# Key sections of a systematic review and how it's structure differs from a traditional review.

'Systematic review' is written in the title of the article

**Abstract**

**Introduction** is quite short and just orientates the reader about what the review is about.

**Method section**

- Indicates the types of databases that were used in the literature search
- Method of search → If the search was electronic, hand searched or both. This tells the reader where the sources came from
- Search terms → what search terms were used including key words. Key words that describe participants of interest and key words that describe the intervention of interest.
- Study selection → authors state *inclusion* and *exclusion* criteria for studies (eg. Number of participants in study, age, type of study design).
- Data extraction → what data was taken from each study, how many people extracted information from these studies. Other information (such as study design, intervention, population, comparison group, outcome data [DV]) that is extracted is also stated in this section.
- Study quality assessment → tells reader how the internal and external validity of studies included in the review were assessed.

**Results**

- Flow chart → PRISMA flowchart describes how studies were found, how many were found, which were excluded, which ones were searched and how many the author was left with.
- Table → shows the reader different features of the studies reviewed.

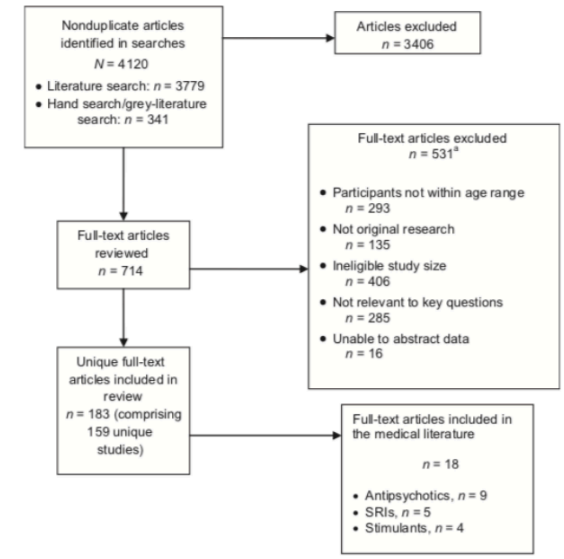



**TABLE 3** Overview of Studies of Medical Interventions

| Characteristic | RCTs (*N* = 10), *n* | Prospective Case Series (*N* = 3), *n* | Retrospective Case Series (*N* = 5), *n* | Total Literature (*N* = 18), *n* |
|---|---|---|---|---|
| Intervention | | | | |
| Antipsychotic medications | 7 | 2 | 0 | 9 |
| SRIs | 2 | 1 | 2 | 5 |
| Stimulants and other medications for hyperactivity | 1 | 0 | 3 | 4 |
| Diagnostic approach | | | | |
| Clinical DSM-IV diagnosis + ADI-R and/or ADOS | 7 | 1 | 0 | 8 |
| Other approaches[a] | 3 | 2 | 5 | 10 |
| Treatment duration | | | | |
| >1 to ≤3 mo | 7 | 1 | 0 | 8 |
| >3 to ≤6 mo | 3 | 0 | 0 | 3 |
| >6 to ≤12 mo | 0 | 2 | 2 | 4 |
| >12 mo | 0 | 0 | 3 | 3 |
| Study population | | | | |
| United States | 6 | 1 | 5 | 12 |
| Europe | 0 | 2 | 0 | 2 |
| Other | 4 | 0 | 0 | 4 |
| Total No. of participants | 720 | 123 | 558 | 1401 |

- Summary of the results of each study

## What is meta-analysis and what do we do in a meta-analysis?

Quantitative review or synthesis of the literature

- Summarise the results of individual studies with an effect size (how big the difference is between two groups on a measure)
- Compute the average effect size for all studies

## How to interpret a forest plot. Specifically, how to interpret study level and overall effect sizes, confidence intervals and p-values

### Forest Plots

Purpose of a forest plot is to summarise the results of individual studies and the meta-analysis

