

Multiverse Meta-Analyses

Constantin Yves Plessen



@CYPlessen

#SIPS2022

Multiverse Meta-Analyses

1. Why do them?

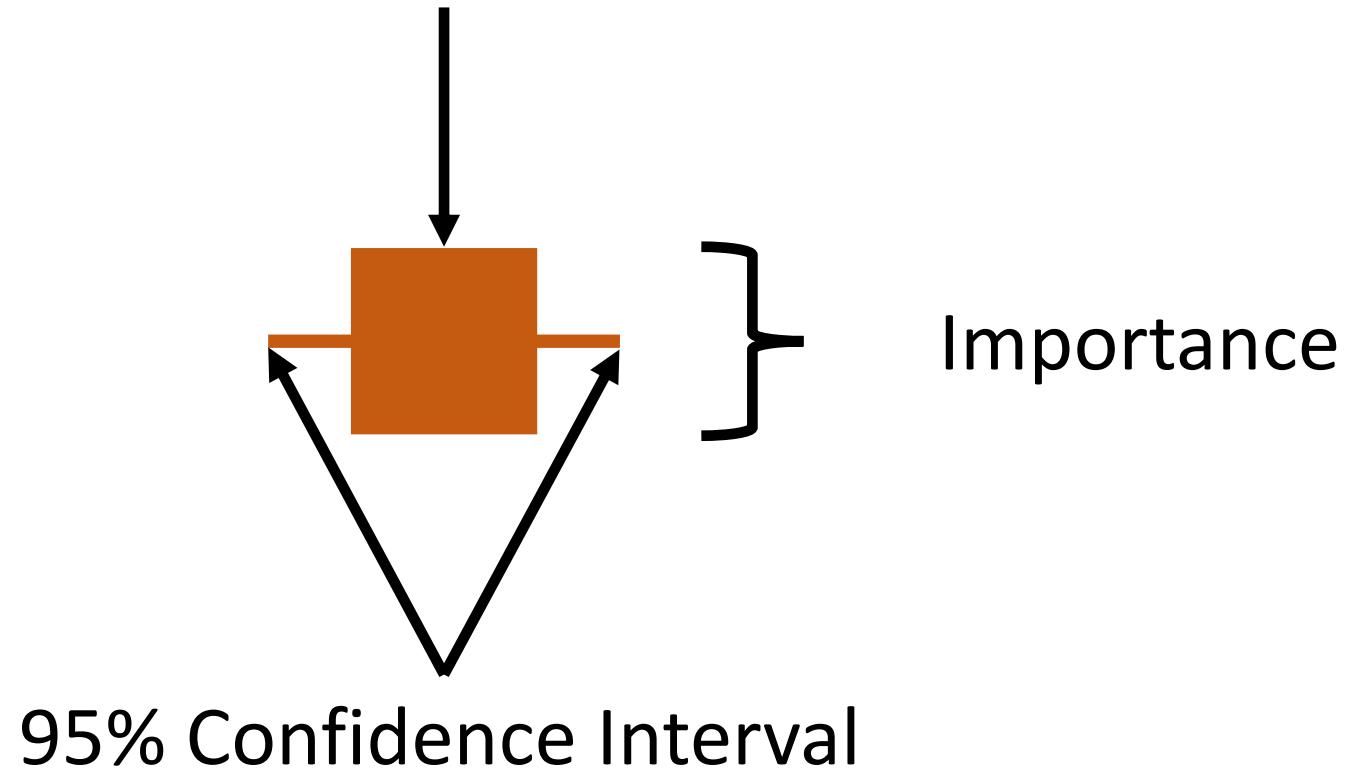
2. How to do them?

