

Addressing publication bias in meta-analysis: Empirical findings from community-augmented meta-analyses of infant language development

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Alejandrina Cristia

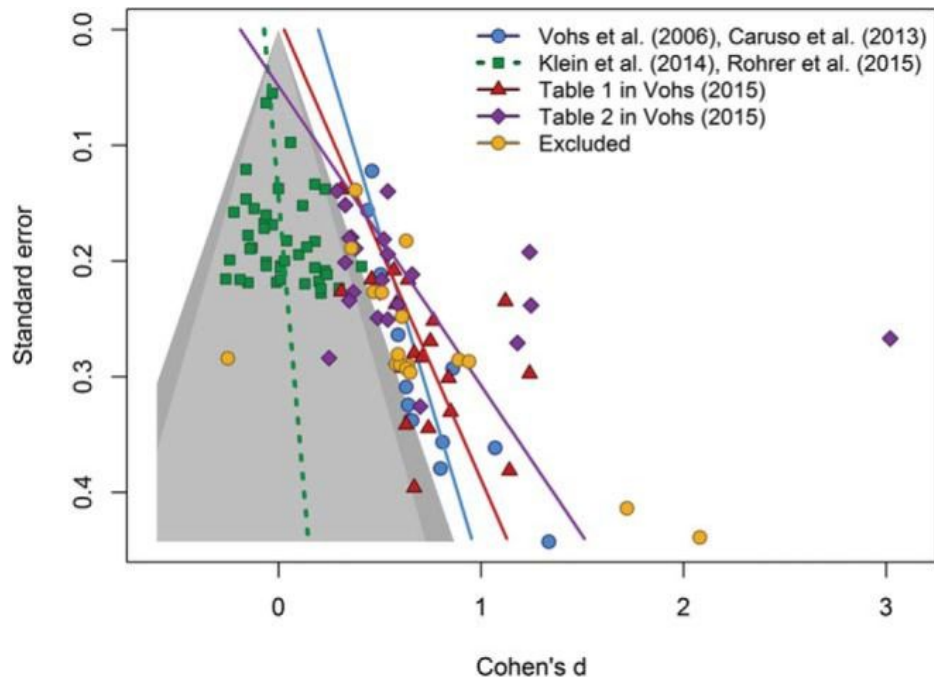
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Publication bias ...



Is Developmental Psychology special?

→ What lands in the filedrawer?

- ★ Failed methodological innovation
- ★ "Low quality" studies

Is Developmental Psychology special?

→ What lands in the filedrawer?

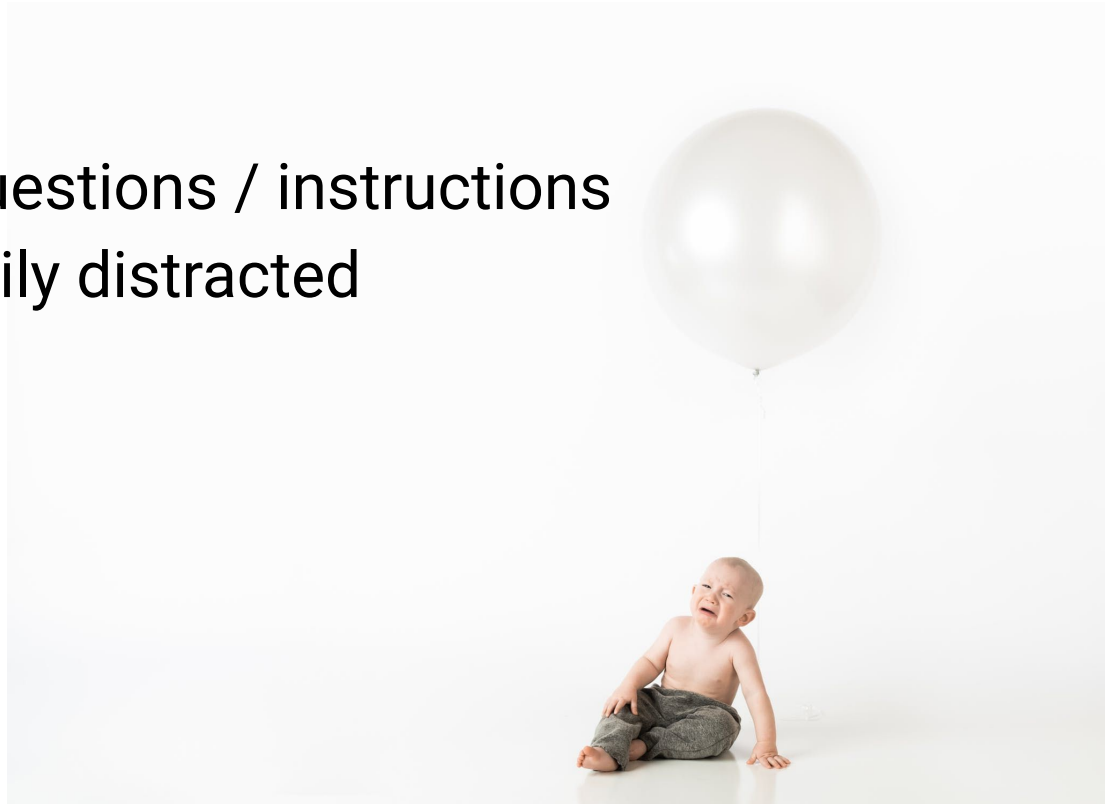
- ★ Failed methodological innovation
- ★ "Low quality" studies

