

Union Is Strength: A Consumer's View of Meta-analysis

David G. Myers
Hope College

Meta-analyses are a textbook author's delight. They can alert authors to the existence of a literature, quantitatively synthesize results, and mitigate overemphasis on vivid but misleading studies. For these benefits text authors pay a price: The need to simplify impedes scrutiny of individual studies and draws attention away from moderating variables and toward the statistical bottom line—the mean effect size.

And now a word from the cheering section. I admit it. I am not so much a critic or connoisseur of meta-analysis as an enthusiastic consumer. Disregarding the proverbial judgment that wise people make proverbs and fools repeat them, let us consider the benefits and costs of meta-analyses.

1. *Where there's a meta-analysis, there's fire.* My textbook definition of *meta-analysis* is simply "a procedure for statistically combining the results of many different research studies. . . . It's as if these studies were merged into one huge study" with hundreds or thousands of participants at different test sites (Myers, in press). The existence of a meta-analysis therefore alerts us to a body of research. Someone has discerned a question worth exploring, a literature worth digesting, often a phenomenon worth revealing.

Although nonstatistical reviews serve this same function, the keyword *meta-analysis* gives me access to reviews I might otherwise miss. For example, as part of my preparation for writing the second edition of *Psychology*, I did a computer search of *Psychological Abstracts*, obtaining every abstract published during the preceding 3 years containing the word root *meta-anal*. Such a search reveals the rising popularity of the technique. As Figure 1 indicates, the number appearing annually has risen almost thirtyfold since 1980. Most meta-analyses ever published have been published in the last half decade.

2. *Many hands make light work.* With but 600 pages in which to cover all of a discipline, our texts offer mere introductions to various subtopics. Given the myriad of

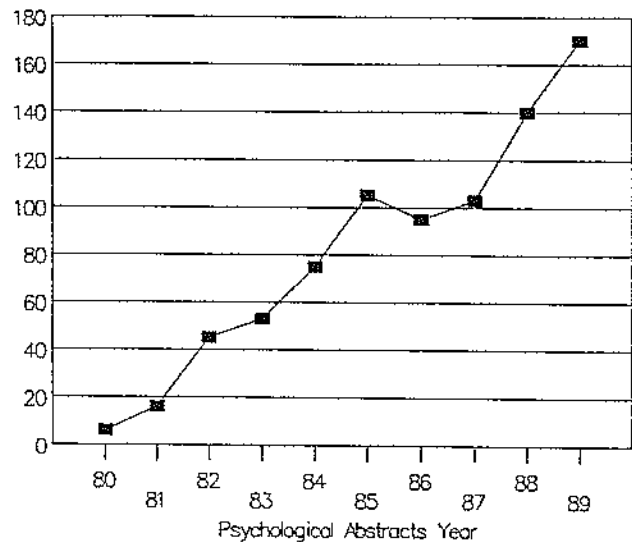


Figure 1 Number of citations appearing annually in *Psychological Abstracts* containing the word root *meta-anal* (as in *meta-analytic*, *meta-analysis*, and *meta-analyses*), 1980-1989.

topics and subtopics to cover, there are insufficient hours in a lifetime for any author to do a *Psychological Bulletin*-quality review of each.

Knowing that four eyes see better than two, I am consequently eager to let specialists' eyes do the hard work of reviewing. Although traditional narrative reviews are helpful, I find quantitative meta-analytic reviews even more helpful—because their conclusions are less likely to exceed my information-processing capacity and because I welcome the seeming objectivity. Because, indeed, truth often lies at the bottom of a well, I say bless

Author's Note: Address correspondence to David G. Myers, Hope College, Holland, MI 49423.

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those who do the dirty work of digging it out and handing it, washed, to us on the outside.

3. *Let the buyer beware* (of the atypical result). Meta-analyses protect us from the common tendency to latch onto and overemphasize a dramatic but unrepresentative study. Having read several magazine and text descriptions of Philip Goldberg's (1968) finding that work attributed to a male author ("John T. McKay") was evaluated more highly than work attributed to a female author ("Joan T. McKay"), I decided to replicate the phenomenon as a class demonstration. After observing no such prejudice, Janet Swim and I searched the published literature and wrote to investigators, seeking replications of Goldberg's study. When Swim moved on to graduate study at Minnesota, she and her colleagues (Swim, Borgida, Maruyama, & Myers, 1989) undertook a quantitative summary of 123 such studies, involving more than 20,000 subjects. The statistical bottom line was that the average difference between ratings of work attributed to men and women was negligible. The acclaimed phenomenon did not reliably exist. One cannot get blood from a stone.

In other cases, the union of disparate results strengthens our confidence in a phenomenon. So it happened when Alice Eagly, Wendy Wood, Judith Hall, and others quantitatively synthesized the available research on gender differences in social behavior. Contrary to textbook conclusions based on Maccoby and Jacklin's (1974) narrative review, these authors "established overall sex-difference trends in a variety of social behaviors" (Eagly & Wood, 1988). Moreover, the new meta-analyses offered magnitude estimations of effect sizes, enabling text authors to describe the strength of findings with appropriate adjectives.

4. *Give me mean effect sizes or give me death.* I know that the human universe is pretzel shaped and that breadstick-shaped conclusions are therefore oversimplified. Life is complicated, and our first calling as teachers is not to be simplifiers but to be truth bearers. But the reality I must contend with is that most readers are not interested in, and certainly will not remember, third-order interaction effects. Within the bounds of integrity, give me, so I can give them, the statistical bottom line.

Let me soften that. If necessary, readers can appreciate single moderator variables. To return to the gender literature, students are interested to know that gender differences in conformity have varied depending on the era of the study or that gender differences in altruism depend on whether helping requires physical intervention. Such findings are especially easy to remember when they confirm and illustrate a theory, as with Alice Eagly's meta-analytic checks on her social role theory of why gender differences exist. Still, the more simply a meaningful finding can be stated, the better. Brevity is the soul of wit, and of good writing.

5. *A little knowledge is a dangerous thing.* Because of its appearance of quantitative objectivity, the statistical bottom line is, admittedly, vulnerable to the garbage-in, garbage-out problem. Bad seed makes a bad crop, and bad data a deceptive crop. Someone has to select studies for inclusion, judging the pertinence and soundness of each. Meta-analysis is therefore no substitute for an intimate knowledge of the methods of each study. When our faith in the reviewer is misplaced, our trust in the conclusions may be misguided. If the blind lead the blind, both will fall into a ditch.

Nevertheless, of two evils choose the least. Lacking a careful synthesis of the available research, the greater evil for me is more likely to be the selective reporting and overgeneralizing of dramatic findings. The spectacular, newsworthy finding can have an almost irresistible lure, for which a comprehensive quantitative synthesis of all available research is a healthy antidote. Facts are stubborn things that with meta-analysis have a way of emerging from a morass of data.

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