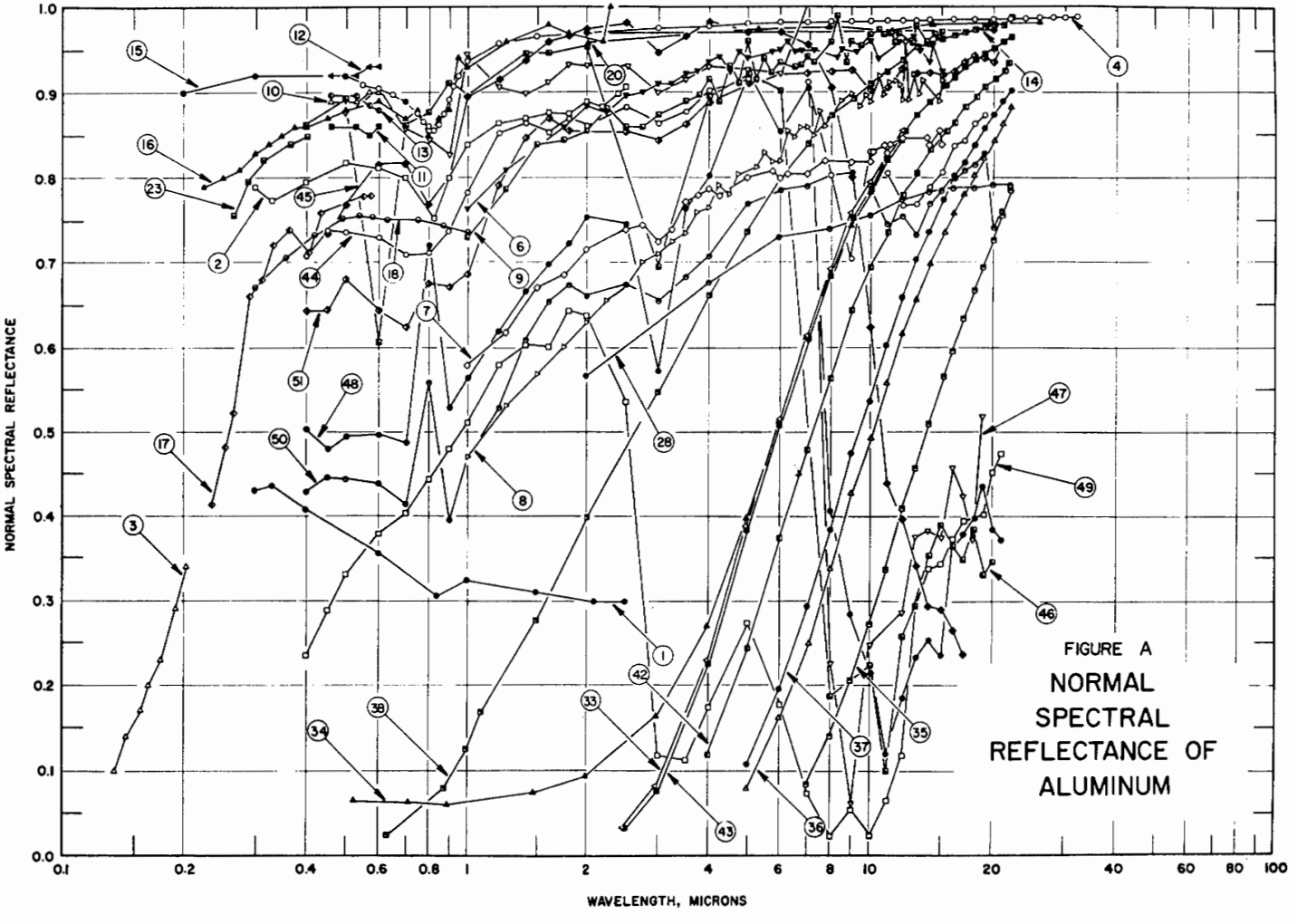


FIGURE A

NORMAL SPECTRAL REFLECTANCE OF ALUMINUM

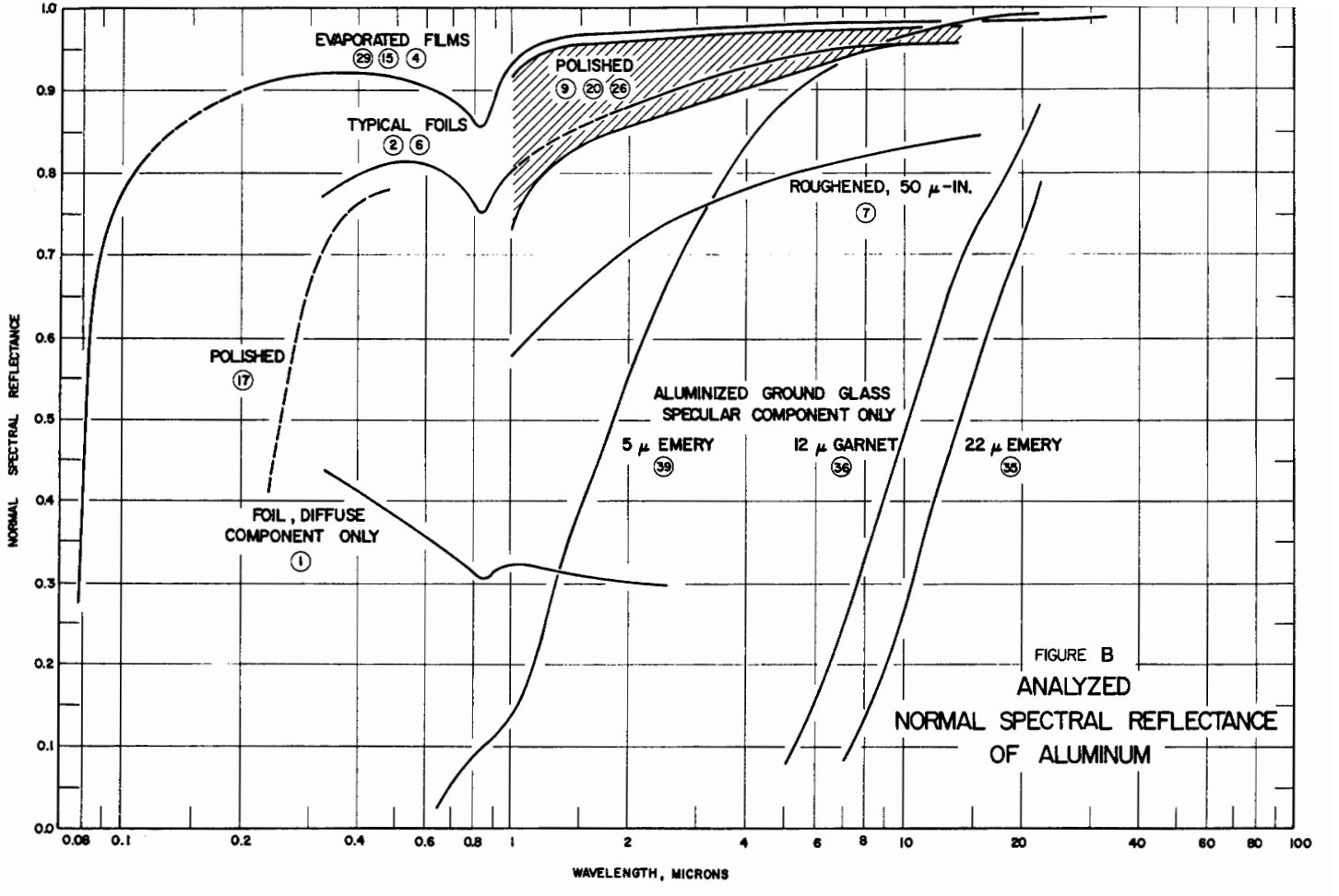


FIGURE B

ANALYZED

NORMAL SPECTRAL REFLECTANCE

OF ALUMINUM

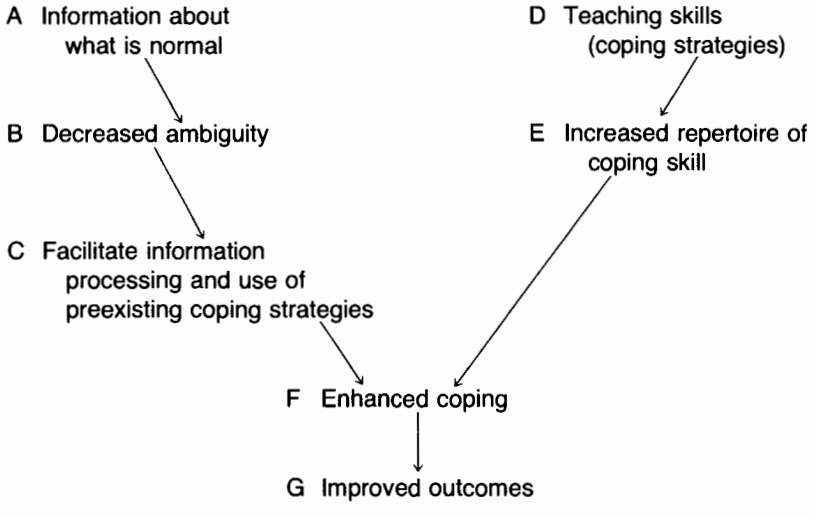
Table 1.1 The Integrative Review as a Research Project

Stage Characteristics	Stage of Research	
	Problem Formulation	Data Collection
Research Question Asked	What evidence should be included in the review?	What procedures should be used to find relevant evidence?
Primary Function in Review	Constructing definitions that distinguish relevant from irrelevant studies.	Determining which sources of potentially relevant studies to examine.
Procedural Differences That Create Variation in Review Conclusions	1. Differences in included operational definitions. 2. Differences in operational detail.	Differences in the research contained in sources of information.
Sources of Potential Invalidity in Review Conclusions	1. Narrow concepts might make review conclusions less definitive and robust. 2. Superficial operational detail might obscure interacting variables.	1. Accessed studies might be qualitatively different from the target population of studies. 2. People sampled in accessible studies might be different from target population of people.

Source: Cooper, 1982. Reprinted by permission.

Stage of Research		
Data Evaluation	Analysis and Interpretation	Public Presentation
What retrieved evidence should be included in the review?	What procedures should be used to make inferences about the literature as a whole?	What information should be included in the review report?
Applying criteria to separate "valid" from "invalid" studies.	Synthesizing valid retrieved studies.	Applying editorial criteria to separate important from unimportant information.
1. Differences in quality criteria. 2. Differences in the influence of non-quality criteria.	Differences in rules of inference.	Differences in guidelines for editorial judgment.
1. Non-quality factors might cause improper weighting of study information. 2. Omissions in study reports might make conclusions unreliable.	1. Rules for distinguishing patterns from noise might be inappropriate. 2. Review-based evidence might be used to infer causality.	1. Omissions of review procedures might make conclusions irreproducible. 2. Omission of review findings and study procedures might make conclusions obsolete.

Figure 3.1 Effect of Information and Skills Teaching Model



Testing links[a]

A→B Accuracy of expectations ($\overline{d}=.97$, $n=2$, $Q=0.2$, $p>.85$).

A→C Ambulation after surgery ($\overline{d}=.84$, $n=5$, $Q=5.7$, $p>.35$).

A→G See Table 3.8.

D→E Accuracy of performance of exercises ($\overline{d}=1.77$, $n=2$, $Q=1.8$, $p>.40$).

E→F Compliance with exercises ($\overline{d}=2.54$, $n=4$, $Q=6.9$, $p>.15$).

D→G See Table 3.8.

[a]No data were available on the links not reported.

Table 3.1 Major Coded Characteristics of Studies, Subjects, Treatments, Settings, and Outcomes

Studies
Publication form
Date of issuance (e.g., publication date)
Professional preparation of first author
Manner of assignment to treatment condition
Type of control group
Subjects
Average age
Gender
Type of surgery
Treatments
Content
Timing
Duration and frequency
Mode of treatment delivery
Settings
Type of hospital
Country
Outcomes
Measurement subjectivity[a]
Sample size
Effect size

[a] Adapted from Smith, Glass, and Miller's scale of reactivity (1980) and reported in Devine and Cook (1986).

Table 3.2 Average *d* Value for Patient Well-Being and Distribution of Studies by Selected Characteristics of Studies

Characteristic	Mean	Number	Percentage
Publication Form			
Journal	.55	49	29.0
Book	.39	6	3.6
Doctoral Dissertation	.28	16	9.5
Master's Thesis or Project	.32	98	58.0
Professional Affiliation of First Author			
Nurse	.38	138	81.7
Psychiatrist, Psychologist, or Counselor	.43	22	13.0
Other	.35	9	5.3
Publication Data			
1961–1968	.30	13	7.7
1969–1972	.43	21	12.4
1973–1976	.42	35	20.7
1977–1980	.47	43	25.4
1981–1984	.28	33	19.5
1985–1988	.34	24	14.2
Manner of Assignment to Treatment Condition			
Random Assignment	.40	117	69.2
High-Quality Nonrandom	.39	40	23.7
Medium-Quality Nonrandom	.55	4	2.4
Low-Quality Nonrandom	−.27	3	1.8
Not Reported	.34	5	3.0
Type of Control Group[a]			
Usual Care for Setting	.38	127	73.0
Usual Care plus Placebo-type Treatment from Researcher	.40	47	27.0

[a] Five studies had both kinds of control groups.

Table 3.3 Average *d* Values for Patient Well-Being and Distribution of Studies by Selected Characteristics of Subjects and Settings

Characteristic	Mean	Number	Percentage
Type of Surgery			
Abdominal	.35	69	40.1
Thoracic	.42	24	14.3
Orthopedic	.46	11	6.5
Gynecological or Urologic	.60	8	4.8
Other Minor	.45	16	9.5
Day Surgery	.11	3	1.8
Other Major	.35	13	7.7
Major plus Minor	.38	24	14.3
		168	99.0
Gender of Subjects			
1–49% Females	.40	41	26.6
50–99% Females	.35	66	42.9
All Females	.44	34	22.1
All Males	.30	13	8.4
		154	100.0
Average Age of Subjects			
29–40 Years	.30	27	19.4
41–50 Years	.40	68	48.9
51–76 Years	.38	44	31.7
		139	100.0
Type of Hospital			
Teaching	.42	49	44.5
General	.38	47	42.7
Veterans or Military	.27	11	10.0
HMO Affiliated	.36	3	2.7
		110	99.9
Location of Hospital			
United States	.39	157	92.9
England	.43	7	4.1
Canada	.16	5	3.0
		169	100.0

Table 3.4 Results on Selected Dependent Variables by Studies, Comparisons, and Outcomes

Measure	Mean	Number	Standard Deviation	Percentage of Outcomes in Positive Direction	Number
Recovery					
Studies	.43	109	.46	83.7	123
Comparison	.44	151	.48	83.9	168
Outcomes	.43	241	.52	79.6	289
Pain					
Studies	.38	82	.45	81.4	102
Comparisons	.36	106	.48	78.5	135
Outcomes	.40	157	.54	79.9	239
Psychological Distress					
Studies	.31	76	.51	78.5	93
Comparison	.31	96	.48	81.9	127
Outcomes	.35	149	.53	76.8	209

Table 3.5 Average Treatment Effects on Length of Hospital Stay Based on Effect Size, Percentage Difference, and Days Difference

Effect Statistics	Mean	Number	Standard Deviation
Sample of Studies			
Effect Size	.39	65	.48
Percentage Difference	11.5	73	14.3
Days Difference	1.5	74	1.5
Sample of Comparisons[a]			
Effect Size	.40	102	.48
Percentage Difference	10.7	111	14.2
Days Difference	1.0	112	1.3

[a]Since length of hospital stay was measured only once for each experimental treatment group, no sample of outcomes is possible.