And/or the "classic" reasons

- ★ Non-significant results
- ★ Impopular (counter-theoretical) results

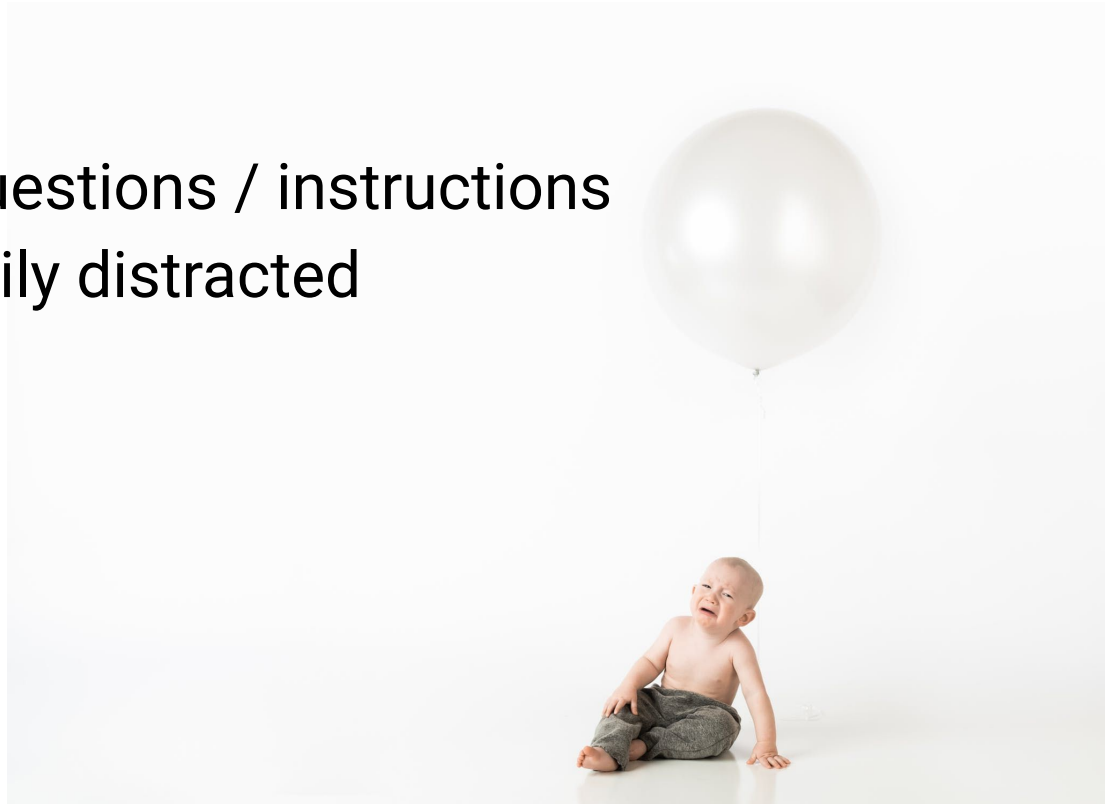
What makes us special: Our participants

- Difficult to test
 - Don't respond to questions / instructions
 - Uncooperative, easily distracted



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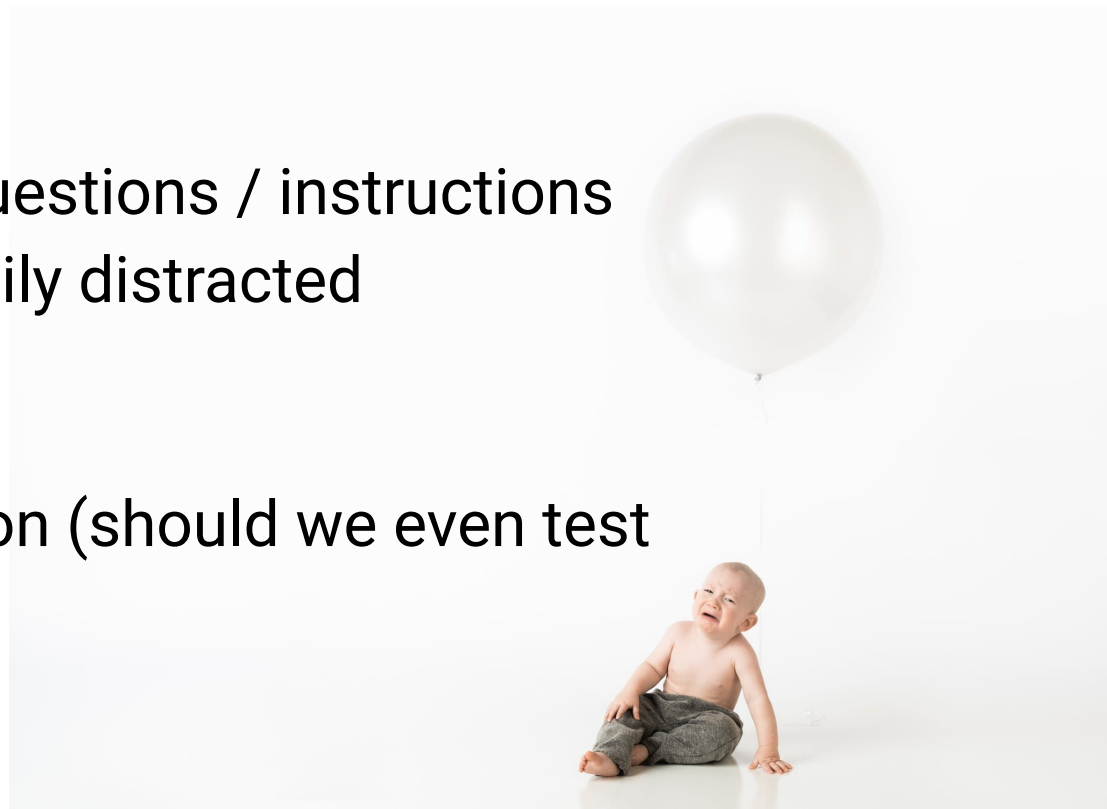
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Bonus: sensitive population (should we even test 1000 babies?)

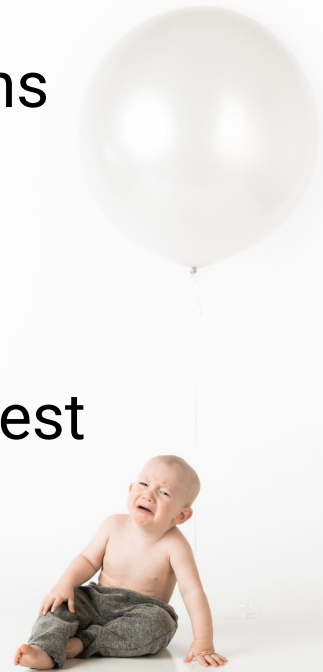


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Bonus: sensitive population (should we even test 1000 babies?)