List of each study included in the meta-analysis

Standardised mean value = effect size

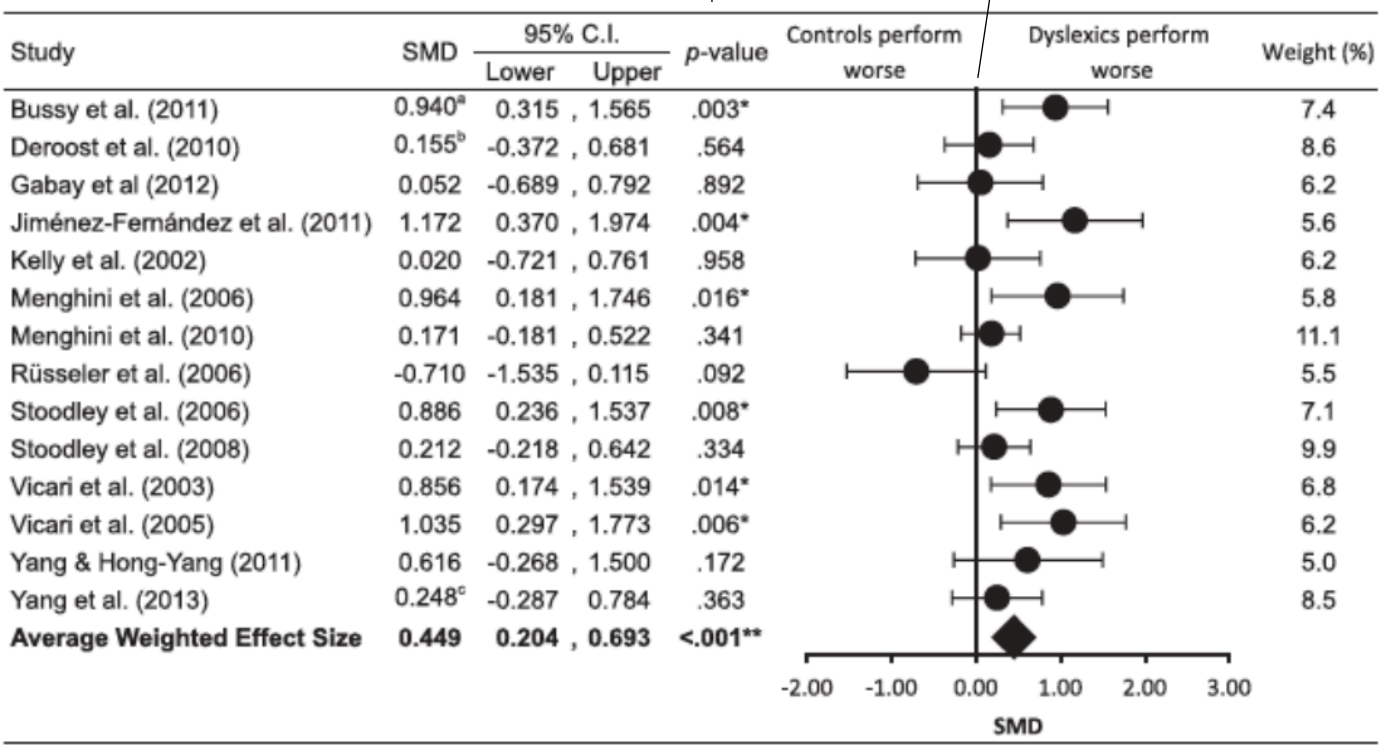
Confidence interval for effect sizes

Indicates a significant effect between groups

Represents all the previous figures

Line of no difference

Contribution of each study to the overall average

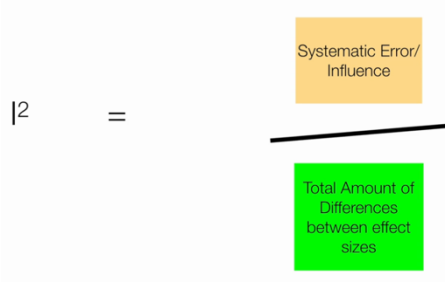


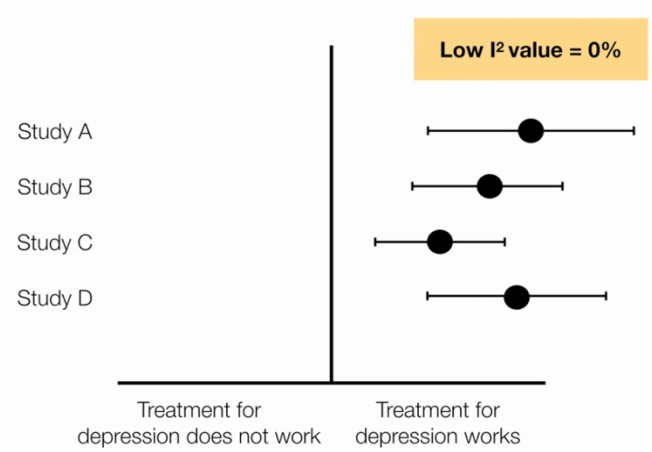
| Study | SMD | 95% C.I. Lower | 95% C.I. Upper | *p*-value | Weight (%) |
|---|---|---|---|---|---|
| Bussy et al. (2011) | 0.940[a] | 0.315 | 1.565 | .003* | 7.4 |
| Deroost et al. (2010) | 0.155[b] | -0.372 | 0.681 | .564 | 8.6 |
| Gabay et al (2012) | 0.052 | -0.689 | 0.792 | .892 | 6.2 |
| Jiménez-Fernández et al. (2011) | 1.172 | 0.370 | 1.974 | .004* | 5.6 |
| Kelly et al. (2002) | 0.020 | -0.721 | 0.761 | .958 | 6.2 |
| Menghini et al. (2006) | 0.964 | 0.181 | 1.746 | .016* | 5.8 |
| Menghini et al. (2010) | 0.171 | -0.181 | 0.522 | .341 | 11.1 |
| Rüsseler et al. (2006) | -0.710 | -1.535 | 0.115 | .092 | 5.5 |
| Stoodley et al. (2006) | 0.886 | 0.236 | 1.537 | .008* | 7.1 |
| Stoodley et al. (2008) | 0.212 | -0.218 | 0.642 | .334 | 9.9 |
| Vicari et al. (2003) | 0.856 | 0.174 | 1.539 | .014* | 6.8 |
| Vicari et al. (2005) | 1.035 | 0.297 | 1.773 | .006* | 6.2 |