Table 3.6 Average Effect Size (*d*) on Respiratory Function by Internal Validity and Publication Form Based on a Sample of Studies

Characteristic	Mean	Number	*SVCE*[a]
Higher Internal Validity[b] and Unpublished	.47	12	.36
Higher Internal Validity and Published	.26	3	.32
Lower Internal Validity and Unpublished	.24	7	0
Lower Internal Validity and Published	.17	3	0

[a]Square root of the variance component estimate.

[b]Studies rated as higher in internal validity had random assignment to treatment condition, less than 15 percent overall attrition, and less than 10 percent differential attrition between groups.

Table 3.7 Homogeneity Testing of Selected Outcomes Based on the Restricted Sample of Studies

Outcome	Variance Weighted *d*	*N*	*Q*	*p*
Recovery[a]				
Length of Stay	.32	53	84.5	<.005
Respiratory Function	.33	21	22.4	.33
Resuming Normal Activities After Surgery	.56	7	12.6	.05
Time in ICU	−.03	7	6.6	.37
Pain				
Pain Medications	.27	70	128.3	<.005
Pain Measured by Questionnaires	.49	26	49.5	<.005
Psychological Distress				
Anxiety Shortly After Treatment	.47	12	9.8	.55
Anxiety After Surgery	.24	35	61.4	<.005
Use of Sedatives	.21	5	1.9	.75
Mood	.27	23	34.4	.05

[a]Many of the *d* values for the outcome "medical complications" were calculated from proportions through probit transformation. Homogeneity tests were not done on medical complications.

Table 3.8 Average Effect Size Values for Selected Treatments: Restricted Sample of Studies

Outcomes	Information Only		Skills Teaching: Stir-Up Exercises Only		Skills Teaching: All Skills[a]		Information plus Skills Teaching: All Skills		Psychosocial Only	
	Mean[b]	N	Mean	N	Mean	N				
Length of Stay	.53	4	.36	7	.32*	16	.35	20	.33	8
Medical Complications	—	—	.86[c]	13	.75[c]	7	.87[c]	16	—	—
Respiratory Function	—	—	.28	11	.34	14	.49	7	—	—
Pain	.56	8	.44**	6	.46**	23	.42	20	.18	8
Anxiety Shortly After Treatment	—	—	—	—	—	—	.29	4	—	—
Anxiety After Surgery	—	—	—	—	.24*	4	.16*	9	—	—
Mood	—	—	—	—	.30*	6	.25	11	—	—

Notes: A modified restricted sample of studies was used. Only one effect size value from any study was included in any mean. However, to make use of all relevant experimental treatments, if a study had an information-only treatment and a skills teaching-only treatment each of these would be included in the appropriate subgroup mean. Homogeneity of d values rejected: * $p < .05$ ** $p < .01$.

[a] Includes stir-up exercises as well as other types of skills teaching.

[b] Only averages based on four or more d values are presented.

[c] To increase sample size, effect size values calculated using probit transformation were combined with those calculated from means and standard deviations. Homogeneity testing was not done.

Figure 4.1 Distribution of Unweighted *n*-Adjusted Effect Sizes for Primary Delinquency Measures

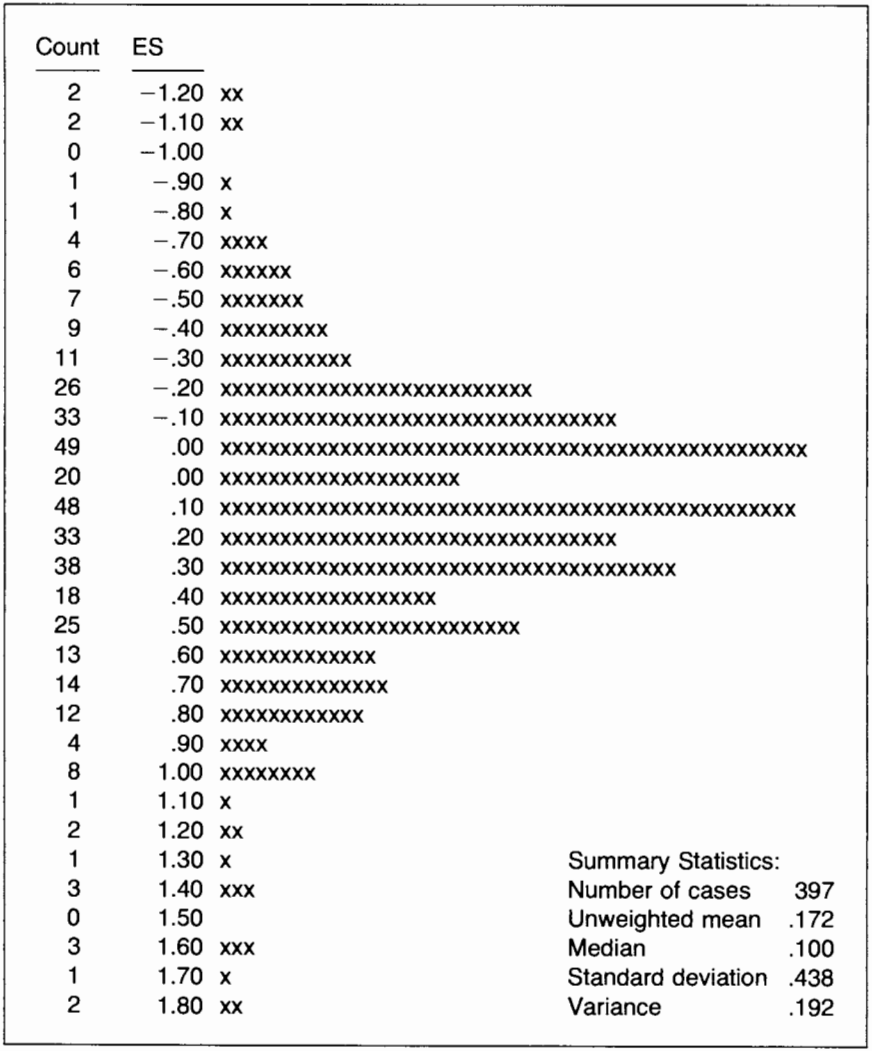


Table 4.1 Direction of Treatment versus Control Group Differences on Primary Delinquency Outcome Measure for All Studies

	N	%
Favors Treatment	285	64.3
Favors Control	131	29.6
Favors Neither	27	6.1
Total	443	

Binomial test (by z approximation) that population proportions are .50/.50: $z = 7.32$ $p<.001$ (hypothesis rejected).

Table 4.2 Statistical Tests for Effect Size Means and Homogeneity

A. *n*-Adjusted Effect Sizes for All Studies		
Inverse-variance weighted ES mean	.103	(n = 397)
.99 confidence interval for mean	.083 to .123	
Inverse-variance weighted ES variance	.089	
Homogeneity test statistic	H = 1319.00	df = 237
Chi-square .01 critical value	273.78	
B. *n*-Adjusted Effect Sizes for Studies with Random Assignment		
Inverse-variance weighted ES mean	.110	(n = 294)
.99 confidence interval for mean	.086 to .134	
Inverse-variance weighted ES variance	.080	
Homogeneity test statistic	H = 904.14	df = 293
Chi-square .01 critical value	351.46	
C. *n*-Adjusted Effect Sizes for Studies with Random Assignment and No Appreciable Attrition from Experimental Groups		
Inverse-variance weighted ES mean	.140	(n = 78)
.99 confidence interval for mean	.094 to .186	
Inverse-variance weighted ES variance	.090	
Homogeneity test statistic	H = 281.08	df = 77
Chi-square .01 critical value	107.98	

Table 4.3 Descriptive Data for Major Variables Coded

	N	%
STUDY CONTEXT		
1. Country of Study		
United States	407	91.9
Canada	12	2.7
Britain	15	3.4
Other	7	1.6
Missing	2	0.5
2. Author's Discipline		
Psychology	135	30.5
Criminal justice	68	15.3
Sociology	43	9.7
Education	43	9.7
Social work	24	5.4
Psychiatry/medicine	12	2.7
Political science	8	1.8
Other	7	1.6
Missing	103	23.3
3. Author's Affiliation		
Academic	246	55.5
Government agency	53	12.0
Program agency	88	19.9
Research firm	30	6.8
Other	2	0.5
Missing	24	5.4
4. Source of Research Funding		
Agency/organization	127	28.7
Federal	126	28.4
State/local government	56	12.6
Funded, unknown source	15	3.4
No funding indicated	117	26.4
Missing	2	0.5
5. Type of Publication		
Journal/book chapter	168	37.9
Technical report	192	43.3
Dissertation/thesis	44	9.9
Book	32	7.2
Conference paper	7	1.6
Missing	0	0.0
6. Year of Publication		
1950–1959	5	1.1
1960–1969	58	13.1
1970–1979	207	46.7
1980–1987	166	37.5
Missing	7	1.6
METHOD		
Experimental Groups, Sample Size, Sampling (Samples)		
7. Number of Treatment Groups in Design**		
One	364	82.2
Two	52	11.7
Three	18	4.1
More	6	1.4
Missing	3	0.7
8. Number of Control Groups in Design		
One	341	77.0
Two	79	17.8
Three	15	3.4
More	2	0.4
Missing	6	1.4
9. Post-Test Total Sample Size**		
1–25	38	8.6
26–50	59	13.3
51–75	47	10.6
76–100	39	8.8
101–150	65	14.7
151–200	46	10.4
201–300	47	10.6
301–500	30	6.8
501–800	21	4.7
801+	27	6.1
Missing	24	5.4

Table 4.3 *(Continued)*

	N	%
10. Method Quality: Representativeness of Sampling**		
Low	140	31.6
Moderate	164	37.0
High	138	31.2
Missing	1	0.2
11. Method Quality: Statistical Power**		
Low	227	51.2
Moderate	113	25.5
High	103	23.3
Missing	0	0.0
Initial Equivalence of Experimental Groups (Equivalence)		
12. Unit on Which Assignment to Experimental Groups Based		
Individual	409	72.3
Intact group	20	4.5
Program area	10	2.3
Missing	4	0.9
13. Procedure for Assignment to Groups**		
Random after matching	61	13.8
Random, no matching	134	30.2
Regression discontinuity	4	0.9
Wait list control	12	2.7
Nonrandom, matched on pretest	14	3.2
Nonrandom, matched on individual features	37	8.4
Nonrandom, matched on demographics	71	16.0
Matched groupwise	22	5.0
Random with serious degradation	27	6.1
Individual selection (e.g., by need)	32	7.2
Convenience comparison group	28	6.3
Missing	1	0.2
14. Confidence/Explicitness of Assignment Procedure*		
Very low	1	0.2
Low	13	2.9
Moderate	36	8.1
High	111	25.1
Very high	279	63.0
Missing	3	0.7
15. Method Quality: Treatment/Control Group Comparability*		
Low	88	19.9
Moderate	202	45.6
High	153	34.5
Missing	0	0.0
16. Rating: Overall Similarity of Treatment and Control*		
Very similar 1	12	2.7
2	114	25.7
3	141	31.8
4	75	16.9
5	58	13.1
6	27	6.1
Very different 7	3	0.7
Missing	13	2.9
17. Confidence/Explicitness of Group Similarity*		
Very low	2	0.5
Low	15	3.4
Moderate	190	42.9

	N	%
High	188	42.4
Very high	37	8.4
Missing	11	2.5
18. Researcher's Comparison of Treatment/Control Equivalence*		
No comparisons made	95	21.4
No statistically significant differences	96	21.7
Significant differences unimportant	27	6.1
Significant differences uncertain	51	11.4
Significant differences important	26	5.9
Descriptive differences unimportant	71	16.0
Descriptive differences uncertain	46	10.4
Descriptive differences important	20	4.5
Missing	11	2.5
19. Direction of Treatment/Control Pre-Test Difference*		
Favors treatment	64	14.4
Favors control	53	12.0
Favors neither	7	1.6
Missing	319	72.0
20. Direction of Treatment/Control Sex Difference**		
Favors treatment	53	12.0
Favors control	55	12.4
Favors neither	99	22.3
Missing	236	53.3
21. Direction of Treatment/Control Age Difference**		
Favors treatment	94	21.2
Favors control	71	16.0
Favors neither	66	14.9
Missing	212	47.9
22. Direction of Treatment/Control Ethnicity Difference*		
Favors treatment	64	14.4
Favors control	67	15.1
Favors neither	50	11.3
Missing	262	59.1
23. Direction of Treatment/Control Delinquency History Difference*		
Favors treatment	66	14.9
Favors control	59	13.3
Favors neither	32	7.2
Missing	286	64.6
24. Direction of Treatment/Control Delinquency Typology Difference**		
Favors treatment	24	5.4
Favors control	22	5.0
Favors neither	23	5.2
Missing	374	84.4
Attrition from Experimental Groups (Attrition)		
25. Treatment Group *N* Change from Pre- to Post-Test**		
Gain	9	2.0
Loss	108	24.4
No difference	241	54.4
Missing	85	19.2
26. Control Group *N* Change from Pre- to Post-Test**		
Gain	11	2.5
Loss	96	21.7
No difference	246	55.5

Table 4.3 *(Continued)*

	N	%
Missing	90	20.3
27. Method Quality: Attrition Problems**		
Low	136	30.7
Moderate	183	41.3
High	115	26.0
Missing	9	2.1
Characteristics of the Control Condition (Control)		
28. Type of Control Condition**		
No treatment	57	12.9
Wait list	17	3.8
Minimal contact	32	7.2
Treatment as usual	307	69.3
Placebo	18	4.1
Other	6	1.4
Missing	6	1.4
29. Confidence/Explicitness of Control Condition*		
Very low	0	0.0
Low	4	0.9
Moderate	45	10.2
High	129	29.1
Very high	255	57.6
Missing	10	2.3
Characteristics of the Delinquency Outcome Measures (Measures)		
30. Number of Delinquency Outcome Measures Codable**		
One	164	37.0
Two	86	19.4
Three	65	14.7
Four	38	8.6
Five	27	6.1
More	47	10.6
Missing	16	3.6
31. Number of Delinquency Outcome Measures Not Codable*		
None	330	74.5
One	43	9.7
Two	24	5.4
Three	12	2.7
Four	8	1.8
Five	6	1.4
More	11	2.4
Missing	9	2.0
32. Weeks After Treatment Begins When Primary Measure Taken**		
1–13	79	17.8
14–26	114	25.7
27–52	111	25.1
53–112	61	13.8
113+	32	7.2
Missing	46	10.4
33. Period Covered in Primary Delinquency Measurement, Weeks**		
1–13	60	13.5
14–26	131	29.6
27–52	130	29.3
53–112	52	11.7
113+	30	6.8
Missing	40	9.0
34. Type of Delinquency Represented in Primary Measure*		
Antisocial behavior	24	5.4
Unofficial delinquency	19	4.3
School disciplinary	12	2.7
Arrests/police contact	195	44.0
Probation contact	35	7.9