→ Incentive to share (most) results?



Opening the file-drawer

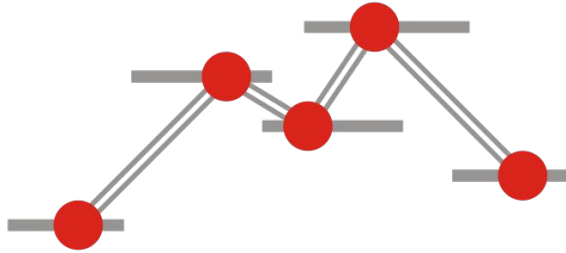
Q0: Are there file-drawer studies?

Q1: Which strategies are most successful?

Q2: Does unpublished literature reduce bias?



The present study



MetaLab



Early Language

How do children learn their native language?



Cognitive Development

What is the nature of children's understanding?

18

Meta-analyses



404

Papers



1,545

Effect sizes



24,870

Participants



2

Meta-analyses



35

Papers



141

Effect sizes

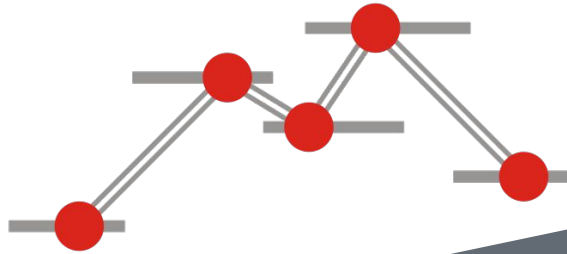


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The present study



MetaLab

More tomorrow at 16h



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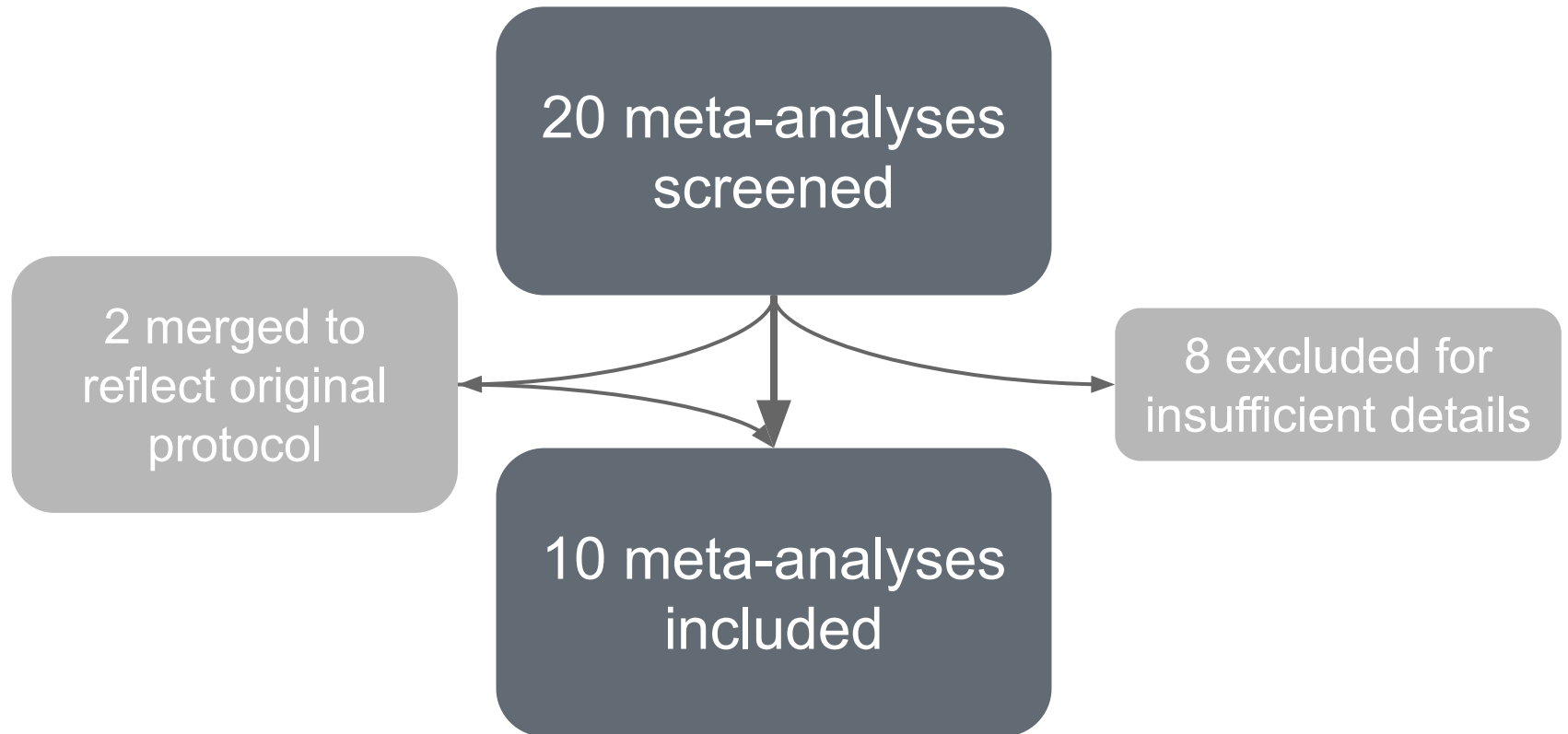