| Yang & Hong-Yang (2011) | 0.616 | -0.268 | 1.500 | .172 | 5.0 |
| Yang et al. (2013) | 0.248[c] | -0.287 | 0.784 | .363 | 8.5 |
| **Average Weighted Effect Size** | **0.449** | **0.204** | **0.693** | **<.001**** | |

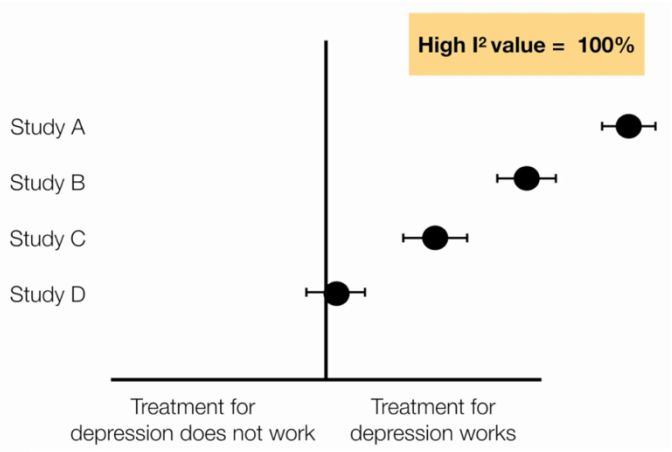
# Understand common measures of inconsistency/variability. In particular, how to interpret the I-squared and Chi-squared values.

## I-Squared

- Tells us, as a percentage, how much *variability/difference/heterogeneity* between effect sizes is due to systematic error/influence
- The higher the $I^2$ value is, this means there is more systematic influence.
- The lower the value is, the more likely the difference in effect sizes is due to chance




Effect sizes here are due to chance

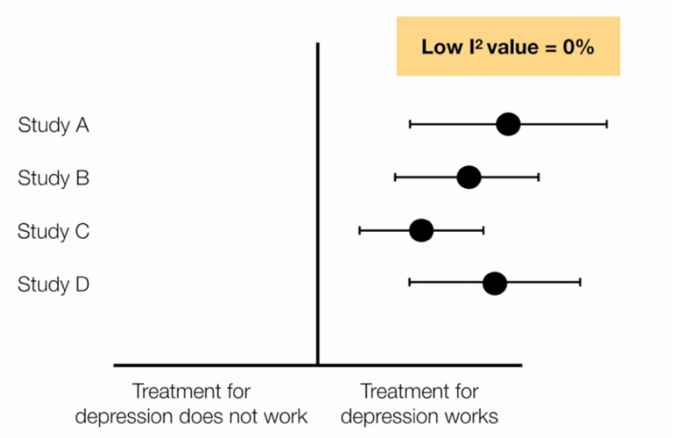
Due to some kind of systematic influence

$I^2 \leq 25\%$ → Low levels of systematic influence
$I^2 = 50\%$ → Moderate levels of systematic influence
$I^2 \geq 75\%$ → High levels of systematic influence

## Chi-Squared

- Significance test
- Test whether there is significant systematic heterogeneity/error/influence in a collection of effect sizes, that is the difference between effect sizes is not due to random error
- May also be reported as a Q-Test or Cochranes Q

p > .05




p < .05