	N	%
Court contact	80	18.1
Parole contact	25	5.6
Institutional disciplinary	15	3.4
Institutionalization	28	6.3
Catchment area indicator	4	0.9
Missing	6	1.4
35. Range of Offenses Covered in Primary Measure*		
All offenses	385	86.9
Status offenses only	10	2.3
Other restricted	37	8.4
Missing	11	2.5
36. Type of Scaling of Primary Delinquency Measure*		
Dichotomous recidivism	247	55.8
Summed dichotomy	9	2.0
Frequency or rate	141	31.8
Severity index	11	2.5
Event timing	6	1.4
Rating of amount	8	1.8
Other	8	1.8
Missing	13	2.9
37. Source of Data for Primary Delinquency Measure**		
Self-report, juvenile	33	7.4
Therapist, teacher, etc.	14	3.2
School records	14	3.2
Police records	127	28.7
Probation records	41	9.3
Court records	114	25.7
Institutional records	52	11.7
Other records	5	1.1
Missing	43	9.7
38. Validity of Primary Delinquency Measure Demonstrated?		
Yes	16	3.6
No	427	96.4
39. Reliability of Primary Delinquency Measure Demonstrated?		
Yes	22	5.0
No	421	95.0
40. Sensitivity of Primary Delinquency Measure Demonstrated?		
Yes	1	0.2
No	442	99.8
41. Rating: Overlap of Measure with Content of Treatment**		
Very low 1	137	30.9
2	82	18.5
3	58	13.1
Moderate 4	61	13.8
5	39	8.8
6	25	5.6
Very high 7	37	8.4
Missing	4	0.9
42. Rating: Potential for Social Desirability Bias*		
Very low 1	311	70.2
2	62	14.0
3	20	4.5
Moderate 4	9	2.0
5	14	3.2
6	9	2.0
Very high 7	14	3.2
Missing	4	0.9
43. Confidence/Explicitness re Overlap and Social Desirability*		

Table 4.3 *(Continued)*

	N	%
Very low	2	0.5
Low	6	1.4
Moderate	46	10.4
High	218	49.2
Very high	164	37.0
Missing	7	1.6
44. Method Quality: Psychometric Properties of Primary Measure**		
Low	286	64.6
Moderate	106	23.9
High	51	11.5
Missing	0	0.0
45. Method Quality: Blinding in Collection of Outcome Data*		
Low	287	64.8
Moderate	90	20.3
High	55	12.4
Missing	11	2.5
TREATMENT		
Characteristics of Subjects/ Clients Treated (Subjects)		
46. Level of Delinquency Risk/Involvement**		
Nondelinquent, normal	3	0.7
Nondelinquent, symptomatic	26	5.9
Predelinquents	64	14.4
Delinquents	155	35.0
Institutionalized, nonjuvenile justice	7	1.6
Institutionalized, juvenile justice	87	19.6
Mixed, low end	37	8.4
Mixed, high end	33	7.4
Mixed, full range	24	5.4
Missing	7	1.6
47. Confidence/Explicitness re Delinquency Risk*		
Very low	1	0.2
Low	4	0.9
Moderate	59	13.3
High	160	36.1
Very high	213	48.1
Missing	6	1.4
48. Proportion of Juveniles with Prior Offense History*		
None	16	3.6
Some	62	14.0
Most	68	15.3
All	206	46.5
Some, can't estimate	50	11.3
Missing	41	9.3
49. Predominant Type of Prior Offenses		
No priors	18	4.1
Mixed	149	33.6
Person crimes	6	1.4
Property crimes	91	20.5
Status offenses	39	8.8
Other	11	2.3
Missing	129	29.1
50. Aggressive History of Juveniles*		
No	116	26.2
Yes, some juveniles	91	20.5
Yes, most juveniles	7	1.6
Yes, all juveniles	7	1.6
Some, can't estimate	69	15.6
Missing	153	34.5
51. Sex of Juveniles*		
No males	10	2.3
Some males	26	5.9
Mostly males	188	42.4

		N	%
All males		154	34.8
Some, can't estimate		18	4.1
Missing		47	10.6
52. Average Age of Juveniles at Time of Treatment**			
6–11		8	1.8
12		7	1.6
13		38	8.6
14		92	20.8
15		100	22.6
16		83	18.7
17		22	5.0
18		15	3.4
19		19	4.3
20–21		6	1.4
Missing		53	12.0
53. Predominant Ethnicity of Juveniles**			
Anglo		143	32.3
Black		52	11.7
Hispanic		8	1.8
Other minority		2	0.5
Mixed, none >60%		70	15.8
Mixed, can't estimate		32	7.2
Missing		136	30.7
54. Rating: Overall Heterogeneity of Treated Juveniles**			
Very homogeneous	1	2	0.5
	2	98	22.1
	3	142	32.1
Moderately heterogeneous	4	82	18.5
	5	67	15.1
	6	23	5.2
Very heterogeneous	7	4	0.9
Missing		25	5.6
55. Confidence/Explicitness re Information on Heterogeneity			
Very low		2	0.5
Low		25	5.6
Moderate		209	47.2
High		179	40.4
Very high		2	0.5
Missing		26	5.9
56. Source of Clients for Treatment**			
Voluntary, family		14	3.2
Non–criminal justice agency		33	7.4
Criminal justice agency, voluntary		142	32.1
Criminal justice agency, mandatory		201	45.4
Multiple sources		14	3.2
Researcher solicits		30	6.8
Missing		9	2.1
Amount or Intensity of Treatment (Dosage)			
57. Duration, Weeks from First to Last Treatment Event**			
1–6		69	15.6
7–13		60	13.5
14–26		108	24.4
27–39		51	11.5
40–52		52	11.7
53–78		9	2.0
79–112		18	4.1
113+		10	2.3
Missing		66	14.9
58. Frequency of Treatment Contact**			
Continuous		71	16.0
Daily		55	12.4
2–4 per week		48	10.8
1–2 per week		151	34.1

Table 4.3 *(Continued)*

		N	%
Less than weekly		45	10.2
Missing		73	16.5
59. Mean Hours Contact per Week*			
Less than 1		45	10.2
1–2		108	24.4
3–5		44	9.9
6–10		30	6.8
11–20		12	2.7
21–30		9	2.0
31–50		10	2.3
51–100		4	0.9
Continuous		70	15.8
Missing		111	25.1
60. Mean Total Number of Hours of Contact**			
1–10		65	14.7
11–20		32	7.2
21–40		42	9.5
41–100		40	9.0
101–200		37	8.4
201–1,000		35	7.9
1,000+		8	1.8
Continuous		71	16.0
Missing		113	25.5
61. Confidence/Explicitness of Information on Treatment Amount*			
Very low		7	1.6
Low		46	10.4
Moderate		111	25.1
High		127	28.7
Very high		95	21.4
Missing		57	12.8
62. Rating: Amount of Meaningful Contact**			
Trivial	1	15	3.4
	2	59	13.3
	3	82	18.5
Moderate	4	71	16.0
	5	90	20.3
	6	70	15.8
Substantial	7	21	4.7
Missing		35	7.9
63. Rating: Intensity of Treatment Event**			
Weak	1	11	2.5
	2	54	12.2
	3	108	24.4
Moderate	4	119	26.9
	5	75	16.9
	6	27	6.1
Strong	7	9	2.0
Missing		40	9.0
64. Confidence/Explicitness re Ratings of Amount/Intensity*			
Very low		9	2.0
Low		34	7.7
Moderate		191	43.1
High		162	36.6
Very high		15	3.4
Missing		32	7.3
65. Evidence of Degradation in Treatment Delivery**			
Yes		132	29.8
Possible		68	15.3
No		195	44.0
Missing		48	10.8
66. Method Quality: Integrity of Treatment Implementation*			
Low		194	43.8
Moderate		158	35.7
High		87	19.6
Missing		2	0.5
Characteristics of the Treatment Condition (Treatment)			
67. Role of Researcher in Treatment**			

	N	%
Delivered treatment	28	6.3
Planned, controlled	162	36.6
Influential, no direct role	57	12.9
Independent of treatment	157	35.4
Missing	39	8.8
68. Treatment Modality; Therapy Type**		
Juvenile Justice Interventions		
Probation, regular	2	0.5
Probation, added counseling	36	8.1
Probation, restitution	12	2.7
Probation, other enhancement	37	8.4
Parole, regular	2	0.5
Parole, enhanced	15	3.4
Institutionalization, regular	4	0.9
Institutionalization, added counseling	43	9.7
Institutionalization, community residential	13	2.9
Institutionalization, other enhancement	33	7.4
Deterrence, shock contact	11	2.5
All other juvenile justice interventions	7	1.6
Non–Juvenile Justice Interventions		
Residential, camp	21	4.7
School, added counseling	17	3.8
School, other enhancement	26	5.9
Individual counseling	23	5.2
Group/family counseling	33	7.4
Other counseling	14	3.2
Behavioral therapy	24	5.4
Skill/employment training	36	8.1
Service broker, multimodal	29	6.5
All other	5	1.1
Missing	0	0.0
69. Confidence/Explicitness re Treatment Modality*		
Very low	0	0.0
Low	0	0.0
Moderate	47	10.6
High	140	31.6
Very high	251	56.7
Missing	5	1.1
70. What the Treatment Attempts to Change		
Broadband delinquency	238	53.7
Status offenses	21	4.7
Other specific offenses	16	3.6
School performance	22	5.0
Psychological attribute	52	11.7
Social attribute	52	11.7
Skill level	27	6.1
Other	10	2.3
Missing	5	1.1
71. Who Administers the Treatment**		
Criminal justice personnel	112	25.3
School personnel	19	4.3
Public mental health personnel	44	9.9
Private mental health personnel	77	17.4

Table 4.3 *(Continued)*

	N	%
Non mental health counselors	44	9.9
Laypersons	85	19.2
Researcher	14	3.2
Other	16	3.6
Missing	32	7.2
72. Format of Treatment Sessions**		
Juvenile alone	22	5.0
Juvenile and provider	123	27.8
Juvenile group	180	40.6
Juvenile with family	47	10.6
Mixed	44	9.9
Other	10	2.3
Missing	17	3.8
73. Treatment Site a Public Facility**		
Yes, criminal justice	138	31.2
Yes, non–criminal justice	86	19.4
No, private	132	29.8
Mixed	31	7.0
Other	17	3.8
Missing	39	8.8
74. Treatment Site a Residential/Institutional Setting**		
Yes	123	27.8
No	302	68.2
Mixed	7	1.6
Missing	11	2.5
75. Formal Setting*		
Yes	311	70.2
No	65	14.7
Mixed	36	8.1
Missing	31	6.8
Treatment Philosophy and Context (Tx Philos)		
76. Treatment Level of Theoretical Development**		
Black box label	60	13.5
Action strategy	134	30.2
Conceptual rationale	140	31.6
Hypothesis testing	40	9.0
Integrated theory	68	15.3
Missing	1	0.2
77. Treatment Etiological Orientation**		
Individual	163	36.8
Individual, mixed	106	23.9
Sociological, micro	88	19.9
Sociological, macro	32	7.2
Labeling	23	5.2
Sociological, mixed	24	5.4
Missing	7	1.6
78. Program Age*		
New (<2 years)	277	62.5
Established	155	35.0
Defunct	5	1.1
Missing	6	1.4
79. Program Sponsorship**		
Researcher, one cohort	112	25.3
Researcher, multiple cohorts	34	7.7
Independent private	41	9.3
Public, non–criminal justice	85	19.2
Public, criminal justice	165	37.2
Missing	6	1.4
80. How Fully Treatment Is Described*		
Detailed	62	14.0
General	166	37.5
Descriptive label	188	42.4
No description	22	5.0
Missing	5	1.1

	N	%
OUTCOME		
Descriptive Outcome		
81. Tone of Report		
Positive	315	71.1
Neutral	102	23.0
Negative	22	5.0
Missing	4	0.9
82. Author's Interpretation of Study Result		
Success	226	51.0
Mixed	123	27.8
Failure	60	13.5
No conclusion	20	4.5
Missing	14	3.2
Statistical Outcome, Primary Delinquency Measure		
83. Direction of Treatment/Control Difference at Post-Test		
Favors treatment	285	64.3
Favors control	131	29.6
Favors neither	18	4.1
Missing	9	2.0
84. Statistical Significance of Post-Test Difference		
Significant	97	21.9
Not significant	177	40.0
Missing	169	38.1
85. Unadjusted Post-Test Effect Size		
−2.00 to −1.00	4	0.9
−0.99 to −0.50	14	3.2
−0.49 to −0.25	25	5.6
−0.26 to −0.01	79	17.8
0.00	21	4.7
+0.01 to +0.25	111	25.1
+0.26 to +0.50	72	16.3
+0.51 to +1.00	54	12.2
+1.00 to +2.00	17	3.8
Missing	46	10.4
Statistical Information re Effect Sizes/Outcomes (ES Info)		
86. Confidence/Explicitness of Information for Post-Test Effect Size**		
Highly estimated 1	4	0.9
Moderate estimation 2	5	1.1
Some estimation 3	12	2.7
Slight estimation 4	33	7.4
No estimation 5	334	75.4
Missing	55	12.4
87. Type of Post-Test Means Reported**		
Arithmetic	167	37.7
Median	2	0.5
Proportion	242	54.6
Other	9	2.0
Missing	23	5.2
88. Type of Post-Test Variances Reported		
Standard deviation	125	28.2
Variance	1	0.2
Standard error	4	0.9
Proportion	215	48.5
Other	5	1.1
Missing	93	21.0
89. Type of Statistical Test Researcher Used for Post Difference		
No report	103	23.3
t, F, z	107	24.2
Chi-square	93	21.0
Nonparametric	16	3.6
ANCOVA	15	3.4

Table 4.3 *(Continued)*

	N	%		N	%
Blocked	2	0.5	Low	105	23.7
Other	3	0.7	Moderate	206	46.5
Missing	104	23.5	High	130	29.3
90. Method Quality:			Missing	2	0.5
Controls for Subject Heterogeneity			92. Confidence/Explicitness for Overall Method Quality Ratings**		
Low	209	47.2	Very low	2	0.5
Moderate	151	34.1	Low	8	1.8
High	83	18.7	Moderate	58	13.1
Missing	0	0.0	High	303	68.4
91. Method quality:			Very high	71	16.0
Appropriateness of Statistical Analysis*			Missing	1	0.2

*Variables included in initial cluster definitions for multiple regression analyses.

**Variables included in pared-down clusters for hierarchical multiple regression analysis.

Table 4.4 Multiple Correlation of Predictor Clusters with Effect Size (Diagonals) and with Each Other (Off-Diagonals)

Method										
Samples	.20*									
Equivalence	.08	.28*								
Attrition	.11	.10	.22*							
Control	.01	.16*	−.14*	.08						
Measures	.04	.27*	.09	.16*	.28*					
ES Info	.06	.02	−.07	.05	.15*	.10				
Treatment										
Subjects	.11	.04	.02	.12*	.08	.12	.19			
Dosage	.03	.07	.05	−.01	.09	.04	.07	.24*		
Treatment	.12	.11	.16*	.02	.09	.19*	.11	.09	.40*	
Tx Philos	−.01	.09	.06	.07	.11	.17*	.04	.01	.18*	.20*
	Samp	Equi	Attr	Cont	Meas	ESIn	Subj	Dosa	Trea	TxPh
	Method						Treatment			

*$p < .05$

Table 4.5 Summary Table for Stepwise Hierarchical Inverse-Variance Weighted Multiple Regression Using All Clusters to Predict Effect Size on the Primary Delinquency Measure

Step	Variable Cluster	Cumulative Multiple R	Cumulative R-Square	R-Square Change	Change as Proportion of Total R-Square
	Method			.25	.53
1	Samples	.20	.04	.04*	.09
2	Equivalence	.31	.10	.06*	.12
3	Attrition	.36	.13	.03*	.07
4	Control	.40	.16	.03	.06
5	Measures	.44	.20	.04*	.08
6	ES Info	.46	.21	.01	.03
7	Meth x Meth	.50	.25	.04*	.09
	Treatment			.22	.47
8	Subjects	.51	.26	.01	.02
9	Dosage	.53	.29	.03*	.07
10	Treatment	.63	.40	.11*	.24
11	Tx Philos	.65	.42	.02*	.04
12	Tx x Meth	.68	.46	.04*	.09
13	Tx x Tx	.68	.47	.01	.02

*$p < .05$

Table 4.6 General Nature of the Multiple Regression Results for Each Major Variable Cluster

Cluster	R^2 Change	
Method		
Samples	.04	Larger studies with larger sample sizes were associated with smaller effect sizes.
Equivalence	.06	Specific dimensions of initial nonequivalence between treatment and control groups (e.g., sex, delinquency type) were associated with larger or smaller effect sizes. Overall method of subject assignment (e.g., random vs. nonrandom), however, was not associated with effect size.
Attrition	.03	Greater attrition from either treatment or control group was associated with smaller effect sizes.
Control	.03	Control groups receiving some contact, e.g., "treatment as usual" in the juvenile justice system, were associated with smaller effect sizes than "no treatment" controls except for probation treatment as usual.
Measures	.04	Large number of delinquency outcome measures, long spans of time covered in those measures, and weak reliability and validity were associated with smaller effect sizes.
ES Info	.01	Less explicit reporting of statistical results was associated with larger effect sizes as was more explicit reporting of general methodological procedures.
Treatment		
Subjects	.01	Juveniles with more indication of delinquency (higher "risk") were associated with larger effect sizes.
Dosage	.03	Longer duration treatment and that judged to provide larger amounts of meaningful contact were associated with larger effect sizes.
Treatment	.11	(1) Treatment provided by the researcher or situations where the researcher was influential in the treatment setting were associated with larger effect sizes.

