

Preconference workshop 6: Dealing with heterogeneity in meta-analysis

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Meta-analysis is widely considered to be the "gold standard" for synthesizing the published literature on a topic. Excellent tutorials have increased its popularity in developmental science. However, differences in effect sizes can arise when similar research questions are examined in different labs, sampling from different populations, using different methods and instrumentation. Such between-studies heterogeneity presents a challenge to data aggregation using classic meta-analytic methods, but also offers an opportunity to learn which factors influence the effect size found.

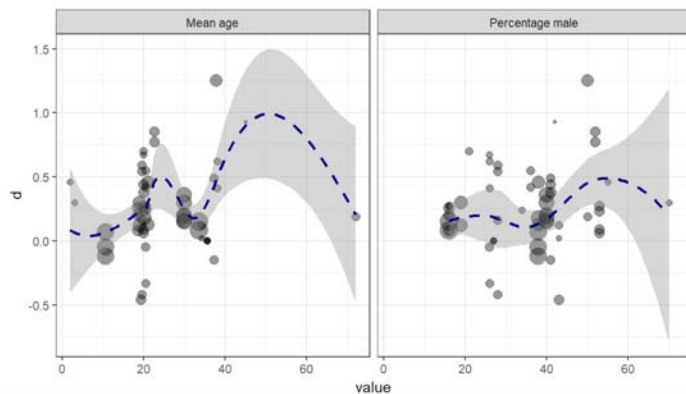


Figure 1. Fixed-effects weighted scatterplots of continuous moderators and effect size, with smooth trend line.

This workshop focuses on the practical details of conducting a cutting-edge meta-analysis from start to finish. Extra attention is devoted to two specific problems common in developmental meta-analyses: How to account for "dependent data", such as multiple outcomes or time-points per study, and how to account for between-studies heterogeneity. You will become familiar with the most commonly used statistical models: The fixed-effect and random-effects models, meta-regression, and multi-level meta-analysis. You will learn exactly the amount of programming required to conduct your own meta-analysis using the free, open-source software R. Moreover, you will practice making beautiful, publication-quality graphics. Finally, you will learn to explore differences between studies using the newly developed MetaForest technique (Van Lissa, 2018).

The workshop focuses on a thorough understanding of relevant concepts, rather than formulas. Participants with a basic understanding of (multivariate) regression should be able to follow everything. Prior knowledge of R or meta-analysis is NOT required. Before the workshop, participants should read the provided literature, and follow provided instructions to install R.

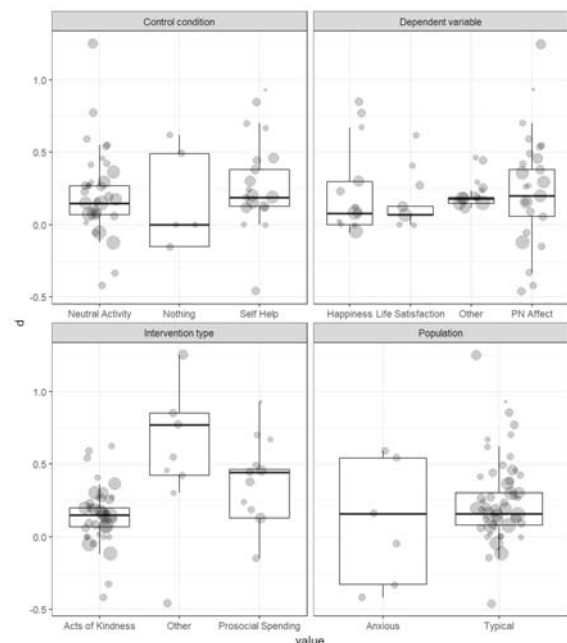


Figure 2. Fixed-effects weighted scatterplots of categorical moderators and effect size, with boxplots.