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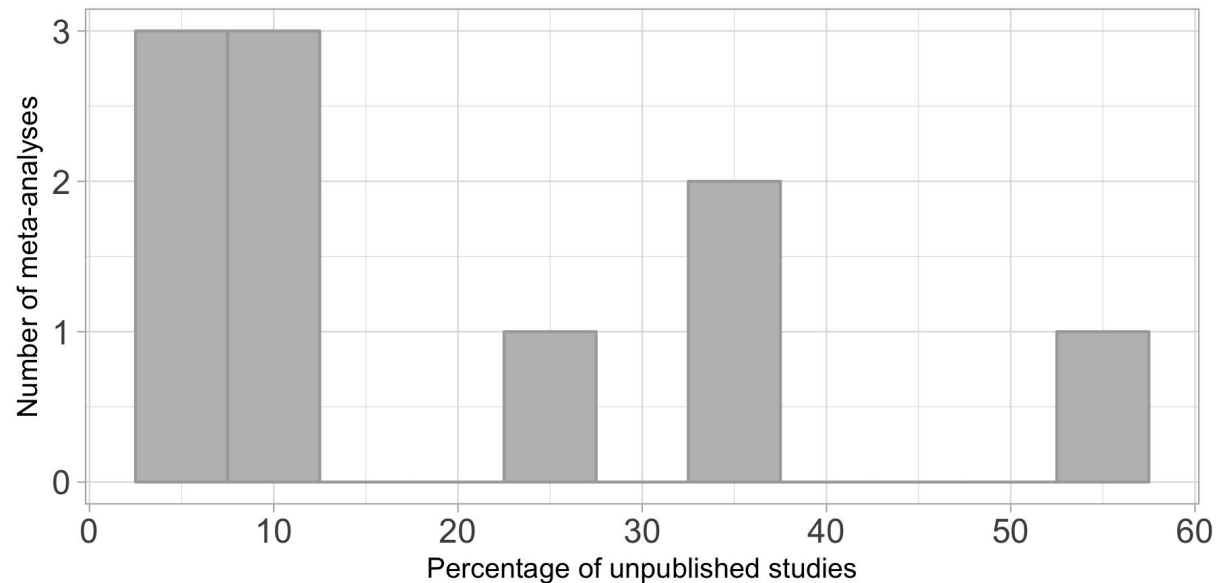
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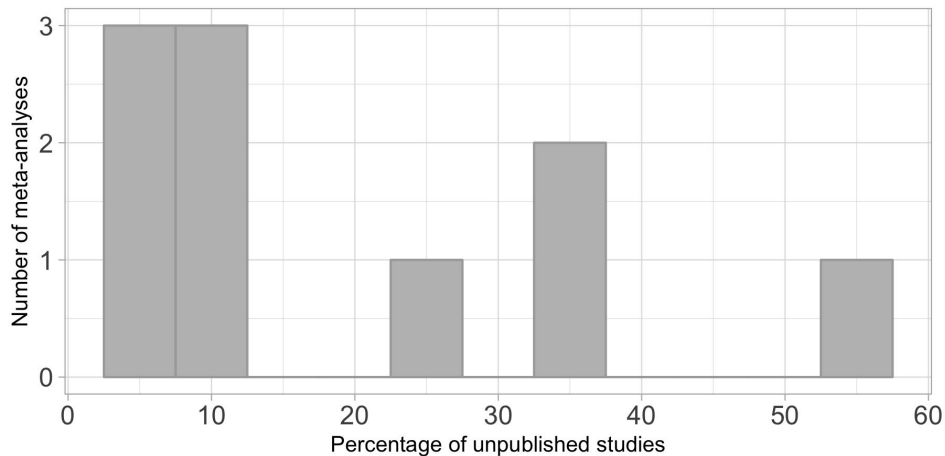
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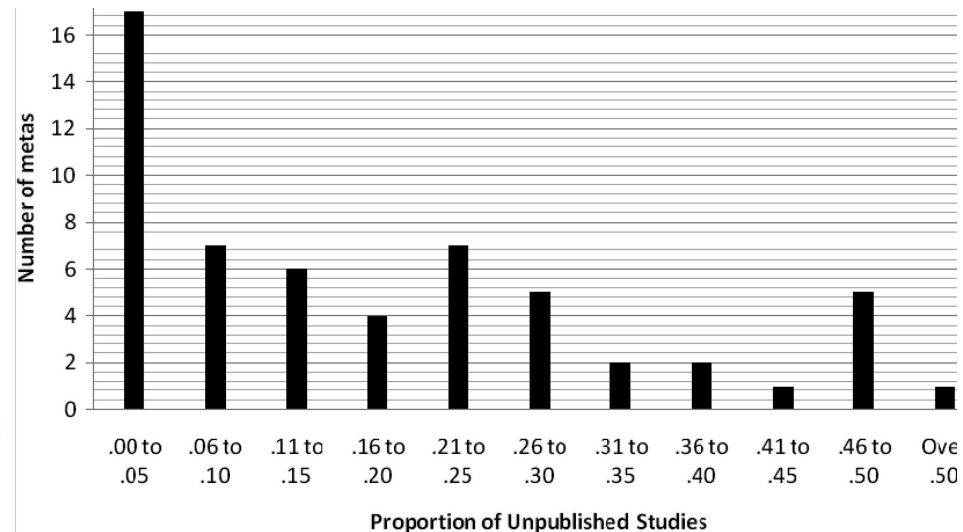
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Ferguson & Brannick (2011), based on 91 meta-analyses