Table 4.6 *(Continued)*

Cluster	R^2 Change	
		(2) Treatment in public facilities, custodial institutions, and the juvenile justice system were associated with smaller effect sizes.
		(3) Behavioral, skill-oriented, and multimodal treatment was associated with larger effect sizes than other treatment approaches.
Tx Philos	.02	Treatment judged to have a more sociological and less psychological orientation was associated with larger effect sizes.

Table 4.7 Residualized Effect Size Estimates After Removal of Method Variance for Different Treatment Modalities

Treatment Modality	Effect Size	Equivalent Recidivism Change from 50% Control
Juvenile Justice		
Employment (4)	.37	−.18
Multimodal (12)	.25	−.12
Behavioral (8)	.25	−.12
Institutional, other (9)	.20	−.10
Skill-oriented (15)	.20	−.10
Community residential (12)	.16	−.08
Any other juvenile justice (5)	.14	−.07
Probation/parole, release (16)	.11	−.05
Probation/parole, reduce caseload (11)	.08	−.04
Probation/parole, restitution (13)	.08	−.04
Individual counseling (20)	.08	−.04
Group counseling (39)	.07	−.03
Probation/parole, other enhancement (7)	.07	−.03
Family counseling (6)	.02	−.01
Vocational (9)	−.18	+.09
Deterrence (9)	−.24	+.12
Non–Juvenile Justice		
Skill-oriented (17)	.32	−.16
Multimodal/broker (29)	.21	−.10
Behavioral (31)	.20	−.10
Group counseling (17)	.18	−.09
Casework (7)	.16	−.08
Family counseling (29)	.10	−.05
Advocacy (4)	.10	−.05
Other counseling (5)	.06	−.03
School class/tutor (14)	.00	−.00
Individual counseling (24)	−.01	+.00
Any other non–juvenile justice (3)	−.01	+.00
Employment/vocational (22)	−.02	+.01

Note: The number of studies in each category is reported in parentheses.

Appendix 4.A Bibliographic Databases Used in Search

Arts and Humanities Citation Index
Books in Print
British Books in Print
British Education Index
Child Abuse and Neglect
Criminal Justice Periodical Index
CRISP: National Institute of Mental Health
Dissertation Abstracts Online
ERIC (Educational Resources Information Center)
Family Resources
Federal Research in Progress
Library of Congress Books
Medline
Mental Health Abstracts
National Criminal Justice Reference Service
National Technical Information Service
PAIS International (Public Affairs Information Service)
Psychological Abstracts
Social Science Citation Index
Sociological Abstracts
SSIE Current Research (Smithsonian Science Information Exchange)
U.S. Government Printing Office Publications
U.S. Political Science Documents

Notes: The research reported in this paper was funded by the National Institute of Mental Health, Antisocial and Violent Behavior Branch (MH39958 and MH42694), and the Russell Sage Foundation.

There were 443 studies involved in the analysis presented in this paper. The full bibliography of studies can be obtained from the author at the Psychology Department, Claremont Graduate School, Claremont, CA 91711.

Figure 5.1 Study-Level Effect Sizes for Treatment-Control Comparisons ($n = 58$)

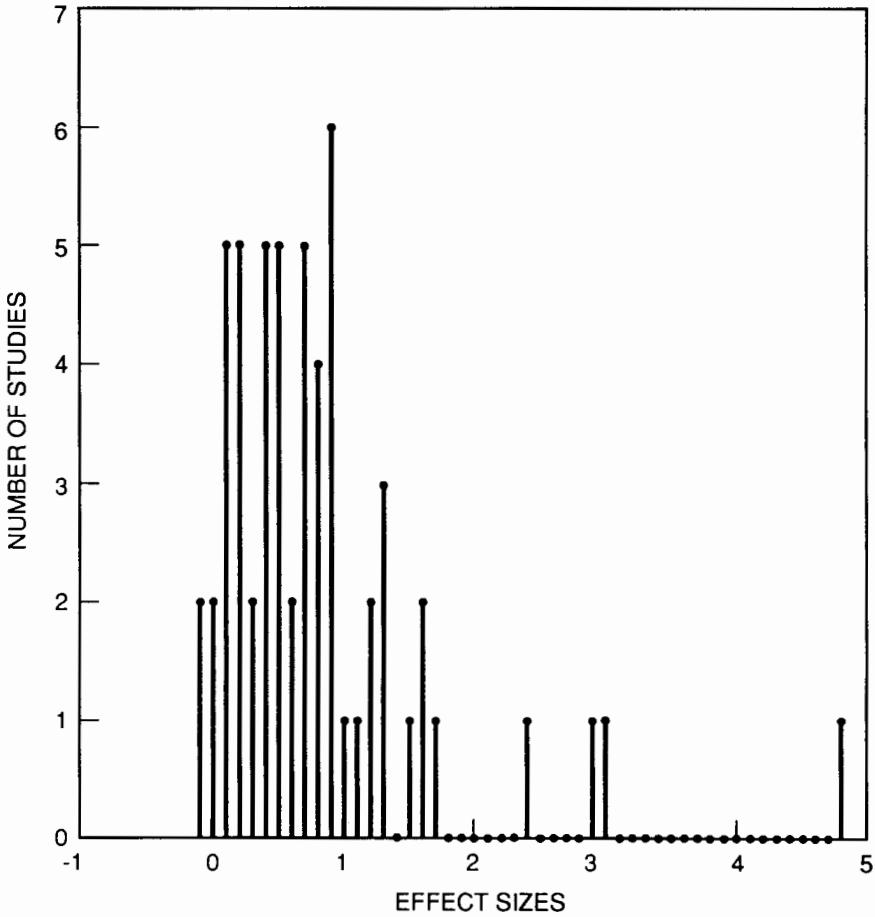


Figure 5.2 Sample Size per Group ($n = 58$)

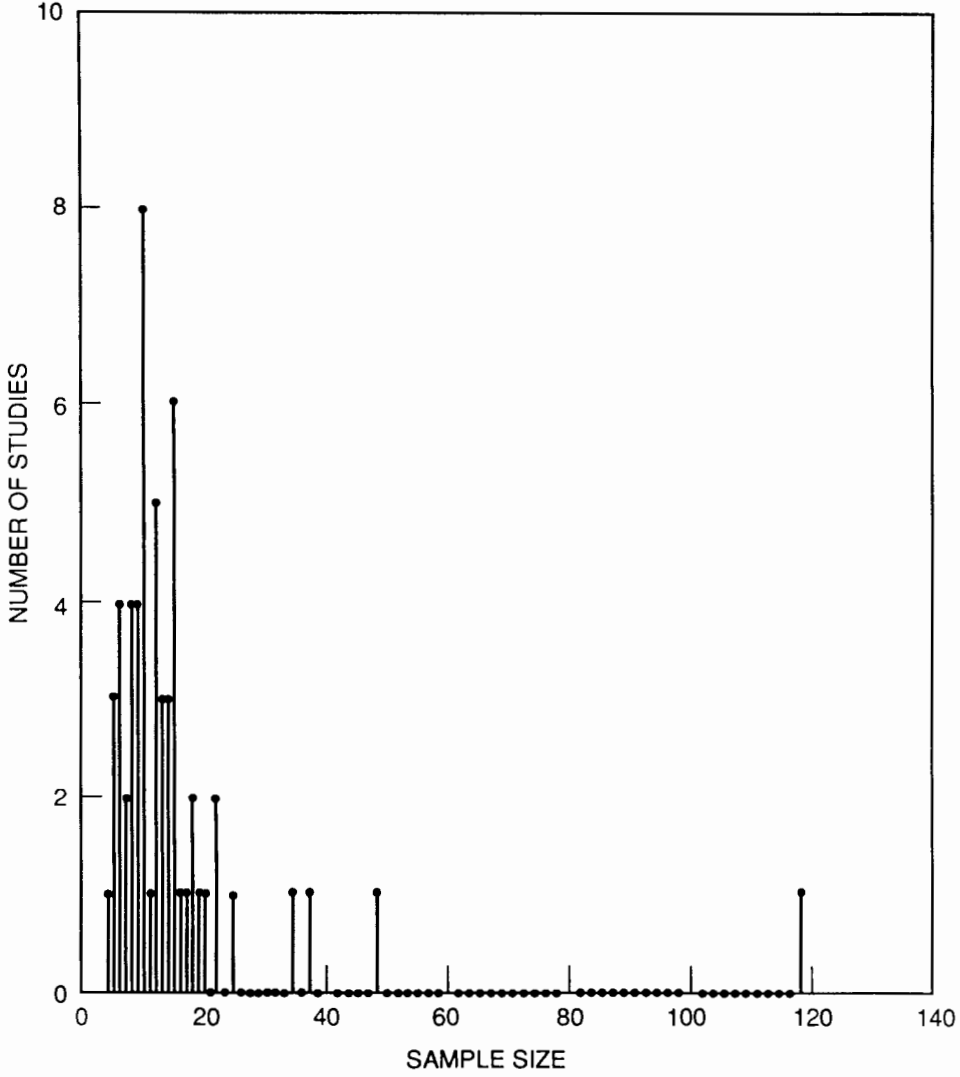


Figure 5.3 Study-Level Effect Sizes Excluding Findings Reported Only as Nonsignificant ($n = 58$)