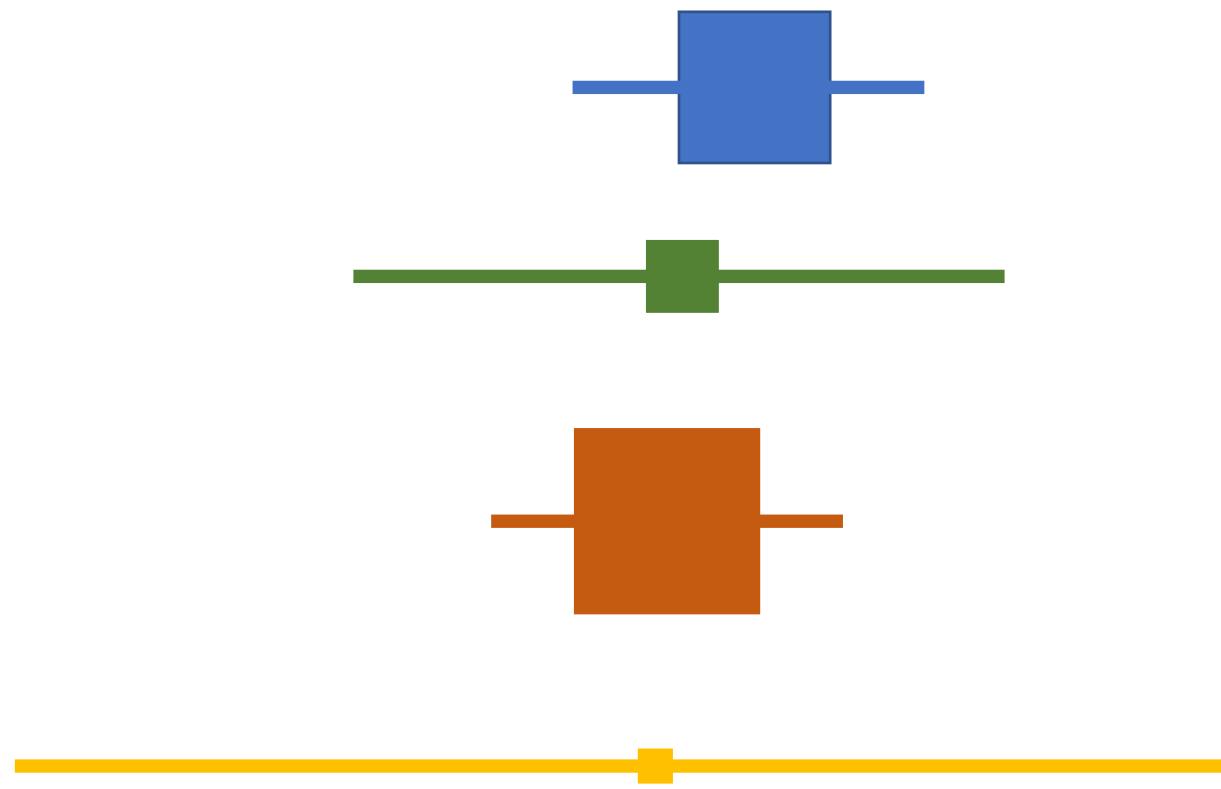


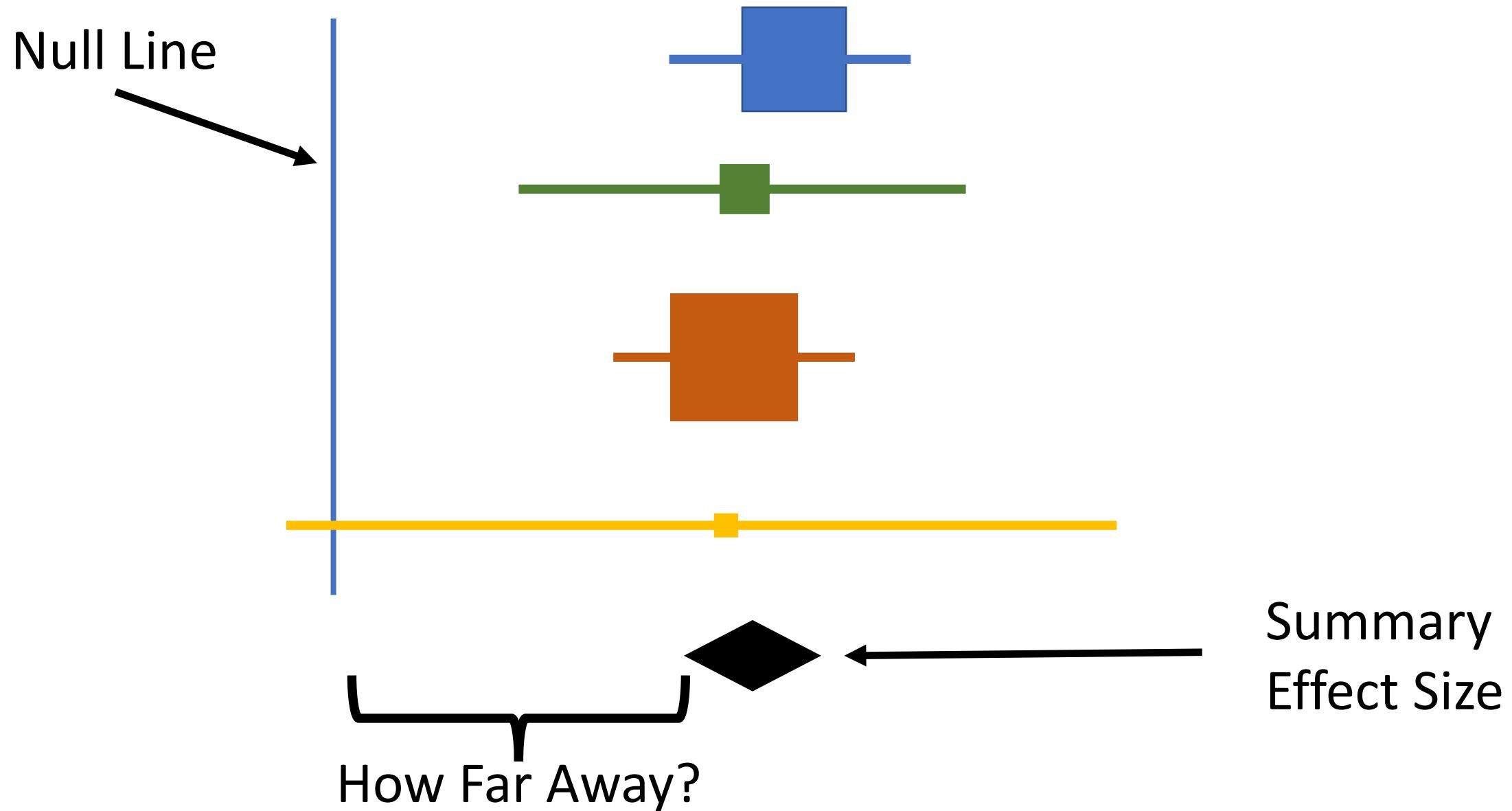
Two Minute Primer on Meta-Analyses



Effect size from a study

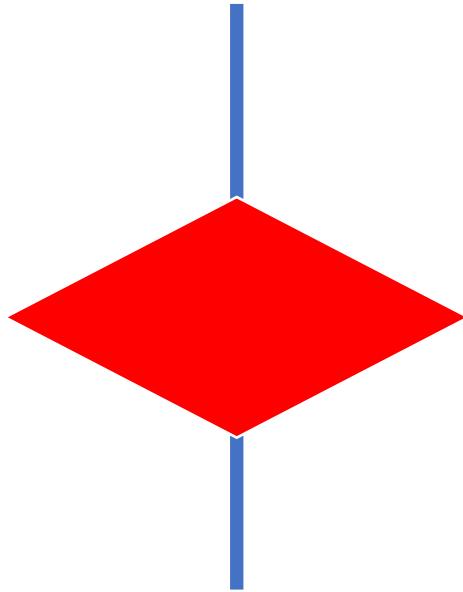




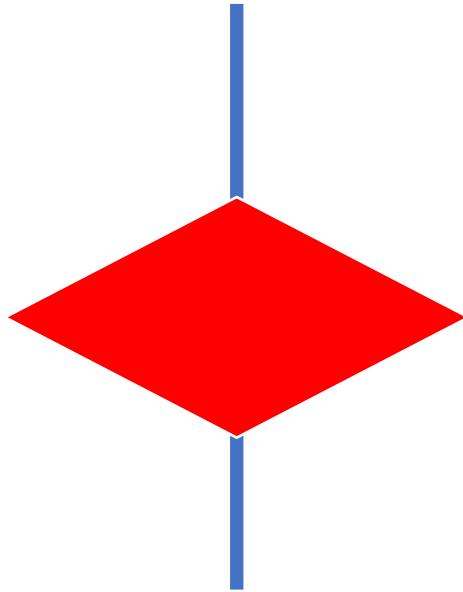


1 Why do multiverse meta-analyses?