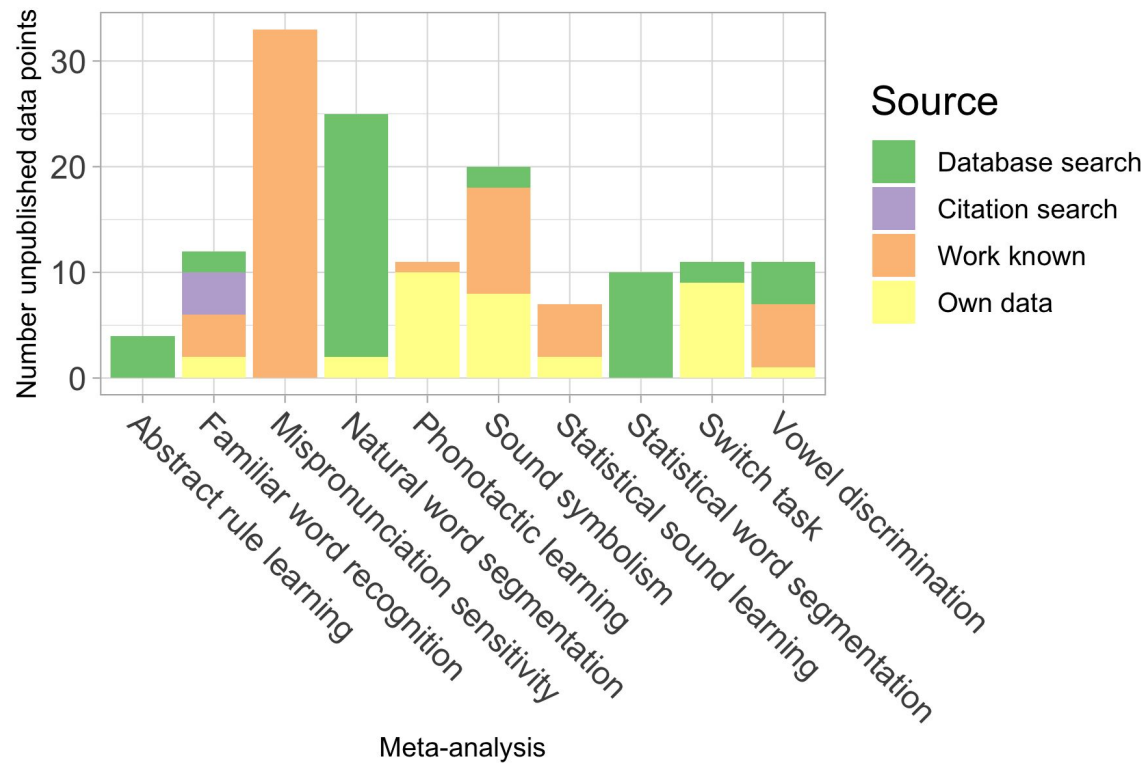


Opening the file-drawer

Q1: Which strategies are most successful?



Where do unpublished data come from?



Where do unpublished data come from?

Source



Own data: 9.6% of published & 27.5% of unpublished

Special case: Author contact

Contacted: 12.7 authors

Responsive: 9.8 / 85.1% (SD = 19.5)

Contributed data: 5.4 / 49.6% (SD = 28.1)



So, which strategy should I choose?

Low time investment and effective: Database search



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Low time investment and effective: Database search

High time investment, but more effective: Networking



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Caution with own data

→ Can be source of bias

- Uneven sampling
- Over-represent one side in contested fields

Opening the file-drawer

Q2: Does adding unpublished literature reduce bias?

- i) effect size estimates
- ii) bias estimates

Are unpublished studies of lower quality?

Study quality: No formal definition

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Proxy: Sample size

→ No difference

published: $M = 21.7$, $SD = 9.9$

unpublished: $M = 22.5$, $SD = 10.3$



Opening the file-drawer

Q2: Does adding unpublished literature reduce bias?

i) effect size estimates

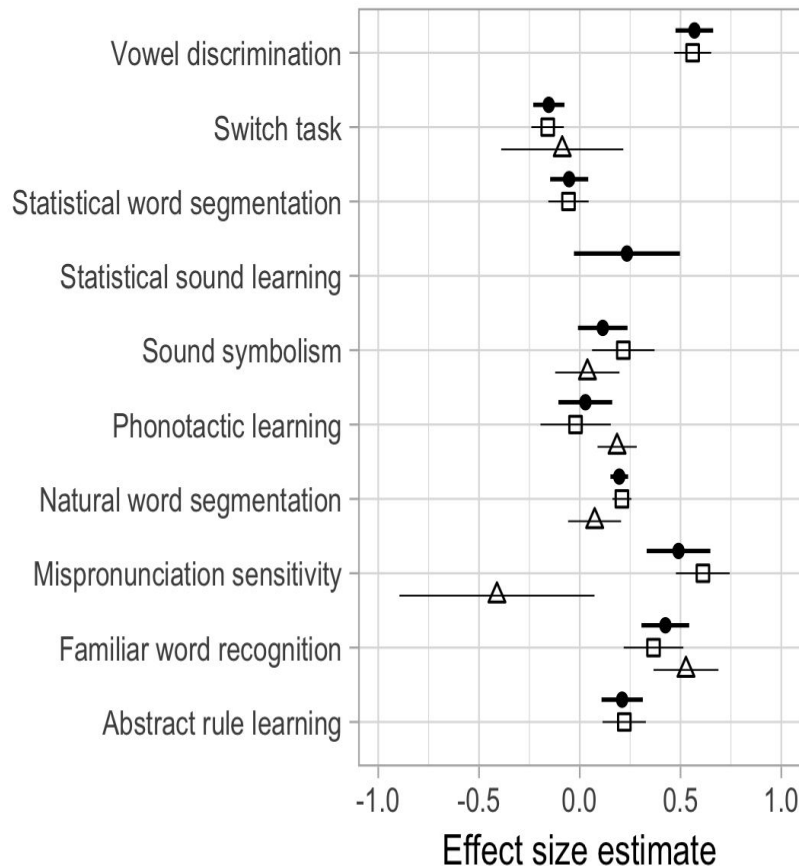
ii) bias estimates

Are unpublished effect sizes smaller?

