Contents

Acknowledgments		
1.	Introduction	1
	Situations to Which Meta-Analysis is Applicable	1
	The Key Concept of Effect Size	3
	The Strengths of Meta-Analysis	5
	The Weaknesses of Meta-Analysis	7
	Recent History and Contemporary Usage of Meta-Analysis	10
	Overview of Book	11
2.	Problem Specification and Study Retrieval	12
	Identifying the Form of the Research Findings to be	
	Meta-Analyzed	12
	Study Eligibility Criteria	16
	Methodological Quality Revisited	20
	Identifying, Locating, and Retrieving Research Reports	23
	Finding References	24
	Retrieving Research Reports	31
3.	Selecting, Computing, and Coding the Effect Size Statistic	34
	Effect Size Statistics and Their Variances	34
	A Note on Notation	37
	Types of Research Findings and Applicable Effect Size	
	Statistics	37
	One-Variable Relationships (Central Tendency Description)	38
	Two-Variable Relationships	41
	Association Between Variables	59
	Multivariate Relationships	67
	Summary of Effect Size Statistics	71
4.	Developing a Coding Scheme and Coding Study Reports	73
	Developing a Coding Protocol	73
	Units of Analysis and Hierarchical Levels of Coding	75
	Effect Size Coding	81
	Study Descriptors	83

	Coding Information About the Coding Process Itself	86
	Training of Coders	88
5.	Data Management	91
	Creating Meta-Analytic Data Files	91
	Coding Directly into the Computer	94
	Using the Computer to Maintain the Bibliography	95
	Structure of Meta-Analytic Data Files	96
	Creating a Single Flat File to Use for Analysis	97
	Merging Multiple Files to Use for Analysis	97
6.	Analysis Issues and Strategies	105
	The Stages of Analysis	107
	Effect Size Adjustments	107
	Analyzing the Effect Size Mean and Distribution	112
	Analysis of Heterogeneous Distributions of Effect Size	116
	Analysis of Statistically Dependent Effect Sizes	125
	Additional Analysis Issues	126
7.	Computational Techniques for Meta-Analysis Data	129
1	The Mean, Confidence Interval, and Homogeneity Test	129
	Analysis of Heterogeneous Distributions of Effect Size	133
	Weighted Regression Analysis	138
	Graphing Techniques	142
8.	Interpreting and Using Meta-Analysis Results	146
	Interpreting Effect Size Values	146
	Rules of Thumb for Effect Size Magnitude	147
	Translation of Effect Sizes to Other Metrics	148
	Clinical and Practical Significance	154
	Caveats in Interpreting Meta-Analysis Results	156
	Methodological Adequacy of the Research Base	157
	Confounding of Substantive and Methodological Features	158
	The Importance of Variance	161
	Research Gaps and Generalizability	163
	Sampling Bias	165
	Implications of Meta-Analysis for Practice and Policy	167
Ar	ppendix A. Computer-Based Bibliographic Services and	1/0
-	Examples of Relevant Databases	169

Appendix B. Procedures for Computing Effect Size Values	
from Eligible Study Reports	172
Standardized Mean Difference Effect Size	172
Direct Calculation of ES_{sm}	172
Algebraically Equivalent Formulas for ES _{sm}	173
Exact Probability Levels for a t-value or F-ratio	174
Calculation of Means and Standard Deviations from a	
Frequency Distribution	175
Approximations Based on Continuous Data—The Point-	
Biserial Coefficient	177
Estimating $\overline{X}_1 - \overline{X}_2$ and s_{pooled}	178
Dichotomized Data	187
The Correlation Coefficient Effect Size	189
Definitional Formula for ES _r	190
Joint Frequency Distributions for Discrete or Grouped	
Continuous Data	191
A Dichotomous and a Continuous Measure	192
Two Dichotomous Measures	194
Approximations and Probability Values	195
Odds-Ratio Effect Size	195
Calculation Based on Cell Frequencies	196
Calculation Based on Row Proportions	196
Calculation Based on Cell Proportions	196
Imputation of 2 × 2 Contingency Table From Correlation and	
Marginal Proportions	197
Imputation of 2 × 2 Contingency Table Based on Chi-Square	
and Marginal Proportions	197
Imputation of Odds-Ratio from Continuous Data	198
Appendix C. MS Excel Effect Size Computation Program	207
Appendix D. SPSS Macros for Meta-Analysis	208
Appendix E. Coding Manual and Coding Forms for the	
Example Meta-Analysis of Challenge Programs for	
Juvenile Delinquents	221
Study-Level Coding Manual	221
Sample Descriptors	221
Research Design Descriptors	222
Nature of the Treatment Descriptors	223
Nature of the Treatment Descriptors	

Effect Size Level Coding Manual	225
Dependent Measure Descriptors	225
Effect Size Data	226
Study-Level Coding Form	228
Sample Descriptors	228
Research Design Descriptors	229
Nature of the Treatment Descriptors	230
Effect Size Level Coding Form	231
Dependent Measure Descriptors	231
Effect Size Data	231
Bibliography of Recommended Readings	23
References	234
Index	24
About the Authors	24