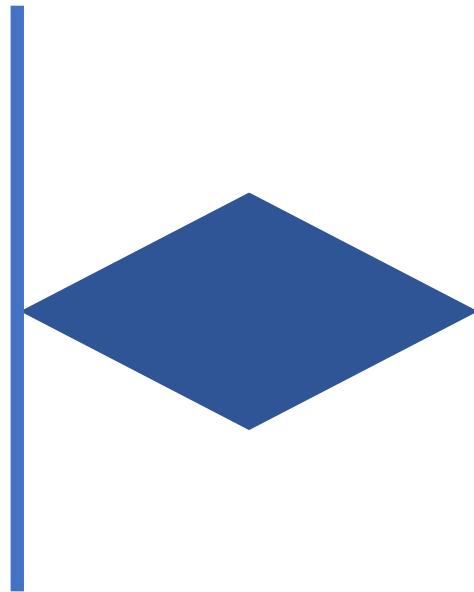
Meta-Analysis A



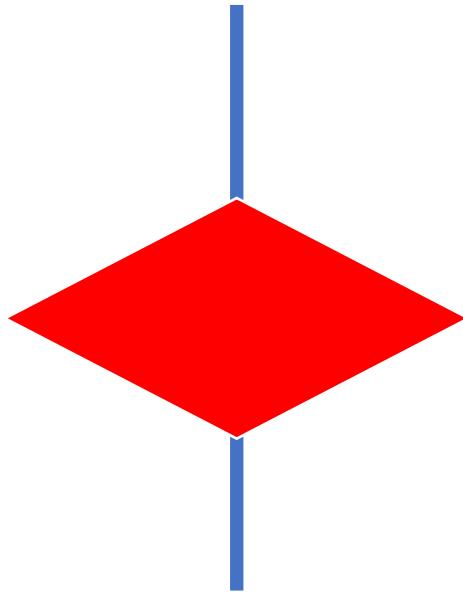
Meta-Analysis A



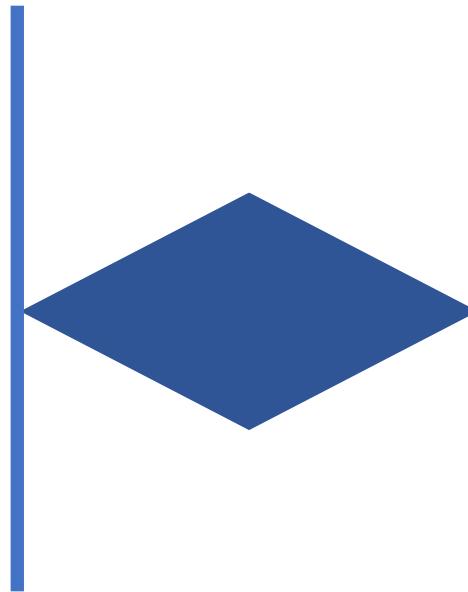
Meta-Analysis B



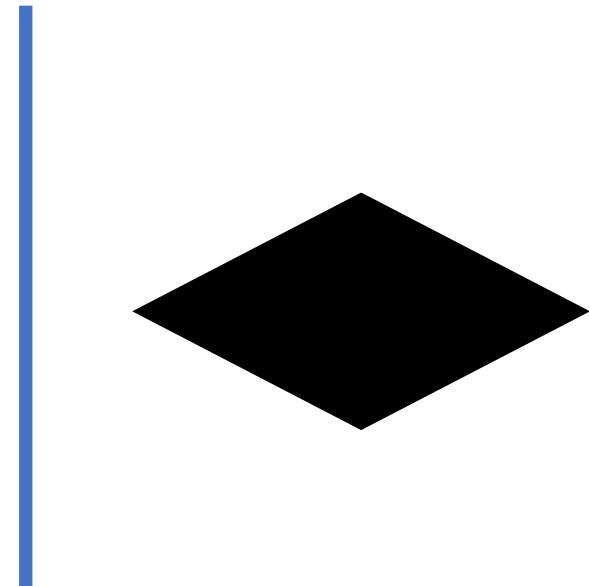
Meta-Analysis A