Publication status

- All $d = 0.22$ (-0.34 - 0.77)
- Published $d = 0.24$ (-0.17 - 0.66)
- △ Unpublished $d = 0.15$ (-0.34 - 0.77)

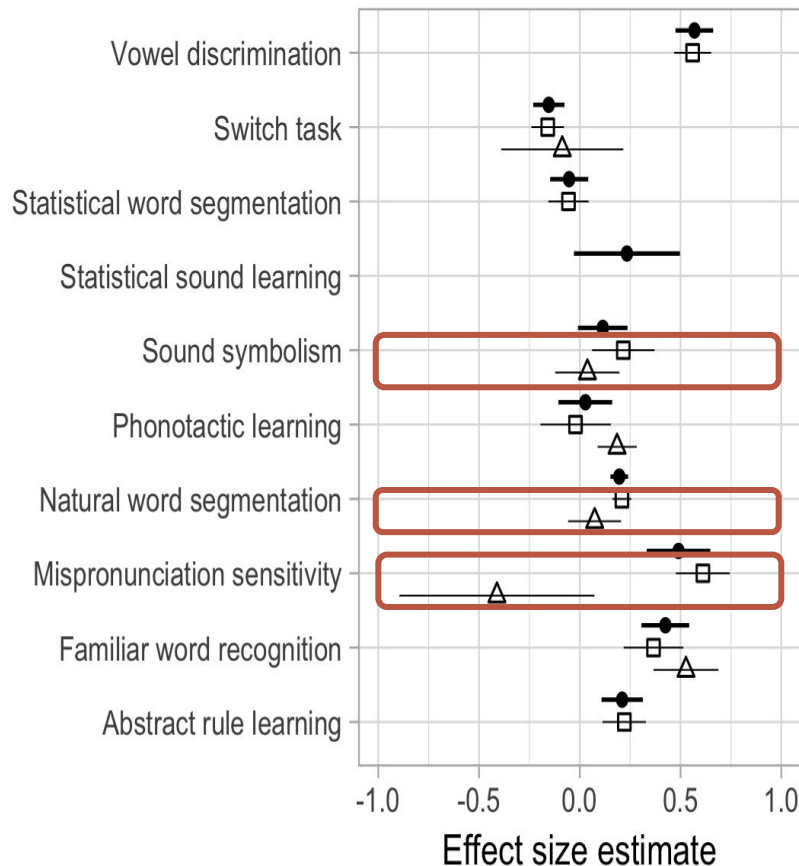
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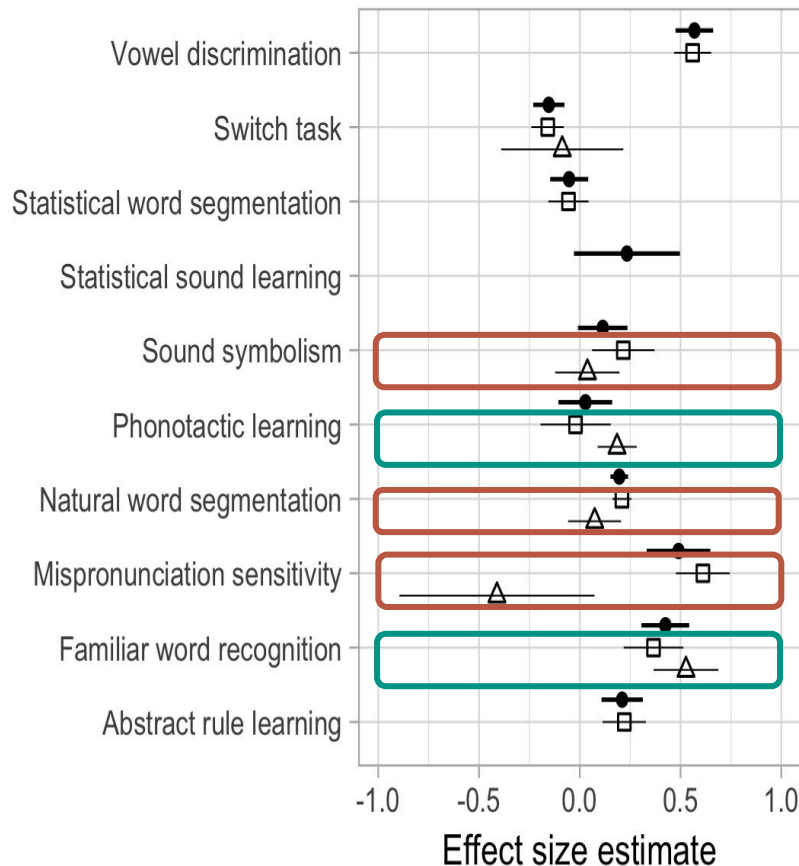