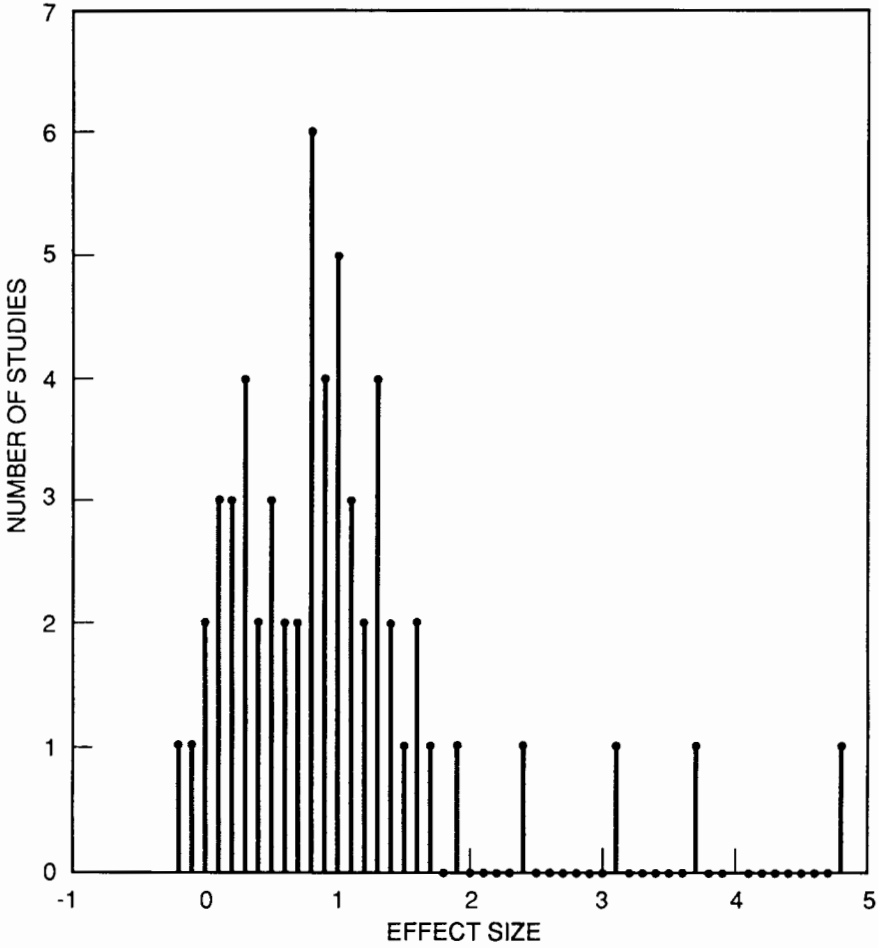


Figure 5.4 Single Equation Model

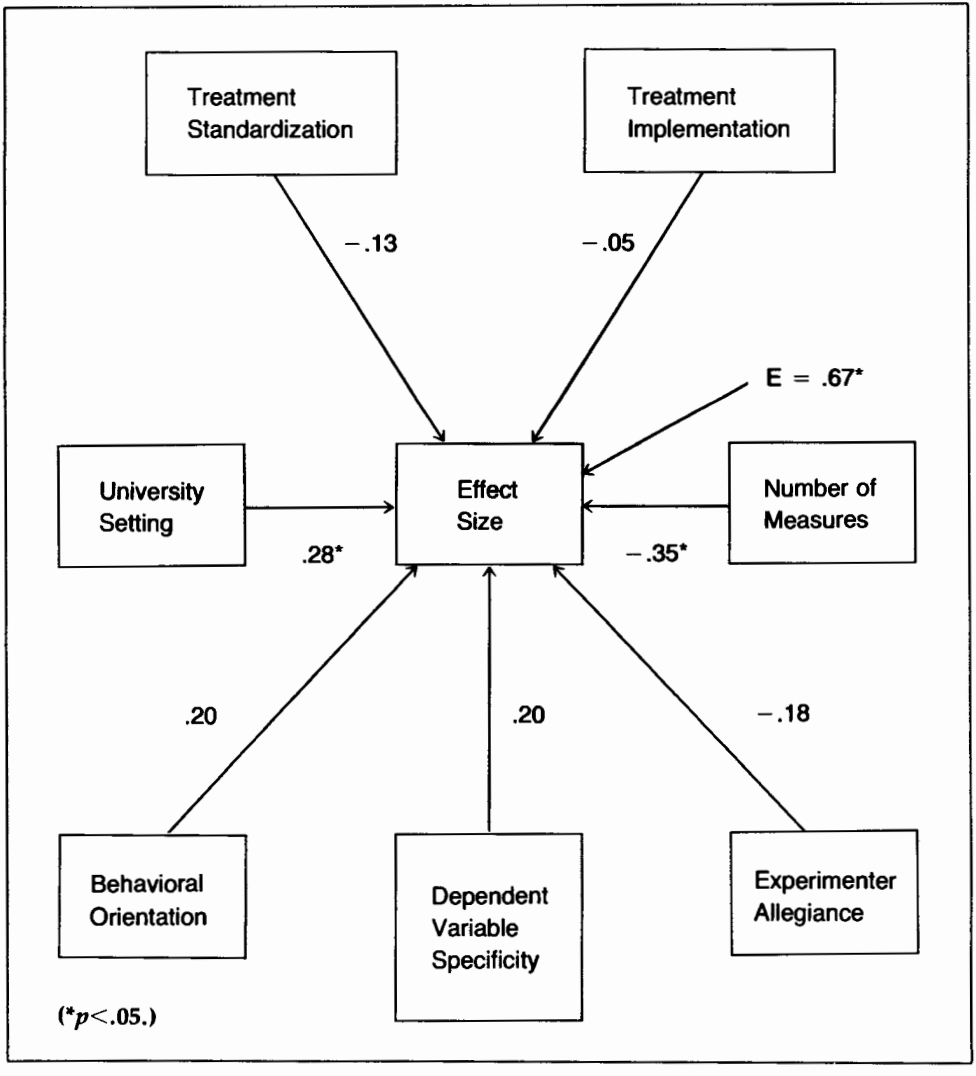


Figure 5.5 A Simultaneous Equation Model

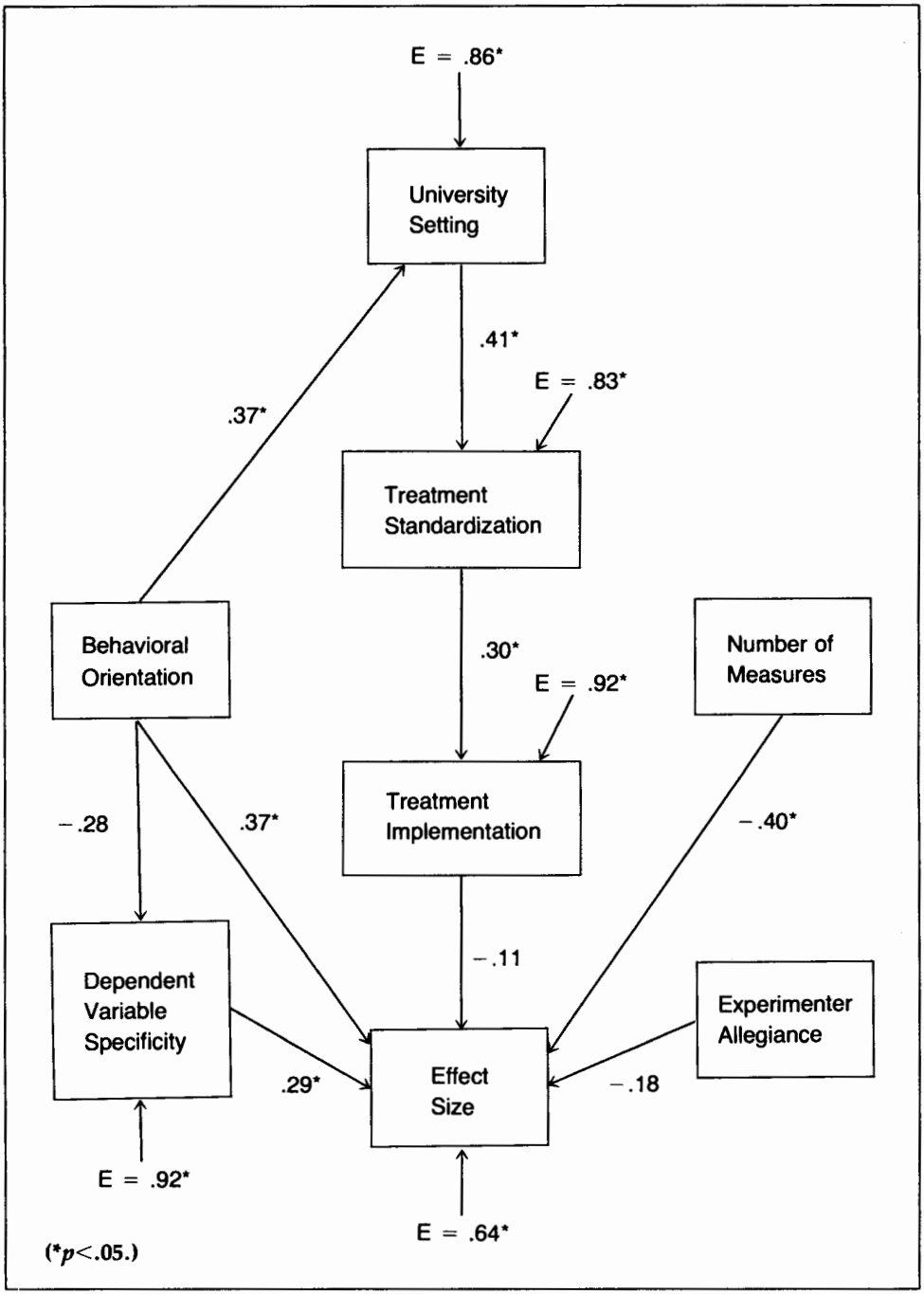


Figure 5.6 A Latent Variable Model

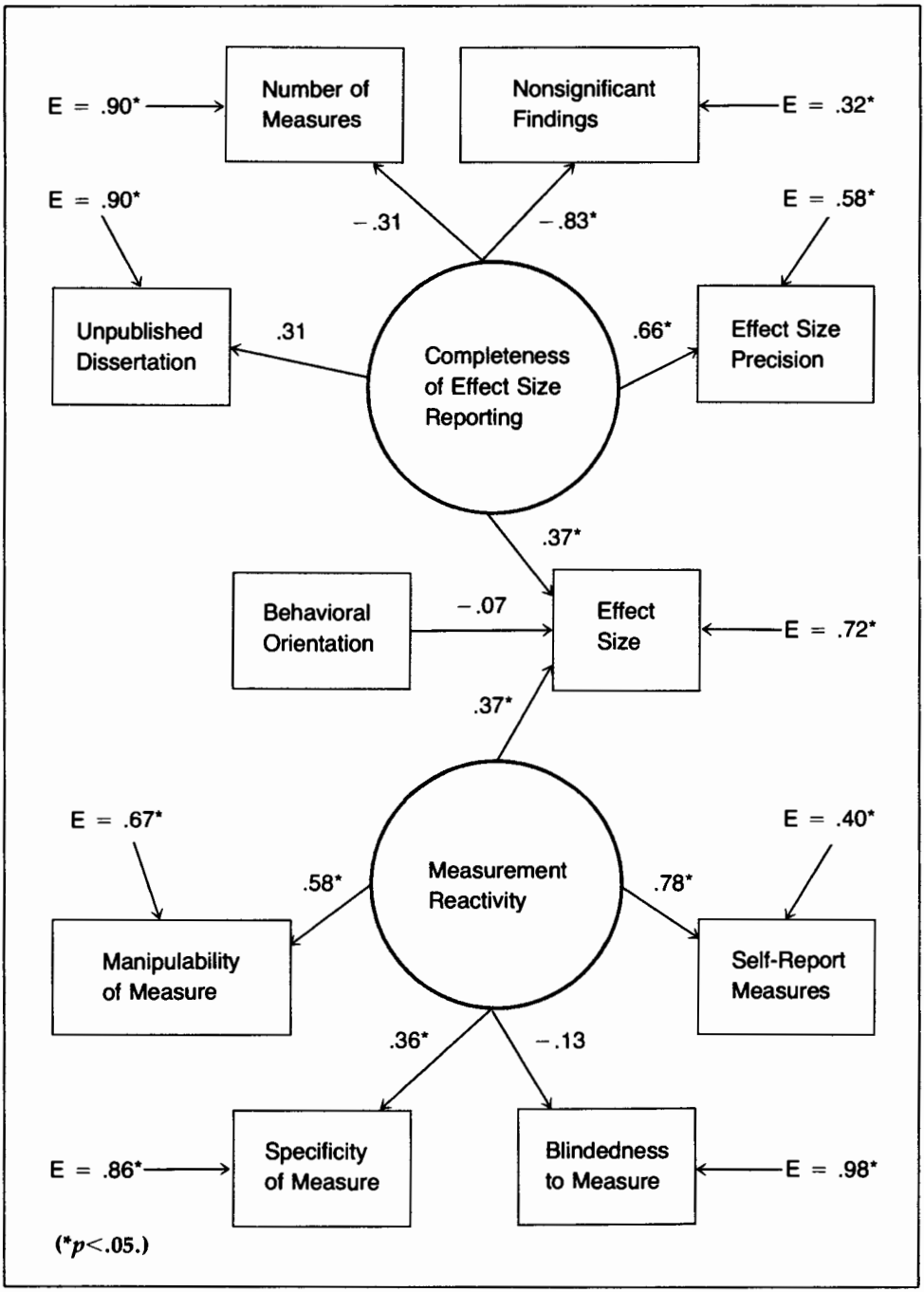


Table 5.1 Some Descriptive Characteristics of 106 Studies with Behavioral Dependent Variables

Study Characteristics	Mean (Range)	Total
Year Published	1979 (1967–1988)	
Form of Publication		
Journal article		57
Book/chapter		2
Dissertation		45
Unpublished manuscript		2
Number of Studies		106
Family studies		70
Marital studies		36
Number of Comparisons		208
Treatment-control comparisons		89
Treatment-treatment comparisons		119
Number of Comparisons/Study	1.96 (1–9)	
Number of Effect Sizes		1,203
Number of Measures/Study	11.26 (1–86)	
Professional Affiliation of First Author		
Psychology		80
Social work		4
Psychiatry		4
Education		16
Nursing		1
Unknown		1

Table 5.2 Effect Sizes as a Function of Various Predictor Variables Under Different Statistics Models

Variable	OLS Statistics		WLS Fixed-Effects Statistics			WLS Random-Effects Statistics		
	d	se	d_+	se	Q_h	$\sigma^2(\Delta)$	Δ	se
Study Methodology								
Effect Size Method								
Exact ($n = 40$)	.87*	.15	.79*	.07	161.36*	.57*	.76*	.14
Approximation (25)	1.06*	.15	.79*	.08	88.15*	.31*	.95*	.15
	F (1,63) = .73		Q_b (1) = .21					
			Q_w (63) = 249.51*					
Form of Publication								
Publication (31)	1.09*	.18	.75*	.08	108.82*	.65*	.95*	.17
Dissertation (27)	.53*	.10	.66*	.07	113.27*	.04*	.61*	.09
	F (1,56) = 6.79*		Q_b (1) = .68					
			Q_w (56) = 222.09*					
Blindedness to Treatment								
No influence likely (4)	.24*	.05	.18	.21	4.22	.00	.23	.21
Indirect influence (18)	.99*	.19	.96*	.09	96.46*	.40*	.93*	.19
Direct influence (25)	.89*	.21	.59*	.09	56.81*	.72	.72*	.20
	F (2,44) = 1.10		Q_b (2) = 16.27*					
			Q_w (44) = 157.48*					
Source of Clients								
Experimenter-solicited (31)	1.01*	.19	.69*	.08	109.46*	.75*	.86*	.18
Other/self-referred (27)	.62*	.10	.71*	.07	113.26*	.00	.75*	.08
	F (1,56) = 3.14		Q_b (1) = .05					
			Q_w (56) = 222.72*					

Variable	OLS Statistics		WLS Fixed-Effects Statistics			WLS Random-Effects Statistics		
	d	se	d_+	se	Q_h	$\sigma^2(\Delta)$	Δ	se
University-Based Clients								
Mostly university (5)	.82*	.23	.64*	.19	9.21	.00	.71*	.19
Some university (4)	1.01*	.16	.78*	.22	14.80*	.00	.92*	.23
No university (48)	.82*	.13	.70*	.06	197.27*	.55*	.72*	.13
	F (2,54) = .08		Q_b (2) = .23					
			Q_w (54) = 221.28*					
Assignment to Conditions[a]								
Random (52)	.84*	.12	.70*	.06	215.86*	.50*	.73*	.12
Haphazard (7)	.70*	.15	.67*	.18	9.33	.00	.68*	.19
	F (1,57) = .18		Q_b (1) = .02					
			Q_w (57) = 225.19*					
Matching[a]								
Matching Occurred (13)	.43*	.11	.43*	.12	18.29	.00	.45*	.12
No Matching (46)	.93*	.14	.76*	.06	200.66*	.52*	.82*	.13
	F (1,57) = 3.60		Q_b (1) = 6.26*					
			Q_w (57) = 218.95*					
Client and Treatment Context and Inputs								
Problem Category								
Family (39)	.62*	.09	.63*	.06	161.25*	.10*	.60*	.09
Couple (19)	1.27*	.26	.91*	.11	56.76*	.90*	1.10*	.25
	F (1,56) = 8.33*		Q_b (1) = 4.75*					
			Q_w (56) = 218.02*					
Locus of Presenting Problem								
Individual child (23)	.63*	.14	.48*	.10	57.53*	.15	.55*	.13
Individual adult (3)	.59	.42	.51*	.21	2.52	.15	.53	.30
Couple (19)	1.27*	.26	.91*	.11	56.76*	.90*	1.10*	.25
Family (7)	.64*	.14	.57*	.15	28.45*	.00	.69*	.15
Extrafamilial (6)	.57*	.23	.96*	.12	57.66*	.16*	.68*	.22
	F (4,53) = 1.98		Q_b (4) = 15.37*					
			Q_w (53) = 202.92*					
Problem Type								
Behavioral (31)	.61*	.11	.66*	.07	124.82*	.11*	.58*	.10
Nonbehavioral (27)	1.08*	.20	.75*	.08	97.14*	.72*	.94*	.19
	F (1,56) = 4.56*		Q_b (1) = .77					
			Q_w (56) = 221.96*					
Experimenter Allegiance								
Yes (54)	.84*	.12	.61*	.06	161.06*	.47*	.72*	.12
No (10)	.80*	.16	1.03*	.11	55.46*	.03*	1.02*	.14
	F (1,62) = .02		Q_b (1) = 12.23*					
			Q_w (62) = 216.52*					
Treatment Location								
University (35)	.99*	.17	.69*	.08	110.53*	.67*	.85*	.17