Meta-Analysis B

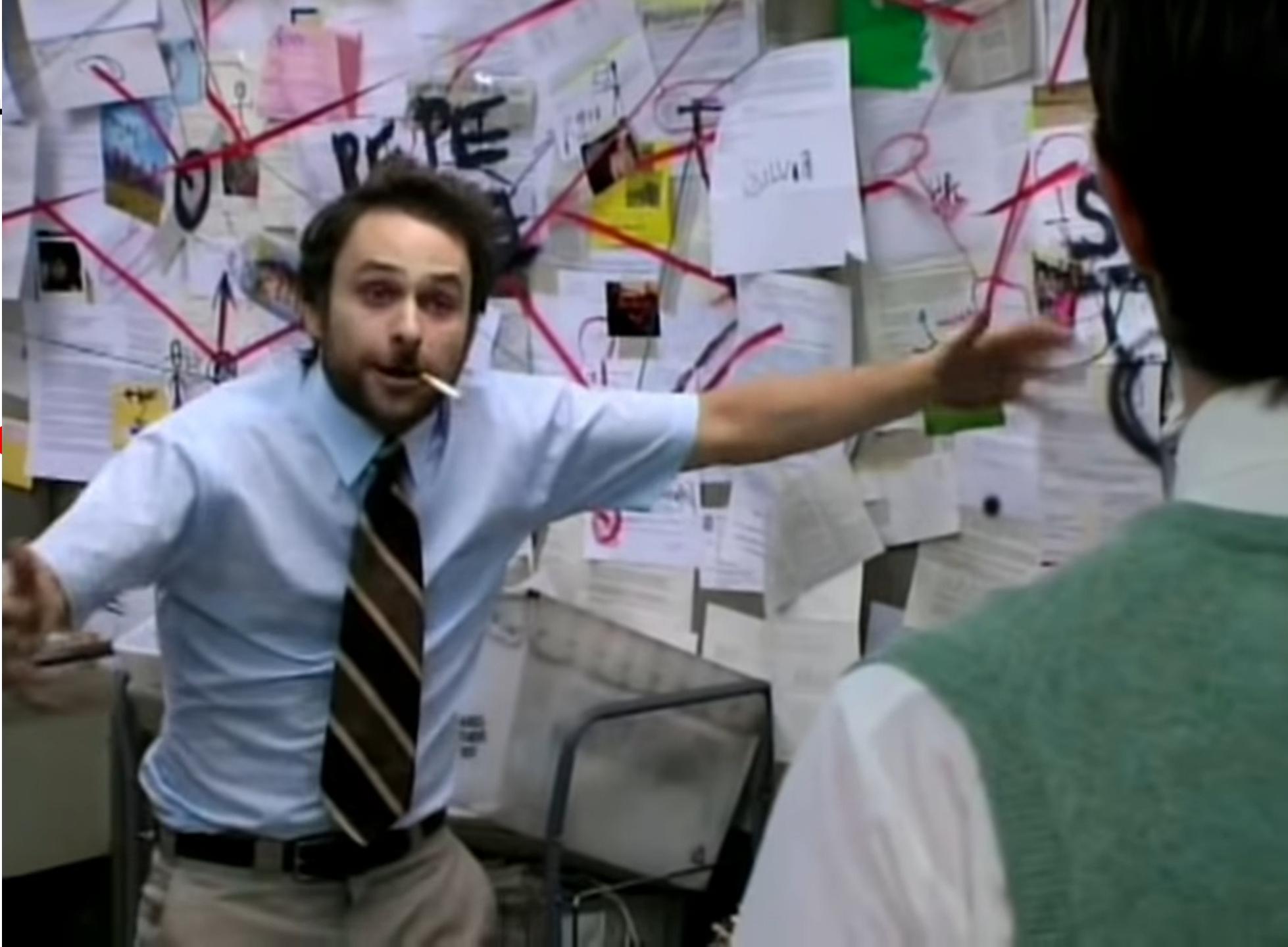


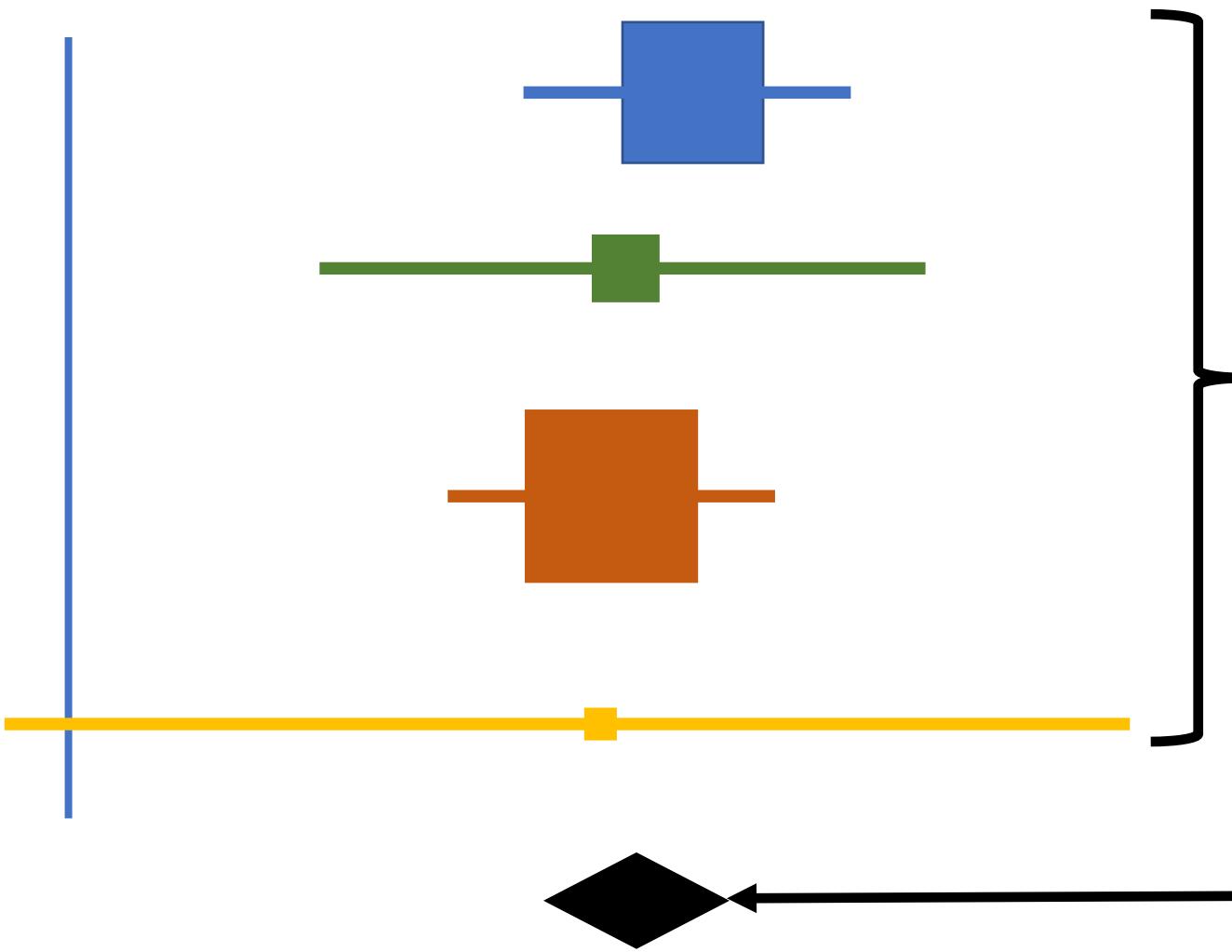
Meta-Analysis C



Met

ysis C





Which?

How?

Review Article



Which Data to Meta-Analyze, and How?

A Specification-Curve and Multiverse-Analysis Approach
to Meta-Analysis

Martin Voracek, Michael Kossmeier, and Ulrich S. Tran

Department of Basic Psychological Research and Research Methods, Faculty of Psychology, University of Vienna, Austria

Review Article



Which Data to Meta-Analyze, and How?