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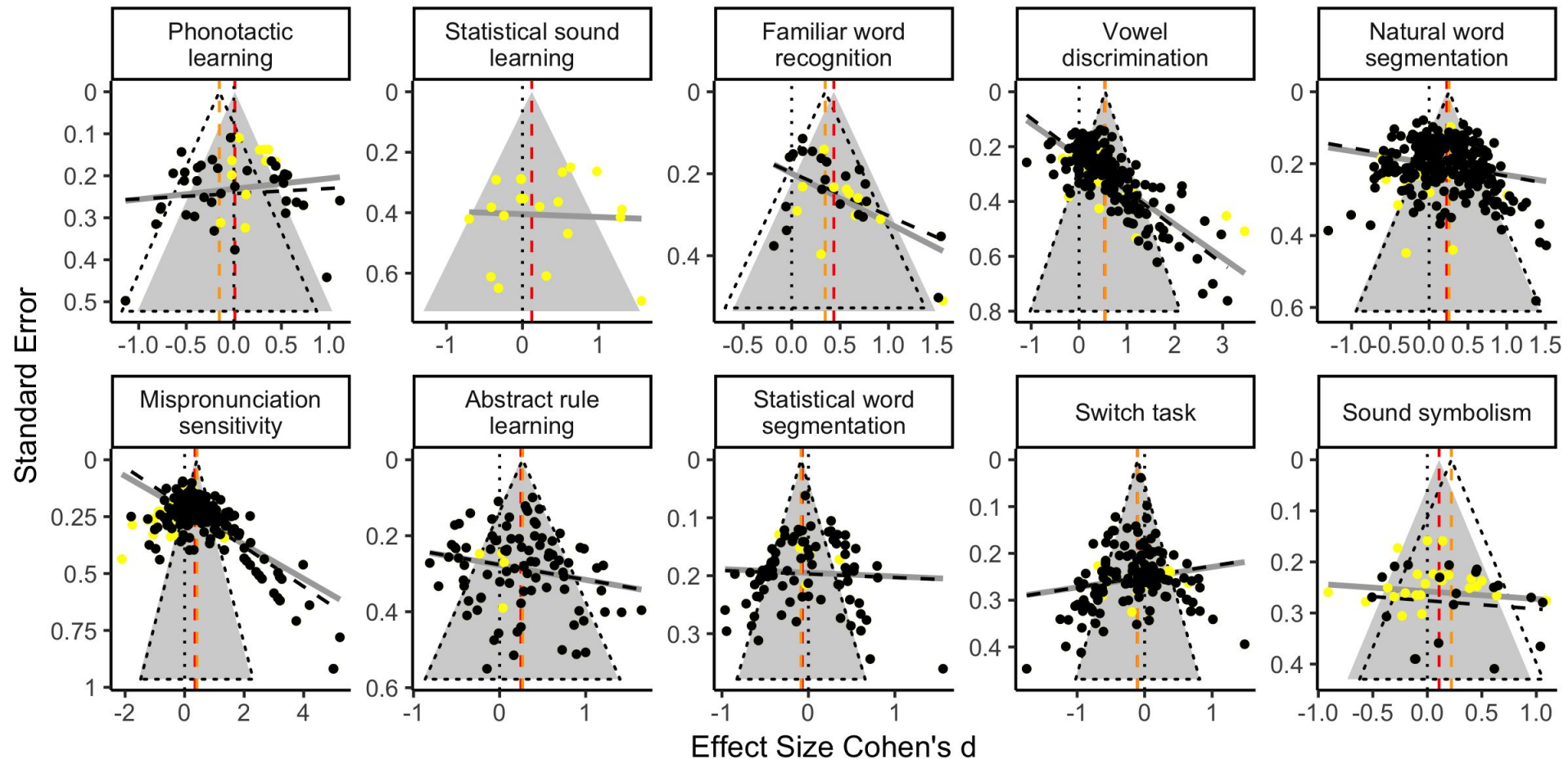
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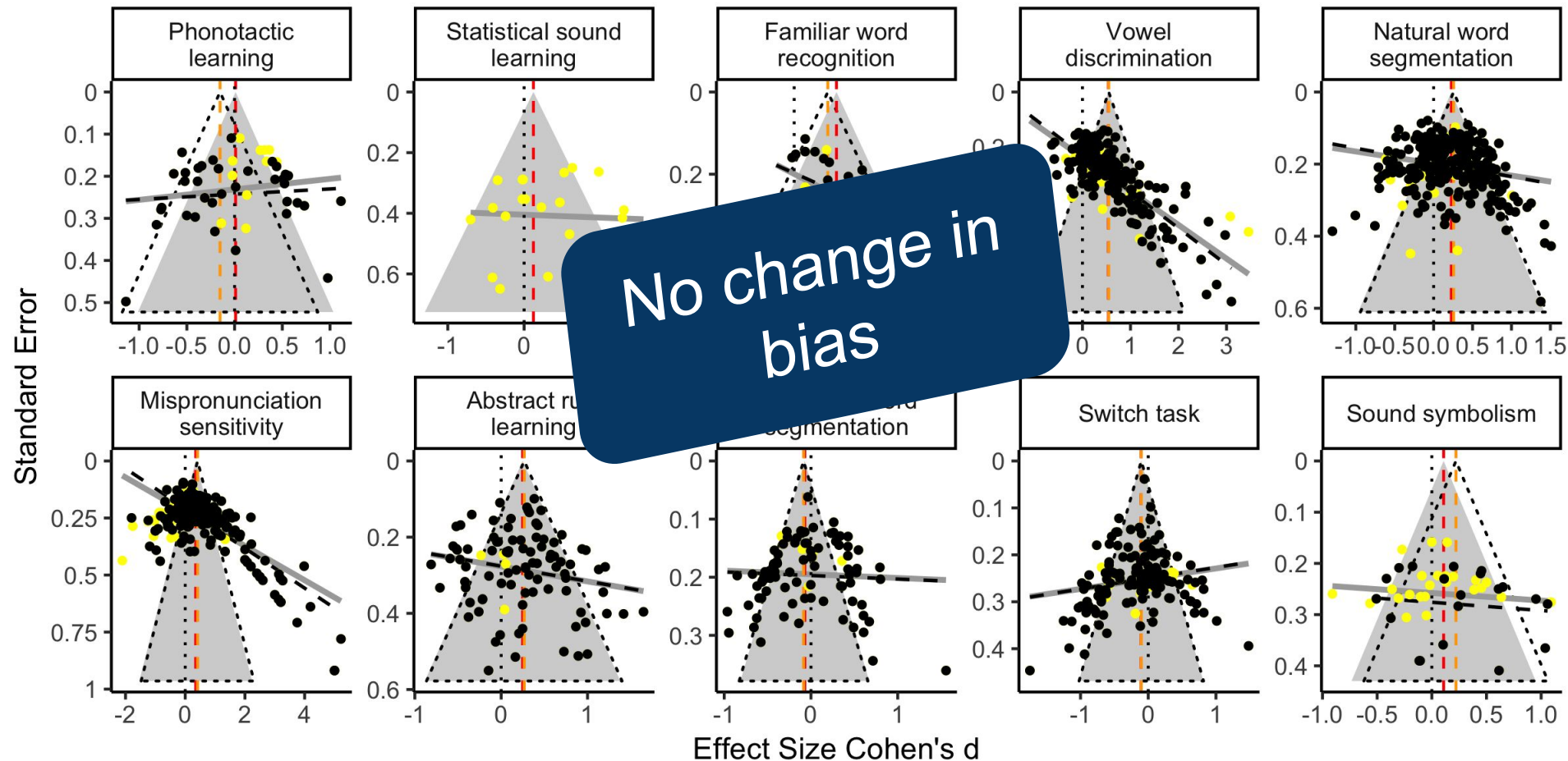
i) effect size estimates