Table 5.2 *(Continued)*

Variable	OLS Statistics		WLS Fixed-Effects Statistics			WLS Random-Effects Statistics		
	d	se	d_+	se	Q_h	$\sigma^2(\Delta)$	Δ	se
Nonuniversity (18)	.54*	.11	.47*	.10	31.65*	.00	.48*	.10
	F (1,51) = 3.25		Q_b (1) = 2.97					
			Q_w (51) = 142.18*					
Therapist Gender								
Male (9)	.77*	.32	.57*	.15	19.48*	.61	.64*	.31
Female (6)	.72*	.29	.55*	.21	8.19	.15	.56*	.27
Both Male/Female (29)	.67*	.09	.58*	.08	81.54*	.01	.65*	.08
	F (2,41) = .09		Q_b (2) = .02					
			Q_w (41) = 109.21*					
Therapist Degree								
Professional Degree (15)	.97*	.22	.70*	.12	45.83*	.42*	.84*	.21
In Degree Training (34)	.75*	.15	.58*	.08	77.80*	.42	.64*	.14
No Training/Degree (3)	.30*	.07	.30	.44	1.46	.00	.27	.32
	F (2,49) = .92		Q_b (2) = 1.20					
			Q_w (49) = 125.08*					
Therapist Experience								
Experienced (21)	.97*	.26	.58*	.10	80.55*	1.02*	.80*	.25
Inexperienced (28)	.65*	.09	.60*	.08	41.89*	.00	.61*	.08
	F (1,47) = 1.64		Q_b (1) = .03					
			Q_w (47) = 122.44*					
Treatment Process								
Treatment Orientation								
Behavioral (36)	.98*	.16	.69*	.07	99.21*	.63*	.84*	.16
Systemic (11)	.52*	.18	.38*	.14	21.93*	.09	.42*	.17
Humanistic (6)	.75*	.21	.60*	.18	21.93*	.06	.72*	.21
Eclectic (11)	.76*	.25	.93*	.10	82.66*	.42*	.78*	.24
Other (6)	.81*	.23	.73*	.14	28.45*	.09*	.85*	.21
	F (4,65) = .68		Q_b (4) = 11.29*					
			Q_w (65) = 254.18*					
Behavioral Orientation								
Behavioral (36)	.98*	.16	.69*	.07	99.21*	.63*	.84*	.16
Nonbehavioral (32)	.72*	.12	.72*	.07	162.02*	.19*	.70*	.11
	F (1,66) = 1.63		Q_b (1) = .16					
			Q_w (66) = 261.23*					
Treatment Standardization								
High (43)	.84*	.13	.63*	.07	116.43*	.46*	.72*	.13
Partial (11)	.97*	.27	.93*	.10	88.86*	.54*	.89*	.26
Unstandardized (4)	.40	.28	.41	.23	9.40*	.09	.44	.27

Variable	OLS Statistics		WLS Fixed-Effects Statistics			WLS Random-Effects Statistics		
	d	se	d_+	se	Q_h	$\sigma^2(\Delta)$	Δ	se
	F (2,55) = .64		Q_b (2) = 7.88*					
			Q_w (55) = 214.69*					
Treatment Implementation								
Documented (18)	.85*	.16	.90*	.09	100.56*	.18*	.85*	.15
Partially Documented (36)	.86*	.16	.59*	.07	106.32*	.64*	.72*	.16
Undocumented (7)	.45*	.14	.44*	.16	11.28	.00	.45*	.16
	F (2,58) = .69		Q_b (2) = 10.18*					
			Q_w (58) = 218.16*					
Time Focus of Therapy								
Present (54)	.87*	.12	.74*	.06	208.12*	.45*	.77*	.11
Present/Historical (4)	.30	.22	.27	.18	7.50	.03	.31	.21
	F (1,56) = 1.69		Q_b (1) = 6.00*					
			Q_w (56) = 215.62*					
Communication Training								
Sole Emphasis (19)	.82*	.15	.63*	.10	65.36*	.15	.76*	.14
Partial Emphasis (28)	1.05*	.22	.87*	.08	135.48*	.97*	.90*	.21
No Emphasis (19)	.77*	.15	.60*	.10	46.76*	.14*	.67*	.14
	F (2,63) = .67		Q_b (2) = 6.42*					
			Q_w (63) = 247.60*					
Dependent Variable Characteristics								
Unit Described by Measure								
Child (25)	.68*	.14	.53*	.09	57.80*	.23	.59*	.14
Adult (11)	.90*	.22	.66*	.13	37.59*	.24	.82*	.21
Couple (20)	1.29*	.25	.92*	.11	58.06*	.83*	1.12*	.24
Family (18)	.33*	.10	.31*	.10	44.14*	.00	.35*	.10
Extrafamilial (5)	.40	.33	.94*	.12	58.02*	.34*	.53	.31
	F (4,74) = 4.00		Q_b (4) = 26.75*					
			Q_w (74) = 255.61*					
Outcome Mode								
Self-Report (24)	.83*	.22	.53*	.09	71.27*	.83*	.70*	.21
Ratings by Others (47)	.75*	.10	.71*	.06	190.52*	.17*	.70*	.09
	F (1,69) = .16		Q_b (1) = 2.85					
			Q_w (69) = 261.79*					
Smith et al. Reactivity[b]								
Low (Categories 1–3) (31)	.81*	.15	.74*	.07	166.87*	.39*	.73*	.14
Medium (Category 4) (37)	.75*	.14	.56*	.07	93.64*	.47*	.65*	.14
High (Category 5) (9)	.60*	.16	.54*	.15	9.98	.00	.57*	.15
	F (2,74) = .25		Q_b (2) = 4.01					
			Q_w (74) = 270.49*					

Table 5.2 *(Continued)*

Variable	OLS Statistics		WLS Fixed-Effects Statistics			WLS Random-Effects Statistics		
	d	se	d_+	se	Q_h	$\sigma^2(\Delta)$	Δ	se
Blindedness on Measure								
Blind (45)	.76*	.11	.71*	.06	190.06*	.27*	.70*	.11
Not Blind (17)	.89*	.27	.60*	.11	40.75*	.88	.73*	.26
	F (1,60) = .26		Q_b (1) = .72					
			Q_w (60) = 230.81*					
Measure Specificity								
Tailored to Treatment (53)	.99*	.20	.66*	.06	176.59*	1.71*	.84*	.19
General Marital/Family (14)	.62*	.22	.43*	.13	38.37*	.37*	.54*	.21
	F (1,65) = .50		Q_b (1) = 2.62					
			Q_w (65) = 214.96*					
Measure Manipulability								
Not Very Manipulable (5)	1.09*	.31	.87*	.20	38.24*	.15	1.08*	.28
Moderately Manipulable (36)	.75*	.13	.70*	.07	148.43*	.31*	.66*	.12
Very Manipulable (38)	.73*	.14	.55*	.07	90.83*	.46*	.63*	.14
	F (2,76) = .43		Q_b (2) = 3.73					
			Q_w (76) = 178.50*					
Who Completed Measure								
Wife (14)	.62*	.21	.49*	.12	42.89*	.36*	.55*	.01
Husband (8)	.48*	.16	.50*	.15	14.04	.02	.52*	.15
Child (17)	.64*	.20	.49*	.11	36.82*	.39	.55*	.19
Couple Jointly (23)	1.14*	.23	.79*	.10	69.85*	.86*	.98*	.23
Family Jointly (6)	.51*	.18	.41*	.16	21.63*	.00	.52*	.16
Other (23)	.66*	.12	.77*	.08	108.72*	.09*	.70	.11
	F (5,85) = 1.55		Q_b (5) = 11.33*					
			Q_w (85) = 293.95*					

Note: Asterisks by d, d_+, $\sigma^2(\Delta)$, or Δ indicate the statistic is significantly different from zero at $p<.05$. Significance is computed by multiplying standard errors by +/− 1.96 to obtain 95 percent confidence intervals around effect size estimates; intervals that do not include zero are significant. Asterisks by numbers under column Q_h indicate rejection of the test of homogeneity of effect size within category; those by Q_b indicate significant differences among effect sizes between categories; those by Q_w indicate rejection of model specification, suggesting the categories are insufficient to explain effect size variation. Numbers in parentheses beside categories are number of study-level effect sizes in category; number in parentheses beside Q statistics are degrees of freedom. Finally, 13 negative variance components in this table were truncated to .00.

[a]Sums to 59 studies because one study used multiple conditions, one of which was a control group haphazardly assigned and matched.

[b]Smith et al.'s reactivity categories 1–3 (1980) are combined in this analysis since their category 1 had only one study and their category 3 had no studies.

Table 5.3 Interrater Reliability and Confidence Codings for Variables Coded in the Meta-Analysis

	Percentage Agreement	Kappa	Pearson	Confidence Rating
Publication Characteristics				
Author Profession	87	.70		2.841
Study Category (Marital or Family)	97	.93		2.998
Presenting Problem Characteristics				
Locus of Problem	83	.76		2.963
Problem State	79	.69		2.821
Use of Patient Exclusion Criteria	86	.73		2.980
Methodological Characteristics				
Experimenter Blindedness to Treatment	97		.94	2.485
Source of Clients	86	.76		2.850
Use of University Subjects	97		.94	2.924
Random Assignment	93		.81	2.951
Matching	97	*		2.944
Assignment of Therapist to Conditions	87	.79		2.920
Internal Validity Rating	73		.73	
Treatment Characteristics				
Orientation	80	.71		2.803
Experimenter Allegiance to Therapy Type	83	.67		2.722
Time Focus of Therapy	90		.79	2.922
Use of Communication Training	87	.73		2.827
Adjunct Use of Medication	100	1.00		3.000
Treatment Modality	80	.74		2.880
Treatment Location	70	.55		2.369
Therapist Gender	97	.96		2.756
Therapist Experience	77	.71		2.695
Kind of Control Group	93	.77		2.889
Treatment Standardization	77		.65	2.627
Treatment Implementation	80		.65	2.613
Outcome Characteristics				
Outcome Type	90	.86		2.886
Outcome State	93	.90		2.776
Outcome Mode	90	.86		2.891
Number of Weeks After Treatment That Post-Test Was Taken	100		1.00	2.609

	Percentage Agreement	Kappa	Pearson	Confidence Rating
Blinding of Experimenter to Dependent Variable	70		.59	2.524
Specificity of Dependent Variable	90		.81	2.712
Manipulability of Dependent Variable	80		.87	2.751

Note: This reliability study occurred on the penultimate draft of the coding manual, which was then revised for use in the meta-analysis. Hence some minor differences exist between the variables used in the interrater reliability study and those reported in the rest of this chapter.

*In this case, one rater had no variance, so that computation of any variance based reliability coefficient was impossible. However, agreement was nearly perfect.

Table 5.4 Relative Effectiveness of Different Orientations Within the Same Study: Specific Treatment-Treatment Comparisons

Orientation	1	2	3	4	5	6
1 Behavioral	.32*	−.20	.32	−.13	.54*	.60*
	(31)	(5)	(2)	(1)	(8)	(6)
2 Systemic		.07	−.03	−.11	−.09	.21
		(6)	(2)	(1)	(3)	(1)
3 Humanistic			.39	—	—	—
			(2)	(0)	(0)	(0)
4 Psychodynamic				.10	—	−.02
				(1)	(0)	(1)
5 Eclectic					−.19*	.42
					(10)	(3)
6 Other						−.03
						(4)

Note: Positive effect sizes mean that the row orientation produced better post-test effects than the column orientation; negative effect sizes imply the opposite. Numbers in parentheses are the number of study-level sizes on which the estimate is based.
*Significantly different from zero, $p<.05$.

Table 5.5 Relative Effectiveness of Different Orientations: Pooled Comparisons

Orientation	Mean	N
Behavioral vs. All Others	.43*	22
Systemic vs. All Others	−.01	12
Humanistic vs. All Others	−.14	4
Psychodynamic vs. All Others	.06	3
Eclectic vs. All Others	−.25*	14
Other vs. All Others	−.48*	10

*$p<.05$.

Figure 6.1 Hypothetical Models of Prediction of Science Achievement for Males and Females

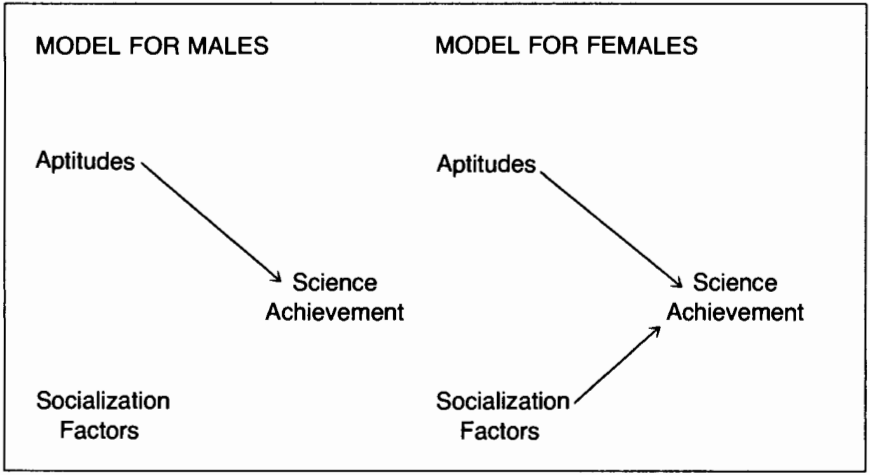


Figure 6.2 Two Possible Relationships Between *X* and *Y* for Males (M) and Females (F)

