

GOOD RESEARCH OR BAD RESEARCH?

HOW TO READ META-ANALYSES WITH CONFIDENCE

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TYPES OF EVIDENCE SYNTHESIS

	NARRATIVE REVIEW	SCOPING REVIEW	SYSTEMATIC REVIEW	META-ANALYSIS
PURPOSE	Broad overview of a topic	Map the range of evidence	Answer a specific research question	Statistically combine results
FOCUS	What is known	What exists and gaps	$X \rightarrow Y$ Effect of X on Y	Size of effect of X on Y
OUTPUT	Descriptive summary	Map of concepts and gaps	Summary of evidence & quality	Pooled effect size with CI
BEST USED TO	Gain general understanding	Explore area or clarify scope	Inform practice, policy, research	When studies are sufficiently similar

BROAD OVERVIEW
MAP THE EVIDENCE
ANSWER THE QUESTION
QUANTIFY THE EFFECT

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But being
 at the **top**
 does not
 mean
 automatically
 trustworthy


Meta-analysis

Single studies

Expert opinion



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GARBAGE IN, GARBAGE OUT




A meta-analysis is only as good as the studies it includes.

WHAT GOES IN
(The Studies)

-  Populations
-  Interventions
-  Outcomes Measured
-  Study Designs & Data




WHAT COMES OUT
(The Meta-Analysis Conclusions)





-  Stronger conclusions when high-quality studies go in.
-  Weak or misleading conclusions when low-quality studies go in.
-  Interpret with care. Quality always matters.


FOCUS BEFORE RESULTS

- Define a clear, specific question.
- Ensure the population, outcomes, and context are well defined.
- Narrow questions lead to more meaningful results.

 **MAIN TAKEAWAY:**
Vague questions lead to vague conclusions.


STUDY QUALITY MATTERS

-  Small samples
-  Poor measurement
-  Biased designs
-  Lack of control groups

 **MAIN TAKEAWAY:**
More high-quality studies = more reliable evidence.

HETEROGENEITY MATTERS

- Studies may differ in populations, settings, interventions, or outcomes.
- High heterogeneity means results may not apply to all situations.

 **MAIN TAKEAWAY:**
High heterogeneity means interpret conclusions carefully.

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<p>Red flags — interpret with caution</p> <ul style="list-style-type: none"> Very broad or vague inclusion criteria Mixing very different populations or interventions Lack of transparency in methods — coding rules unclear or missing Conclusions that go beyond what the data actually support No discussion of limitations or bias No quality assessment of included studies 	<p>Green flags — signs of trustworthiness</p> <ul style="list-style-type: none"> Transparent, predefined methods — ideally preregistered Clear inclusion and exclusion criteria Assessment of study quality or risk of bias Exploration of heterogeneity — why studies differ Balanced interpretation that acknowledges limitations Conclusions that match the strength of the evidence
<p>RED FLAG TAKEAWAY Be cautious when conclusions sound stronger than the data — and when you can't follow what the authors actually did.</p>	<p>GREEN FLAG TAKEAWAY Transparency and clear methods matter more than impressive-sounding results.</p>

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FROM EVIDENCE TO PRACTICE

— Make the Evidence Meaningful. —

INPUTS: WHAT WE CONSIDER

- META-ANALYTIC EVIDENCE**
Findings from the best available research synthesis.
- PROFESSIONAL JUDGEMENT**
Your expertise, experience, and clinical reasoning.
- CONTEXT**
Client characteristics, setting, resources, culture, and environment.
- FEASIBILITY**
Practicality, resources, time, and system constraints.

OUTPUT: INFORMED, NOT RULED

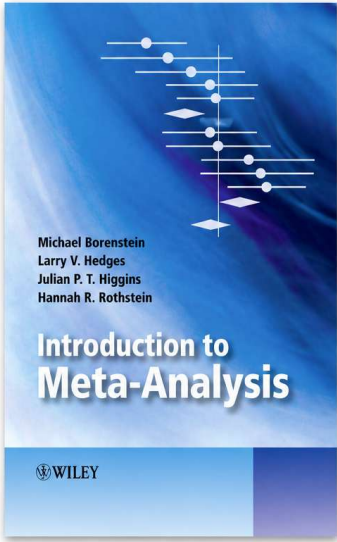
A thoughtful clinical decision that fits your client, your setting, and the situation.

IS IT MEANINGFUL?
Two different questions:

- STATISTICALLY SIGNIFICANT**
Unlikely due to chance. Can occur with very small differences in large studies.
- CLINICALLY IMPORTANT**
Meaningful in real life. Makes a noticeable difference for clients.


KEY TAKEAWAY: Ask yourself, “Would this actually matter in practice?”
Evidence provides direction—judgement provides application.

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A Few Helpful Guides


Essential resources to support your meta-analysis journey

 **Borenstein et al. (2011) – Introduction to Meta-Analysis**


<https://doi.org/10.1371/journal.pcbi.1011461>


 **Cochrane Handbook for Systematic Reviews of Interventions**
Current Chapter 10


<https://www.cochrane.org/authors/handbooks-and-manuals/handbook/current/chapter-10>


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Thank you.


Questions?


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