ii) bias estimates

Does adding grey literature counter bias?



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Lessons learned: Include grey literature?

- Unpublished effects tend to be lower
 - BUT: Reverse pattern in some meta-analyses
- No evidence for bias changes (Note: Small sample)

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- Unpublished effects tend to be lower
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- **Recommendation:** *Gather* grey literature and report effect of inclusion

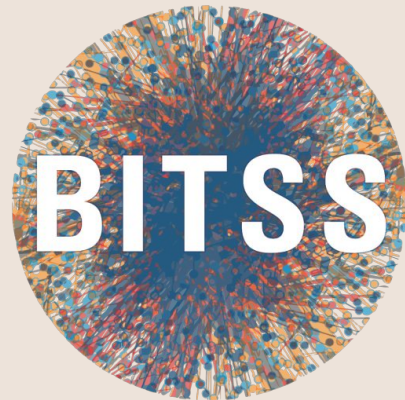
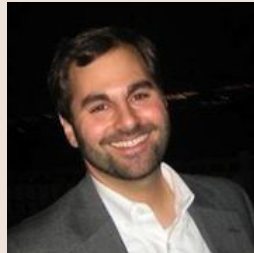
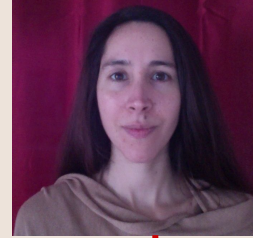
Lessons learned: Improving quality appraisal

- Missing: Formal definitions of "study quality" applicable to basic-level (developmental) psychology
 - Key for inclusion / weighting
 - (But possible source of bias)

Lessons learned: Improving meta-analyses

- Documentation and transparency are key
- Improve literature search from both ends
 - Meta-analysis: Provide templates (incentivize with added value)
 - Data providers / search engines: Better indexing, make searches reproducible

Thank you

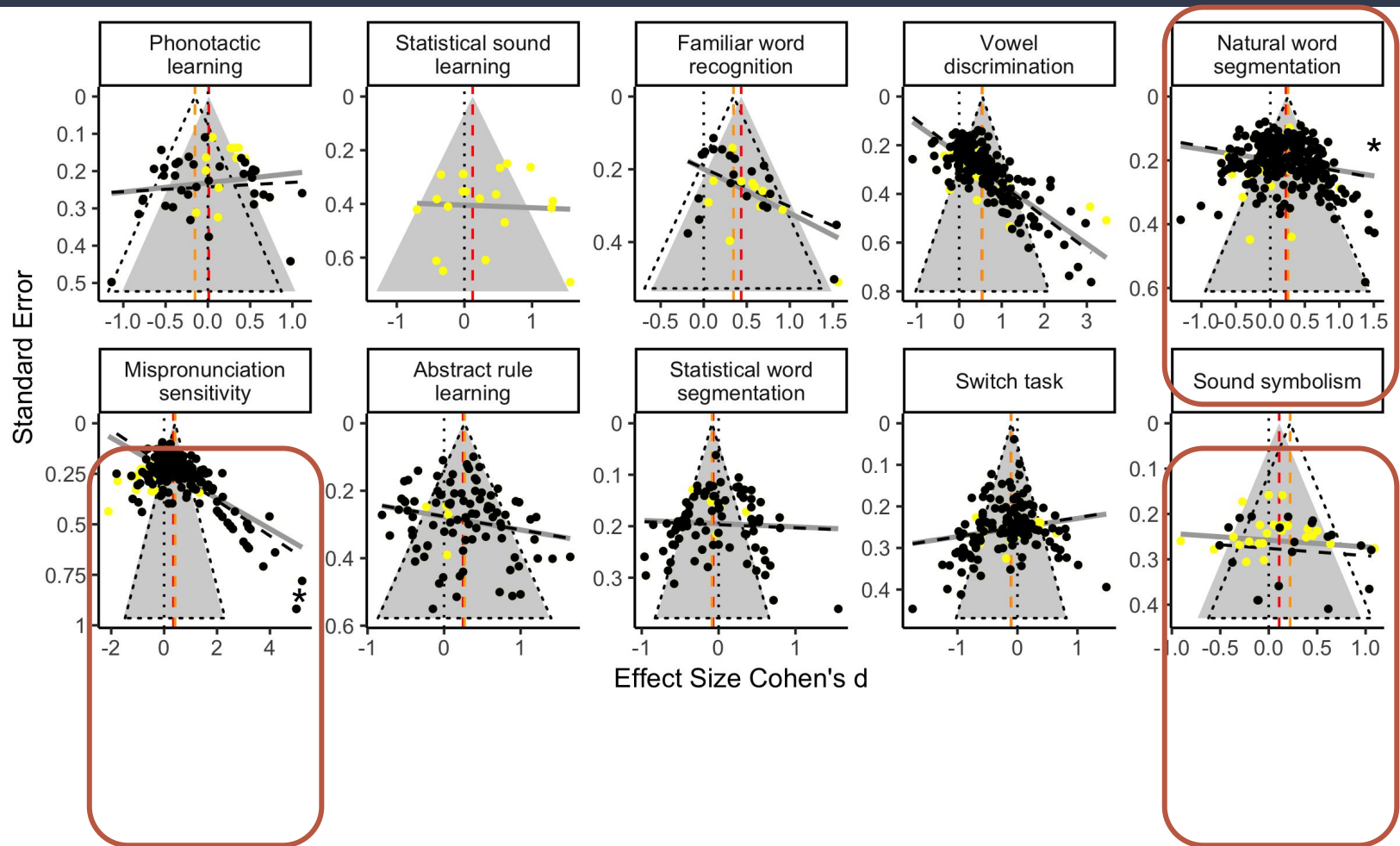


James S. McDonnell Foundation



Map: Francis Galton
(Life time: 17 January 1911)
[Public domain]

Does adding grey literature lower effect size?



Does adding grey literature lower effect size?