A Specification-Curve and Multiverse-Analysis Approach
to Meta-Analysis

Specification Curve: Descriptive and Inferential Statistics on All Reasonable Specifications

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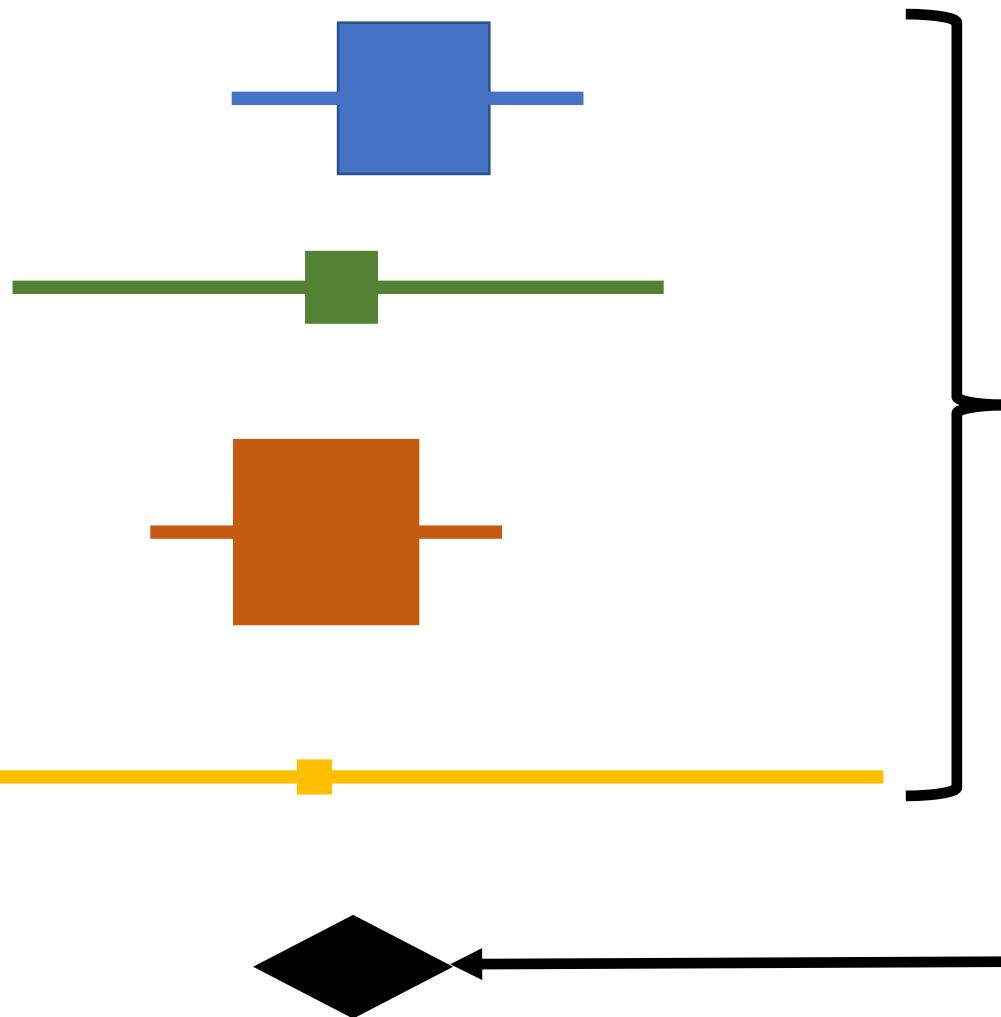
Sara Steegen¹, Francis Tuerlinckx¹, Andrew Gelman², and
Wolf Vanpaemel¹
¹KU Leuven, University of Leuven and ²Columbia University

Increasing Transparency Through a Multiverse Analysis



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DOI: 10.1177/1745691616658637
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Which?

- 1 Study inclusion?
- 2 Outliers?
- 3 Risk of bias?

How?

- 1 Effect size estimator?
- 2 Dependency?
- 3 Publication bias?