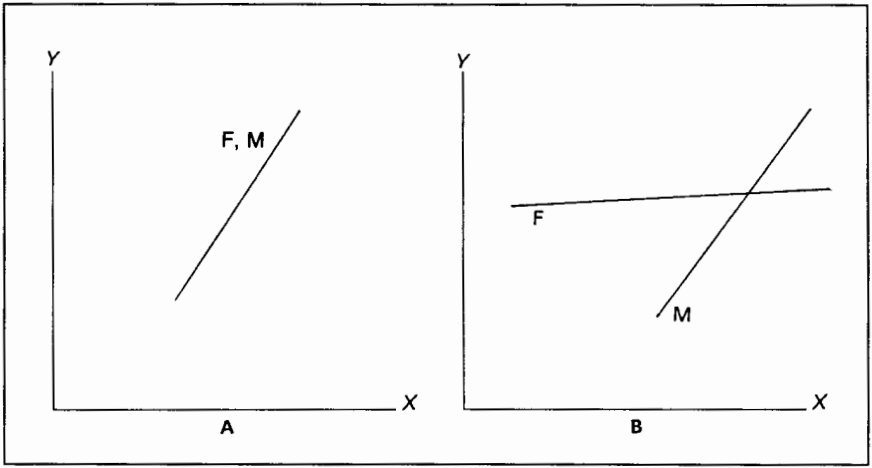
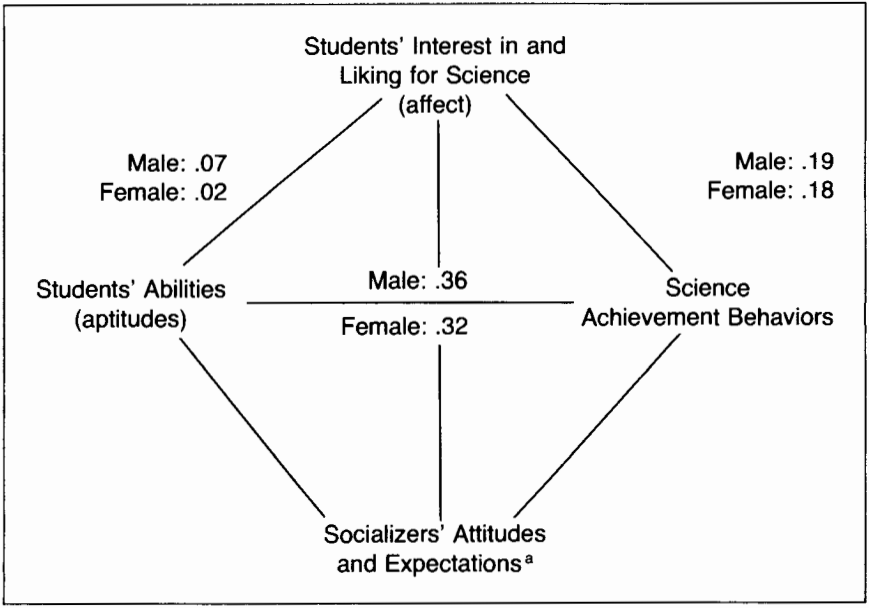
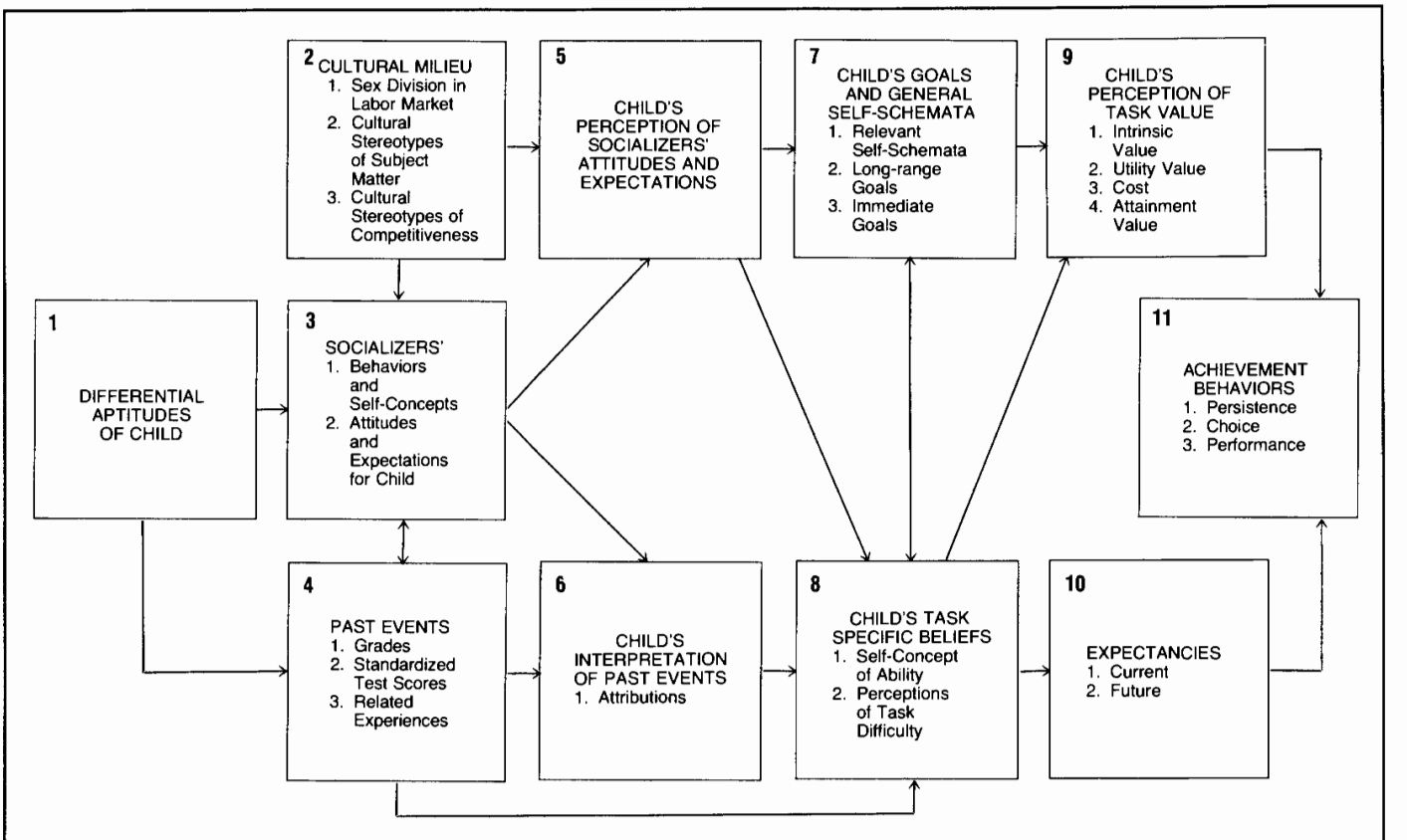


Figure 6.3 Simple Model, with Average Correlations from Steinkamp and Maehr (1983)



[a]Steinkamp and Maehr did not consider this component in their synthesis.

Figure 6.4 General Model of Academic Choice



Source: "Sex Differences in Mathematics Participation," J. Eccles (Parsons). In Steinkamp, W., and M. L. Maehr, eds. *Advances in Achievement and Motivation, Vol. 2.* Greenwich, CT: JAI Press, 1984, pp. 93–137.

Figure 6.5 The Simple Model as a Distillation of Eccles' Model

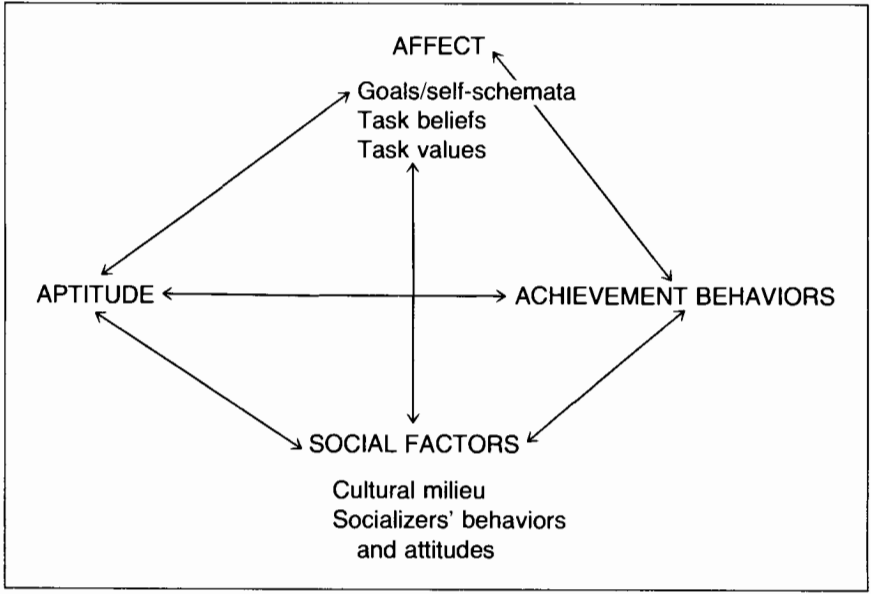
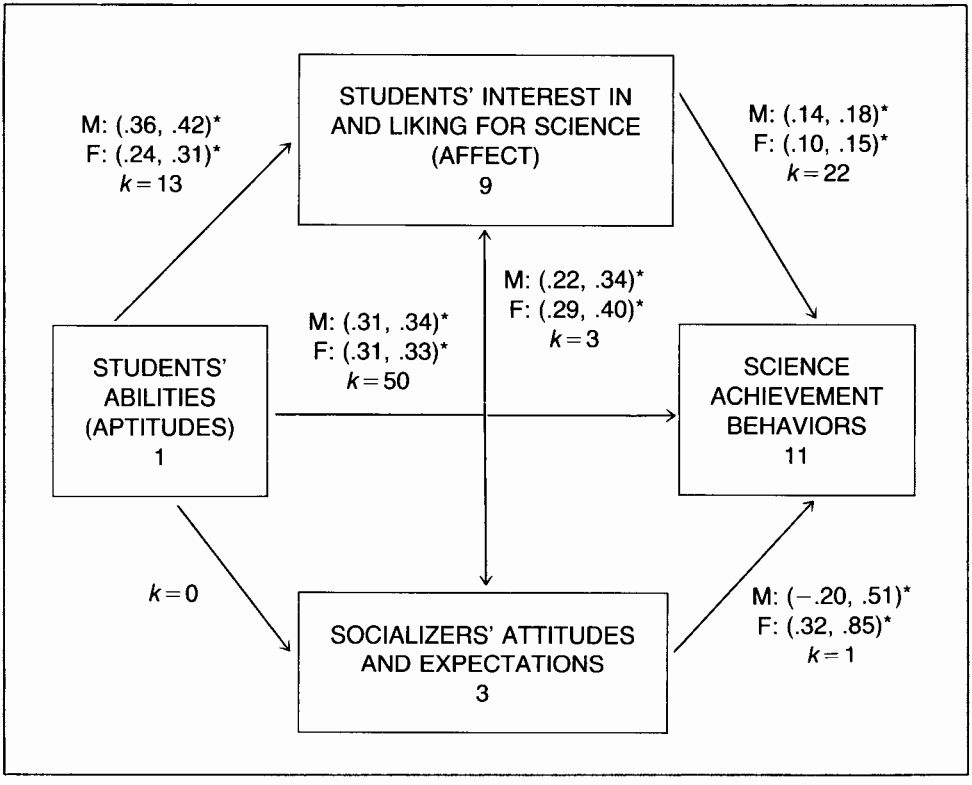
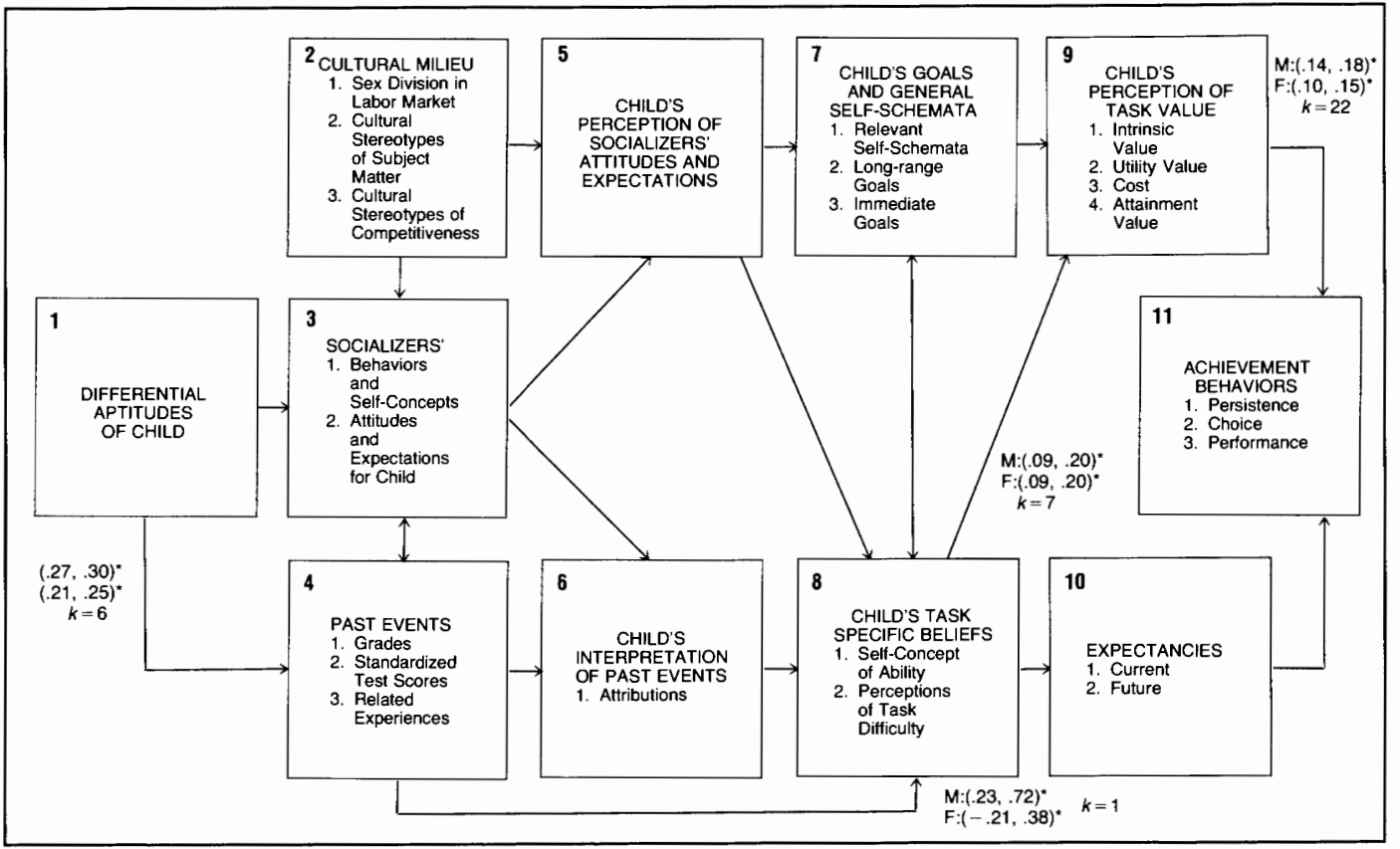


Figure 6.6 Ninety-five Percent Confidence Intervals for Average Correlations for Paths in Simple Model



Note: Asterisks represent sets of heterogeneous correlations. The number of correlations for each sex is denoted as *k*.

Figure 6.7 Ninety-five Percent Confidence Intervals for Paths in Eccles' Model



Note: Asterisks represent sets of heterogeneous correlations. The number of correlations for each sex is denoted as *k*.

Table 6.1 Numbers of Documents Identified by Different Search Procedures

Source	Number	
	Identified	Obtained
Computerized Databases		
Educational Resources Information Center	626	177
Psychological Abstracts	534	156
Dissertation Abstracts	25	13
Past Reviews	—	110
Journals	53	35
Dissertation Catalogs	—	11
Reference Lists	117	54
Other Sources	—	39

Table 6.2 Types of Documents in Literature on Science and Gender

Type	Number
Policy and Program Documents	60
Other Related Documents (e.g., books, discussions of models)	69
Empirical Studies	
Studies of models (by gender)	41
Correlational studies (by gender)	32
Studies of gender differences	320
Total	522

Table 6.3 Types of Variables Coded in the Synthesis

Article Characteristics
Author Characteristics
Subject Characteristics
Time of Study
School/Classroom Characteristics
Special Characteristics of Design/Study
Teacher Characteristics
Family/Parent Influence/Socializers
Outcomes/Measures
Type of Study
Results
Quantitative Assessments
Notes
Abstract

Table 6.4 Topics Examined by Measures of Components in Eccles' Model

Component	Affect	SES/Occupation	Age	Father in Science Occupation	Views of Scientists
Demographics		5	1	1	
Culture					10
Socializers	1			1	

	Art/ Music	Science Topics	General	Inquiry/ Reasoning	Math	General/ Science	Social/ Interpersonal	Verbal
Abilities		3	6	35	6	1		10
Past Events			5		3	5		3
Achievement Behaviors	2	13		2		17	1	2

	Affect	Art/ Music	Science Topics	Education	Inquiry/ Reasoning	Math	Non-academic	General/ Science	Social/ Interpersonal	Scientists	Verbal
Perception of Socializers			3					1			
Self-Schemata	2			2	3				2	4	
Task-Specific Beliefs	1			2				2			
Task Value	2	2	8		1	2	3	14	2	1	1
Expectancies				1							

Note: "Science topics" measures include those related to biology, chemistry, physics, and other specific topics while "general/science" measures include nonspecified science measures and measures labeled general science.

Table 6.5 Construction of X for Two-Path Model

Relationship (Path) Represented by r	Values of Elements of the **X** Matrix for Grand Mean and Paths			Interactions with Sex: Males		Interactions with Sex: Females	
	X_1	X_2	X_3	X_4	X_5	X_4	X_5
Aptitude-Achievement	1	1	0	0	0	1	0
Affect-Achievement	1	0	1	0	0	0	1
Other	1	0	0	0	0	0	0

Table 6.6 Characteristics of Samples

Characteristic	Frequency
School Level	
Elementary	5
Middle/junior high	12
Secondary	15
College	6
Presence of Attrition or Selection	
Attrition	12
Selection	4
Attrition and selection	4
Neither	3
No information	15

Table 6.7 Measures of Science-Related Variables

Type of Measure	Frequency	Percent	Median Numbers of Items
Aptitude	61	32	29
Achievement	38	20	45
Science Course-Taking	5	3	1
Attitude	24	13	8
Interest	25	13	33
Self-Concept	7	4	7
SES	6	3	1
Other	26	14	—

Note: "Other" includes such variables as activities, goals, number of math courses, and test anxiety. These variables occurred no more than four times each. No median number of items is reported across these measure types.

