

## 1: Editions of Introduction to Meta-Analysis by Michael Borenstein

*Introduction to Meta-Analysis is an excellent resource for novices and experts alike. The book provides a clear and comprehensive presentation of all basic and most advanced approaches to meta-analysis.*

Meta-Analysis Macros for SAS, SPSS, and Stata Opposing theories and disparate findings populate the field of psychology; scientists must interpret the results of any single study in the context of its limitations. Meta-analysis is a robust tool that can help researchers overcome these challenges by assimilating data across studies identified through a literature review. In other words, rather than surveying participants, a meta-analysis surveys studies. Despite the utility of this statistical technique, it can intimidate a beginner who has no formal training in the approach. However, any motivated researcher with a statistics background can complete a meta-analysis. This article provides an overview of the main steps of basic meta-analysis. Meta-analysis has many strengths. First, meta-analysis provides an organized approach for handling a large number of studies. Third, meta-analysis allows researchers to examine an effect within a collection of studies in a more sophisticated manner than a qualitative summary. However, meta-analysis also involves numerous challenges. First, it consumes a great deal of time and requires a great deal of effort. Second, meta-analysis has been criticized for aggregating studies that are too different i. Third, some scientists argue that the objective coding procedure used in meta-analysis ignores the context of each individual study, such as its methodological rigor. Fourth, when a researcher includes low-quality studies in a meta-analysis, the limitations of these studies impact the mean effect size i. As long as researchers are aware of these issues and consider the potential influence of these limitations on their findings, meta-analysis can serve as a powerful and informative approach to help us draw conclusions from a large literature base. Identifying the Right Question Similar to any research study, a meta-analysis begins with a research question. Meta-analysis can be used in any situation where the goal is to summarize quantitative findings from empirical studies. It can be used to examine different types of effects, including prevalence rates e. To select the effect metric, researchers should consider the statistical form of the results in the literature. Any given meta-analysis can focus on only one metric at a time. While selecting a research question, researchers should think about the size of the literature base and select a manageable topic. At the same time, they should make sure the number of existing studies is large enough to warrant a meta-analysis. Determining Eligibility Criteria After choosing a relevant question, researchers should then identify and explicitly state the types of studies to be included. These criteria ensure that the studies overlap enough in topic and methodology that it makes sense to combine them. The inclusion and exclusion criteria depend on the specific research question and characteristics of the literature. First, researchers can specify relevant participant characteristics, such as age or gender. Second, researchers can identify the key variables that must be included in the study. Third, the language, date range, and types e. Fourth, pertinent study characteristics, such as experimental design, can be defined. Eligibility criteria should be clearly documented and relevant to the research question. Specifying the eligibility criteria prior to conducting the literature search allows the researcher to perform a more targeted search and reduces the number of irrelevant studies. Eligibility criteria can also be revised later, because the researcher may become aware of unforeseen issues during the literature search stage. Conducting a Literature Search and Review The next step is to identify, retrieve, and review published and unpublished studies. The goal is to be exhaustive; however, being too broad can result in an overwhelming number of studies to review. Online databases, such as PsycINFO and PubMed, compile millions of searchable records, including peer-reviewed journals, books, and dissertations. In addition, through these electronic databases, researchers can access the full text of many of the records. It is important that researchers carefully choose search terms and databases, because these decisions impact the breadth of the review. Additional ways to identify studies include searching conference proceedings, examining reference lists of relevant studies, and directly contacting researchers. After the literature search is completed, researchers must evaluate each study for inclusion using the eligibility criteria. At least a subset of the studies should be reviewed by two individuals i. It is vital that researchers keep meticulous records of this process; for publication, a flow diagram is typically required to depict the search

and results. Researchers should allow adequate time, because this step can be quite time consuming.

**Calculating Effect Size** Next, researchers calculate an effect size for each eligible study. The effect size is the key component of a meta-analysis because it encodes the results in a numeric value that can then be aggregated. The effect size metric is based on the statistical form of the results in the literature and the research question. Because studies that include more participants provide more accurate estimates of an effect than those that include fewer participants, it is important to also calculate the precision of the effect size  $e$ .

Meta-analysis software guides researchers through the calculation process by requesting the necessary information for the specified effect size metric. I have identified some potentially useful resources and programs below. Although meta-analysis software makes effect size calculations simple, it is good practice for researchers to understand what computations are being used.

**Analysis** The effect size and precision of each individual study are aggregated into a summary statistic, which can be done with meta-analysis software. Researchers should confirm that the effect sizes are independent of each other  $i$ .

Additionally, researchers must select either a fixed effects model  $i$ . The random effects model is typically preferred when the studies have been conducted using different methodologies. Depending on the software, additional specifications or adjustments may be possible. During analysis, the effect sizes of the included studies are weighted by their precision  $e$ . This statistic is typically accompanied by an estimate of its precision  $e$ .

Forest plots are a common way of displaying meta-analysis results. Depending on the situation, follow-up analyses may be advised. Researchers can quantify heterogeneity  $e$ .