2 How to do multiverse meta-analyses?

Inclusion Criteria, e.g. Age

Include All



Exclude Children



Risk of Bias Assessment

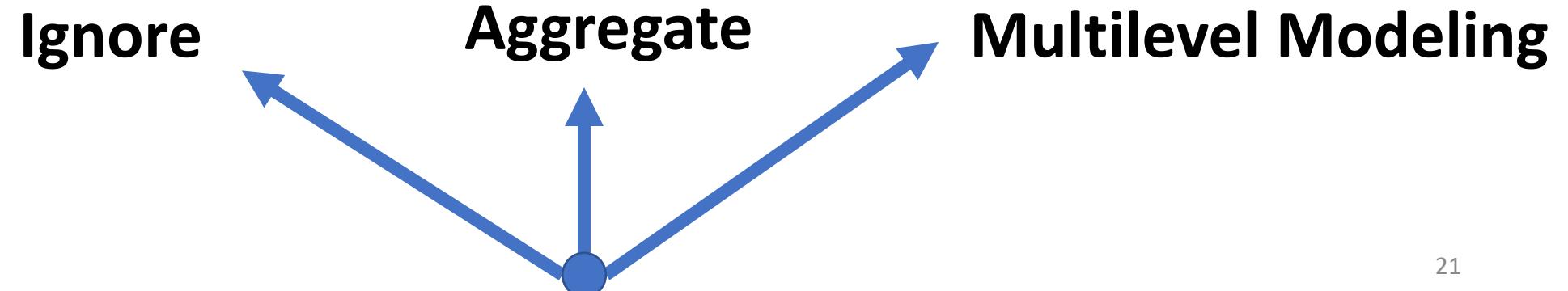


Effect size dependency

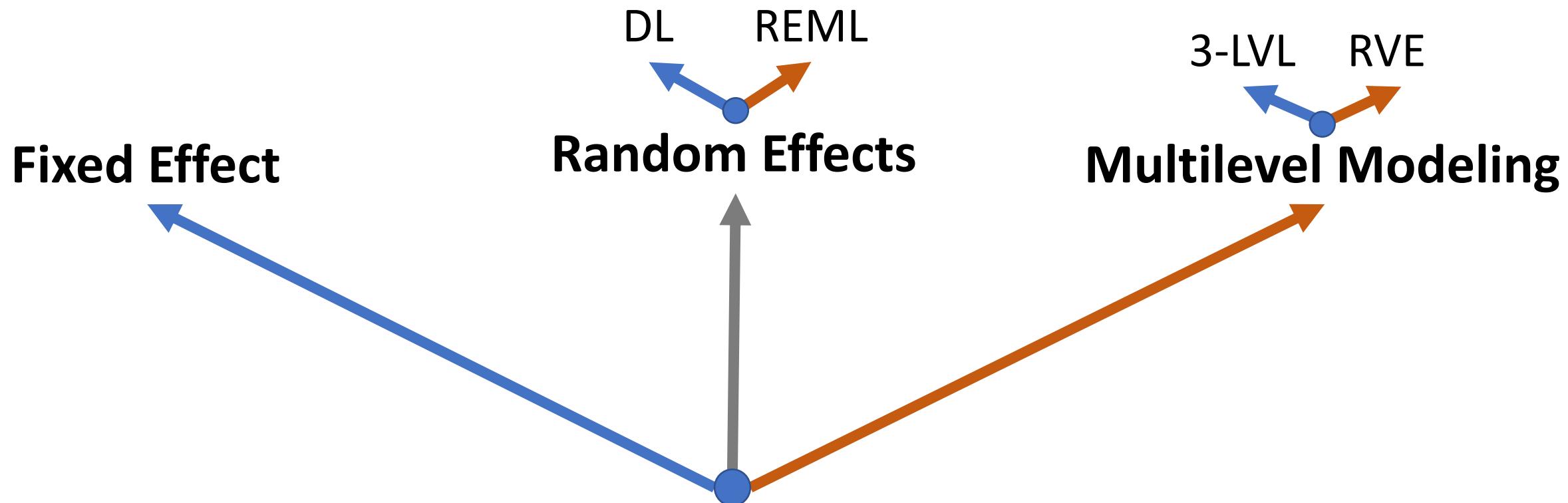
Study	SMD	Intervention	Control Group
Study A	0.0	CBT	Active
Study A	1.0	CBT	Passive

Effect size dependency

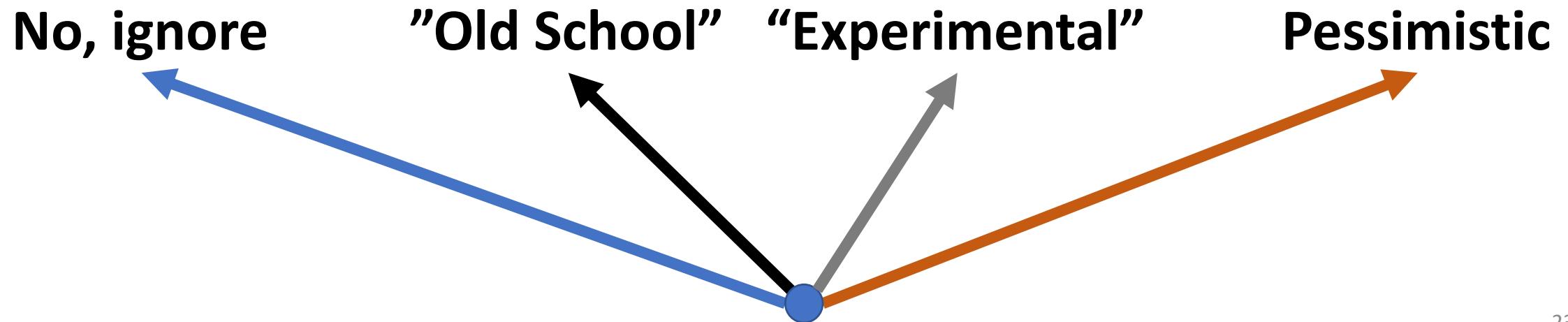
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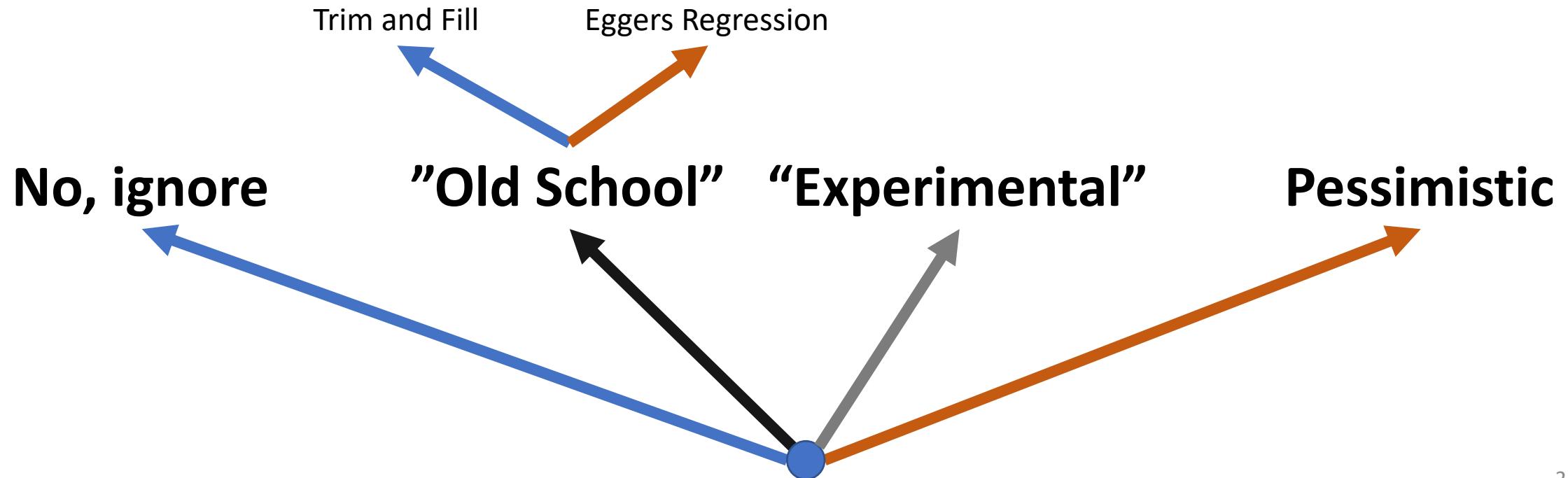
Estimators