Table 6.8 Methods of Construction of Different Measure Types

Method of Construction	Frequencies			
	Achievement	Aptitude	Attitude/ Interest	Other
Research Measures				
Experimenter-made	6	12	19	26
Research-based	4	7	15	9
Standardized Measures				
Standardized	12	36	15	6
Curriculum-based	4	1	—	—
School Measures				
Teacher-made	9	—	—	—
School records	3	5	—	3
Total	38	61	49	44

Table 6.9 Topics Investigated with Different Measure Types

Topics	Frequencies		
	Achievement	Aptitude	Attitude/Interest
Affect	—	—	1
Biology	4	1	2
Chemistry	3	2	2
General Intelligence	5	6	—
General Science	1	—	—
Inquiry	2	8	2
Math	2	6	—
Nonacademic Interests	—	—	5
Physics	6	—	4
Reasoning	—	14	2
Science	12	1	10
Scientists	—	—	15
Spatial	—	13	—
Verbal	3	10	1

Note: This table does not present a complete list of topics.

Table 6.10 Number of Correlations for Paths in Simple Model

First Component	Second Component											
	Dem	Apt	Cul	Soc	Pas	Per	Int	Goa	Sel	Per	Exp	Ach
Demographics	0	4			2					6		6
Aptitudes		54		◯	12			3		(26)		(100)
Culture			0		2			4	2	20		18
Socializers				0						(6)		(2)
Past Events					2			8		2		28
Perception of Socializers						0				16		
Interpretation of Past Events							0					
Goals/Self-Schemata								0				5
Self-Concept									0	14	2	12
Perception of Task Value										26		(44)
Expectancies											0	
Achievement												20

Table 6.11 Number of Correlations for Paths in Simple Model with Composite Components

First Component	Second Component: Aptitudes	Social Factors	Affect	Achievement Behaviors
Aptitudes	54	0	29	100
Social Factors		0	32	20
Affect			40	61
Achievement Behaviors				20

Table 6.12 Number of Correlations for Paths in Eccles' Model

First Component	Second Component											
	Dem	Apt	Cul	Soc	Pas	Per	Int	Goa	Sel	Per	Exp	Ach
Demographics	0	4			2					6		6
Aptitudes		54		◯	(12)			3		26		100
Culture			0	◯	2	◯		4	2	20		18
Socializers				0	◯	◯	◯			6		2
Past Events					2		◯	8	◯	2		28
Perception of Socializers						0		◯	◯	16		
Interpretation of Past Events							0		◯			
Goals/Self-Schemata								0	◯	◯		5
Self-Concept									0	(14)	(2)	12
Perception of Task Value										26		(44)
Expectancies											0	◯
Achievement												20

Table 6.13 Analysis of Correlations in Simple Model

Path in Simple Model	Number of Pairs of Correlations	Males		Females	
		Mean Correlation	H_T	Mean Correlation	H_T
Aptitude–Task Value	13	.39	47.13	.28	23.68
Aptitude–Achievement	50	.33	725.06	.32	578.73
Task Value–Achievement	22	.16	187.60	.12	98.09
Socializers–Task Value	3	.28	14.62	.34	14.53
Socializers–Achievement	1	.18	0	.66	0

Table 6.14 Stem-and-Leaf Diagrams of Correlations for Paths in Simple Model

Aptitude and Task Value

Males (k = 13)

.5	4 9
.4	0 4 5 6 6
.3	7
.2	3 5 6 7 7
.1	
+.0	

median = .40

Females (k = 13)

.5	
.4	8
.3	0 3 6 6 8
.2	0 1 4 5 9
.1	
+.0	8 9

median = .29

Aptitude and Achievement

Males (k = 50)

.7	0 1 4
.6	3 3 4
.5	1 1 7
.4	1 1 2 2 3 3 7 7 8 8 9
.3	0 1 2 3 4 6 8 9
.2	3 4 5 7 8 8 8 9
.1	0 2 2 2 4 4 6 7
+.0	6 7 7 8 9
−.0	7
−.1	

median = .32

Females (k = 50)

.7	
.6	0 3 3 5 6 6 8 9
.5	0 0 1 1
.4	1 1 3 3 4 5 7 7 8
.3	0 0 2 2 4 5 5 5 6 6 9 9
.2	0 1 1 3 3 5 6 9
.1	3 4 5 6 7
+.0	7 8
−.0	5 6
−.1	

median = .36

Task Value and Achievement

Males (k = 22)

.6	
.5	1 9
.4	0 6
.3	0 2 3
.2	0 2 4 8
.1	1 8
+.0	4 4 7 9
−.0	2 3 7
−.1	0 0
−.2	

median = .19

Females (k = 22)

.6	
.5	
.4	0 0 1
.3	3 9
.2	0 2 4 7
.1	0 1 2 9
+.0	4 4 7 9
−.0	1 2 5 5 6
−.1	
−.2	

median = .12

Table 6.15 Analysis of Correlations in Eccles' Model

Path in Eccles' Model	Number of Pairs of Correlations	Males		Females	
		Mean Correlation	H_T	Mean Correlation	H_T
Aptitude–Past Event	6	.29	52.22	.23	24.01
Task Belief–Task Value	7	.15	59.54	.14	39.63
Task Belief–Expectancies	1	.52	0	.09	0
Task Value–Achievement	22	.16	187.60	.12	98.09

Table 6.16 Stem-and-Leaf of Correlations Between Past Events and Achievement

Males (k = 14)		Females (k = 14)	
.7	2 3 4 4 4	.7	0 1 1 4 7
.6	4 5	.6	2 7
.5	5 8	.5	1 9
.4	3 9	.4	5
.3	1	.3	1 5
.2		.2	9
.1	2	.1	
+.0	8	+.0	7
median = .61		median = .60	

Table 6.17 Number of Correlations for Individual Paths in 23 Generalized Least Squares Studies

First Component	Second Component											
	Dem	Apt	Cul	Soc	Pas	Per	Int	Goa	Sel	Per	Exp	Ach
Demographics	0	2										6
Aptitudes		0			<u>10</u>			3		<u>22</u>		<u>88</u>
Culture			0									
Socializers				0								2
Past Events					2			8		2		<u>28</u>
Perception of Socializers						0						
Interpretation of Past Events							0					
Goals/Self-Schemata								0				1
Self-Concept									0		2	4
Perception of Task Value										4		<u>40</u>
Expectancies											0	
Achievement												20

Note: Underlined numbers denote paths which were assigned predictor variables in the GLS regression.

Table 6.18 Regression Model Tests for the Generalized Least Squares Analysis

Description of Model	Regression Model Test, H_R	(df)	Model Specification Test, H_E	(df)	Change Due to Added Predictors	(df)
1. Sex Effect	55.3	(1)	6636.3	(242)		
2. Sample and Study Features	3316.4	(7)	3375.2	(236)	3261.1	(6)
3. Model 2 and five Paths	3809.9	(12)	2881.7	(231)	493.5	(5)
4. Model 3 and five Sex-by-Path Interactions	3836.9	(17)	2854.7	(226)	27.0	(5)
5. Model 2 and four Paths for Composite Components	3861.2	(11)	2830.3	(232)	544.8	(4)
6. Model 5 and four Sex-by-Composite-Path Interactions	3886.2	(15)	2805.4	(228)	25.0	(4)

Note: All tests are significant at the .05 level or beyond.

Table 6.19 Predictors in Regression with Individual Paths (Model 4)

Predictor	Regression Coefficient	Standard Error	z Test
Grand Mean	−0.017	0.0682	−0.24 ns
Sex	−0.030	0.0096	−3.19
Year	−0.001	0.0094	−0.74 ns
Grade	0.030	0.0029	10.54
Nationality	0.522	0.0225	23.22
Focus on Gender	−0.034	0.0108	−3.12
Voluntariness	−0.256	0.0140	−18.37
Sample Type	0.117	0.0152	7.72
Aptitude–Past Events Path	0.010	0.0143	0.71 ns
Aptitude–Task Value Path	−0.063	0.0267	−2.36
Aptitude–Achievement Path	−0.005	0.0128	−0.42 ns
Past Events–Achievement Path	0.060	0.0134	4.52
Task Value–Achievement Path	−0.226	0.0146	−15.51
Sex × Aptitude–Past Events Path	−0.014	0.0211	−0.66 ns
Sex × Aptitude–Task Value Path	−0.092	0.0416	−2.22
Sex × Aptitude–Achievement Path	0.027	0.0149	1.79 ns
Sex × Past Events–Achievement Path	0.027	0.0169	1.61 ns
Sex × Task Value–Achievement Path	0.043	0.0117	3.68

Table 6.20 Results and Predicted Correlations from Six Samples

Study	Sex (Value)	Year	Grade	Focus on Gender (Value)	Path	Correlations		
						Actual	Model 4	Model 6
Kaminski and Erickson	M (0)	79	12	Major (1)	Apt-Ach	.42	.25	.26
	F (1)	79	12	Major (1)	Apt-Ach	.30	.25	.25
Cohen	M (0)	79	8	Minor (0)	Task-Ach	.09	−.05	−.04
	F (1)	79	8	Minor (0)	Task-Ach	.19	−.04	−.03
Bridgham	M (0)	69	3	Minor (0)	Soc-Ach	.18	.03	.24
	F (1)	69	3	Minor (0)	Soc-Ach	.66	.00	.46

Note: Labels for the paths are: Ach = Achievement, Apt = Aptitude, Soc = Socializers' behaviors and attitudes, Task = Task value. All studies shown examined U.S. students (Nationality = 0) and did not use volunteer samples (Voluntariness = 0).

Table 6.21 Numbers of Correlations for Composite Paths in 23 Generalized Least Squares Studies

First Component	Second Component: Aptitudes	Social Factors	Affect	Achievement Behaviors
Aptitudes	0	0	25	88
Social Factors		0	0	2
Affect			4	45
Achievement Behaviors				20

Table 6.22 Predictors in Regression for Composite Components (Model 6)

Predictor	Regression Coefficient	Standard Error	z Test
Grand Mean	0.062	0.0685	0.91 ns
Sex	−0.025	0.0081	−3.06
Year	−0.001	0.0009	−0.55 ns
Grade	0.028	0.0030	9.32
Nationality	0.499	0.0230	21.74
Focus on Gender	−0.035	0.0106	−3.28
Voluntariness	−0.314	0.0121	−25.94
Sample Type	0.117	0.0151	7.78
Aptitude–Affect Path	−0.123	0.0250	−4.92
Aptitude–Achievement Path	−0.062	0.0101	−6.13
Affect–Achievement Path	−0.287	0.0131	−21.98
Social Factors–Achievement Path	0.128	0.1681	0.76 ns
Sex × Aptitude–Affect Path	−0.105	0.0404	−2.60
Sex × Aptitude–Achievement Path	0.013	0.0128	1.03 ns
Sex × Affect–Achievement Path	0.037	0.0105	3.50
Sex × Social Factors–Achievement Path	0.243	0.2020	1.20 ns

Table 6.A.1 Correlations from †Schock (1973)

	Pre-test		Post-test	
	NBT	ASLT	NBT	ASLT
Pre-test NBT	1.0	**.28**	**.86**	r_M
Pre-test ASLT	.19	1.0	r_M	**.52**
Post-test NBT	.69	r_F	1.0	**.22**
Post-test ASLT	r_F	.58	.27	1.0

Note: Males' correlations are above the diagonal (in boldface) and females' correlations are below. The values $r_M = 0.20$ and $r_F = 0.15$ were substituted for the missing values. The numbers of males and females were 177 and 206, respectively.

Table 6.B.1 Average Correlations Among All Components in Eccles' Model

First Component	Second Component											
	Dem	Apt	Cul	Soc	Pas	Per	Int	Goa	Sel	Per	Exp	Ach
Demographics		.40			.06					.32		.23
Aptitudes	.44				.29			.33		.39		.33
Culture					.14			.23	.15	.30		.23
Socializers										.28		.18
Past Events	.02	.23	.25					.10		.08		.46
Perceptions of Socializers										.49		
Interpretation of Past Events												
Goals/Self-Schemata		.17	.21		.07							.18
Self-concept			.18							.15	.52	.25
Perception of Task Value	.31	.28	.26	.34	.18	.45			.14			.16
Expectancies									.09			
Achievement	.25	.32	.25	.66	.47			.17	.23	.12		

Note: Values for males are above the diagonal; those for females are below the diagonal. Underlined values do *not* differ from zero at the .05 level of significance. Table 6.10 shows the numbers of correlations averaged for each path.

Figure 7.1 **Recommended Values of Five Fundamental Physical Constants Between 1952 and 1969 with Associated 68 Percent (one standard error) Confidence Intervals (values are expressed as deviations from 1969 values in parts per million)**

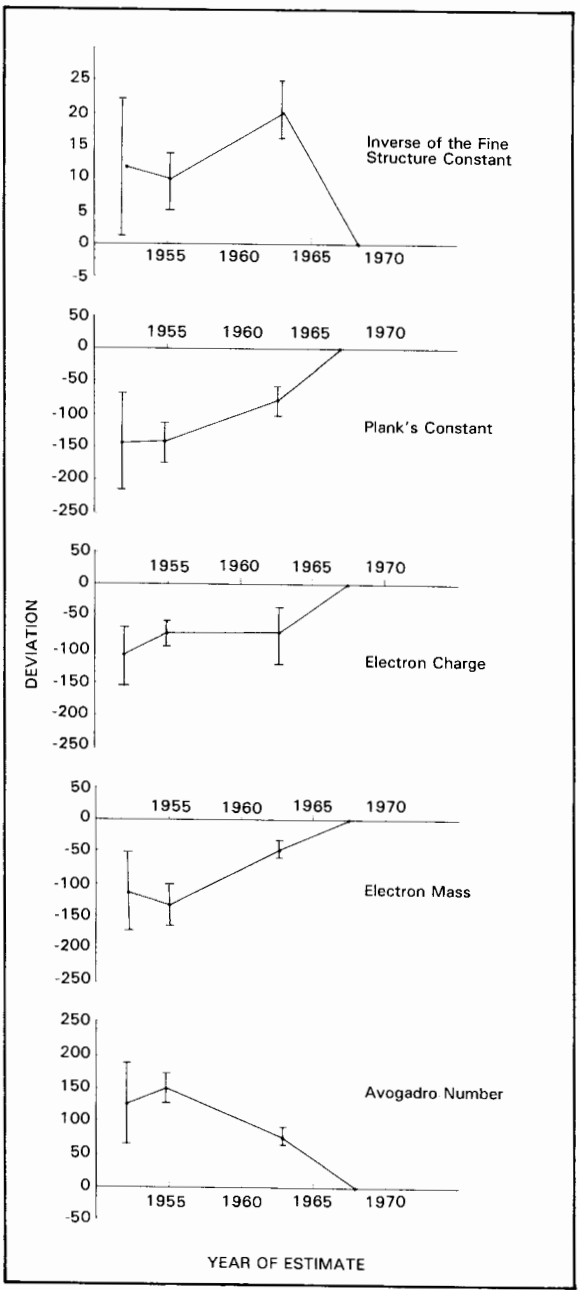


Table 7.1 Artificial Estimated Length of Stay (LOS) Reduction from Nine Studies

Study	LOS Reduction	Within-Study Variation
1	−0.25	1.25
2	1.50	1.25
3	2.40	1.25
4	4.00	1.25
5	−0.60	1.25
6	2.00	1.25
7	3.40	1.25
8	0.20	1.25
9	0.85	1.25
Mean	1.50	
Sample Variance	2.56	1.25

Note: Within-study variation is the square of the within-study standard error.