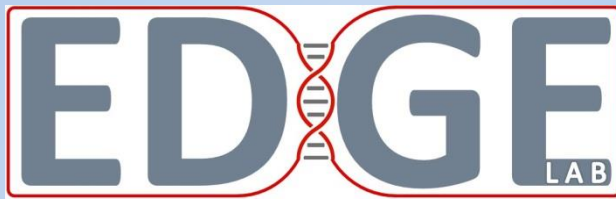# Systematic review and meta-analysis

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Systematic Review -Aim

- To present a balanced and impartial summary of the existing research, enabling decisions on effectiveness / relative risk to be based on all relevant studies of adequate quality.

Meta-analysis / systematic review are the gold standard of psychological research

Systematic Review –Why?

- Studies give unclear, confusing and contradictory results.

- Traditions reviews are usually conducted by "experts in the field" and are often biased (i.e. based on prior beliefs about the treatment or phenomena under study).

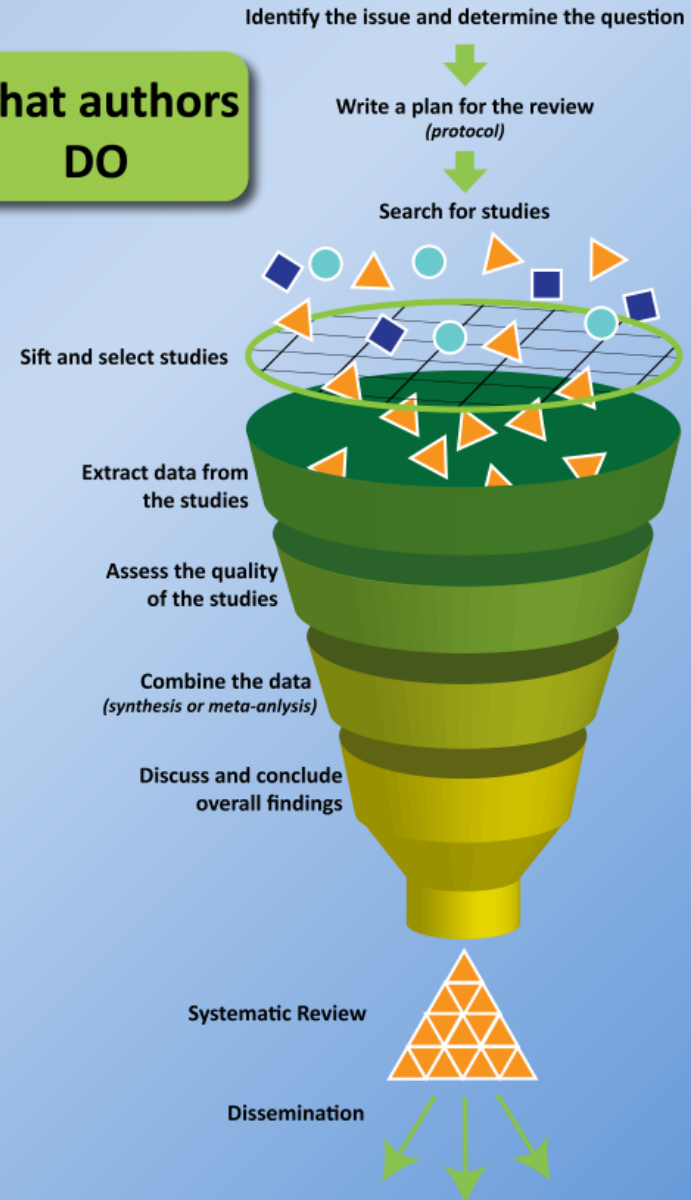- Therefore, we need this unbiased way of collating research findings

Systematic Review –When?

- We need them when there is a substantive question (several primary studies – perhaps with disparate findings) and substantial uncertainty.

Stages of a systematic review

1. **Defining the questions**

2. **Developing search terms**

3. **Searching the literature (published and unpublished literature)**

What authors DO

Identify the issue and determine the question

Write a plan for the review *(protocol)*

Search for studies

Sift and select studies

Extract data from the studies

Assess the quality of the studies

Combine the data *(synthesis or meta-anlysis)*

Discuss and conclude overall findings

Systematic Review

Dissemination

1. Defining the questions

Nanni, Uher & Danese (2012)

*"To test whether individuals with a history of childhood maltreatment are at elevated risk of an unfavorable depression course and treatment outcome, we performed meta-analyses **of epidemiological studies** investigating
the association between childhood maltreatment and depression recurrence or persistence and of clinical trials investigating the association between childhood maltreatment and outcome of psychological, pharmacological, or combined treatment. We also explored the effects of various possible sources of artifact or bias on the results of the meta-analyses".*

2. Developing search terms

- Sensitive and Specific

2. Searching the literature (published and unpublished literature)

Nanni, Uher & Danese (2012)

- Child* maltreatment, Child* abuse, Child* neglect, early experiences)

AND (OR)

- Depress*, mood disorder, MDD, recurrence, persistence, chronic, duration, length, improvement, response, remission, treatment, psychotherapy, antidepressants, SSRI)

- Papers were written in English and published by 2010.

2. Searching the literature (published and unpublished literature)

Potential biases

- Publication bias

- Selection bias

- Language bias

We want to minimise these as much as possible – How?

- Contact authors in the field (to ask for non-published research

- Conference proceedings

- Scan reference lists

- www.opengrey.eu/

Assessing the Studies

- Exclusion / inclusion criteria

- Title screen

- Abstract screen

- Full text screen

- Quality Analysis

→ These steps need to be verified!

Synthesising the Results - Meta-analysis

- Meta-Analysis?

-The use of statistical techniques to synthesise (combine) the results!

Synthesising the Results

- A technique known as meta-analysis is used if homogenous quantitative evidence is assessed.

- Narrative synthesis is used if quantitative data are not homogenous.

Refernces

Nanni, V., Uher, R., & Danese, A. (2012). Childhood maltreatment predicts unfavorable course of illness and treatment outcome in depression: a meta-analysis. *American Journal of Psychiatry*, *169*(2), 141-151

Field, A. P., & Gillett, R. (2010). How to do a meta-analysis. *The British Journal of Mathematical and Statistical Psychology*, *63*(Pt 3), 665–94. doi:10.1348/000711010X502733

Hemingway, P. (2009). What is a systematic review? (April), 1–8.

Crombie, I. K. (2009). What is meta-analysis?, (April), 1–8.