Moderator variables, such as the quality of the studies or age of participants, may be included to examine sources of heterogeneity. Because published studies may be biased towards significant effects, it is important to evaluate the impact of publication bias  $e$ .

Sensitivity analysis can indicate how the results of the meta-analysis would change if one study were excluded from the analysis. If properly conducted and clearly documented, meta-analyses often make significant contributions to a specific field of study and therefore stand a good chance of being published in a top-tier journal. The biggest obstacle for most researchers who attempt meta-analysis for the first time is the amount of work and organization required for proper execution, rather than their level of statistical knowledge.

**Recommended Resources**

Borenstein, M. *The handbook of research synthesis and meta-analysis* 2nd ed. Publication bias in meta-analysis: Prevention, assessment, and adjustments.

## 2: Introduction to Meta-Analysis by Michael Borenstein

*Introduction to Meta-Analysis is an excellent resource for novices and experts alike. The book provides a clear and comprehensive presentation of all basic and most advanced approaches to meta-analysis. This book will be referenced for decades.*

Meta-analysis has become a critically important tool in fields as diverse as medicine, pharmacology, epidemiology, education, psychology, business, and ecology. Outlines the role of meta-analysis in the research process. Shows how to compute effects sizes and treatment effects. Explains the fixed-effect and random-effects models for synthesizing data. Demonstrates how to assess and interpret variation in effect size across studies. Clarifies concepts using text and figures, followed by formulas and examples. Explains how to avoid common mistakes in meta-analysis. Discusses controversies in meta-analysis. Features a web site with additional material and exercises. Borenstein, Hedges, Higgins, and Rothstein provide a refreshing departure from cookbook approaches with their clear explanations of the what and why of meta-analysis. The book is ideal as a course textbook or for self-study. My students, who used pre-publication versions of some of the chapters, raved about the clarity of the explanations and examples. The approach taken by Introduction to Meta-analysis is intended to be primarily conceptual, and it is amazingly successful at achieving that goal. The reader can comfortably skip the formulas and still understand their application and underlying motivation. For the more statistically sophisticated reader, the relevant formulas and worked examples provide a superb practical guide to performing a meta-analysis. The book provides an eclectic mix of examples from education, social science, biomedical studies, and even ecology. For anyone considering leading a course in meta-analysis, or pursuing self-directed study, Introduction to Meta-analysis would be a clear first choice. Introduction to Meta-Analysis is an excellent resource for novices and experts alike. The book provides a clear and comprehensive presentation of all basic and most advanced approaches to meta-analysis. This book will be referenced for decades. AB - This book provides a clear and thorough introduction to meta-analysis, the process of synthesizing data from a series of separate studies.

## 3: Introduction to Meta-Analysis – Northwestern Scholars

*"Introduction to Meta-Analysis is an excellent resource for novices and experts alike. The book provides a clear and comprehensive presentation of all basic and most advanced approaches to meta-analysis.*

## 4: Module 6: Analysing the data | Cochrane Training

*This book provides a clear and thorough introduction to meta-analysis, the process of synthesizing data from a series of separate studies. Meta-analysis has become a critically important tool in fields as diverse as medicine, pharmacology, epidemiology, education, psychology, business, and ecology.*

## 5: Introduction to Meta-Analysis: A Guide for the Novice – Association for Psychological Science

*Introduction to Meta-Analysis by Michael Borenstein, Larry V. Hedges, Julian P. T Higgins, Hannah R. Rothstein  
Summary of Chapter 1. How a Meta-Analysis Works.*

*Chemistry the physical setting The most valuable business legal forms youll ever need Samsung a5 user manual Death note all-in-one edition Dosage and Solution Calculations The elements of nuclear reactor theory glasstone St. Agnes and its band Finding a language: deconstruction, semiotics, and social change Science education in japan Authorization: reading the body of the slave Most true and more admirable newes Journal of a sawmill owner West, A. H. G. Wells. TRANSMUTATION, A Novel about Eternal Love Mycoplasmosis in Animals Mysticism, political philosophy, and play Csat sample question paper Music and radio in the 21st century Special sermons on the family Sowing and reaping, flocks and herds V. 3. Beetlemania. The internet threatens privacy Jeffrey Rothfeder Flip book to Modificare gratis italiano A dictionary of Maori placenames Wisdom of many, the vision of one The Sacred Art of Bowing Training in Christianity and the Edifying discourse which accompanied it Teetotalers and saloon smashers Edible wild plants and herbs Sylvia Ostry, Asymmetry in the Uruguay round and in the Doha round A wizard in chaos The grant of endowment Essentially self-adjoint, and self-adjoint, operators Application by Albania for admission to the League of Nations The Chinese Academy of Social Sciences (CASS): Shaping the Reforms, Academia And China (1977-2003 (China Ayia Triadha sarcophagus Permanent residence The Cambridge Companion to American Judaism (Cambridge Companions to Religion) Modern european history notes*