Conducting Mini Meta-analyses

What are Meta-analyses?

- basis of evidence-based policy and decision making
- summarise the results - effect sizes - of several independent, quantitative studies to test a directional hypothesis
- conclude a pooled, weighted correlation/difference/moderation etc. (advantage to systematic reviews)

Do you need many studies for a meta-analysis?

No - Perspective change: synthesise specific subset of studies

Two effect sizes are sufficient to conduct a meta-analysis = ‘mini metas’

Can you only do meta-analyses of other people's work?

No - Perspective change: Evaluate other's work vs. synthesise your own research program

Why conduct ‘minis’?

Imagine:

Study 1
p = .04, N = 55

Study 2
p = .02, N = 400

Study 3
p = .08, N = 120

What is the conclusion?

Why conduct ‘minis’?

- Clarify conclusions in light of inconsistent studies
- Strengthen the conclusions you can draw by focusing and synthesising effect sizes —> more convincing
- Increase precision of estimates (smaller confidence intervals)
- Increase the power of your analysis, especially for small-sample studies, and detect small effects
- Avoid the file drawer and present all (conceptually related) studies

How to conduct ‘minis’?

1. Run at least two studies with same or conceptually similar research question and same or conceptually similar measures
2. Note your sample size
3. Identify the effect sizes, e.g., d, g (based on mean scores), r, F, t
4. Convert different ES into the same metric (use online converters; https://www.psychometrica.de/effect_size.html)

How to conduct ‘minis’?

5. Fixed effects approach: ES are weighted by sample size (larger studies get higher weight)

    A. Convert ES to r, compute Fisher’s z transformation

    B. Follow formula on p. 542

6. Fully random effects approach: ES are not weighted

    C. Calculate mean ES

    D. Use ES as data points for one-sample t-test to examine if different from 0

(See paper for contrast analysis to assess moderators)

How to conduct ‘minis’?

- What if you have several outcomes? Similar = create one average ES; Different = several ‘minis’ and note dependency
- More information and resources: osf.io/6tfh5/