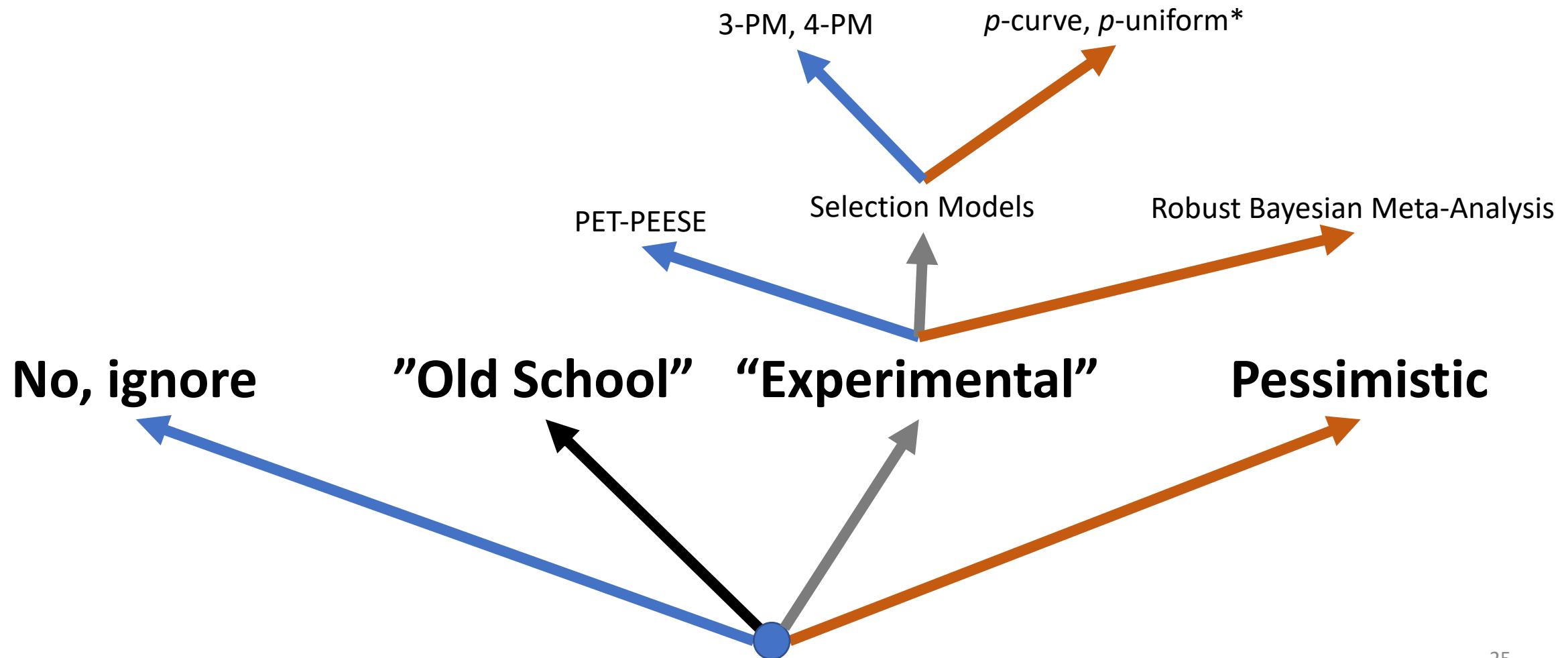
Correction for Publication Bias



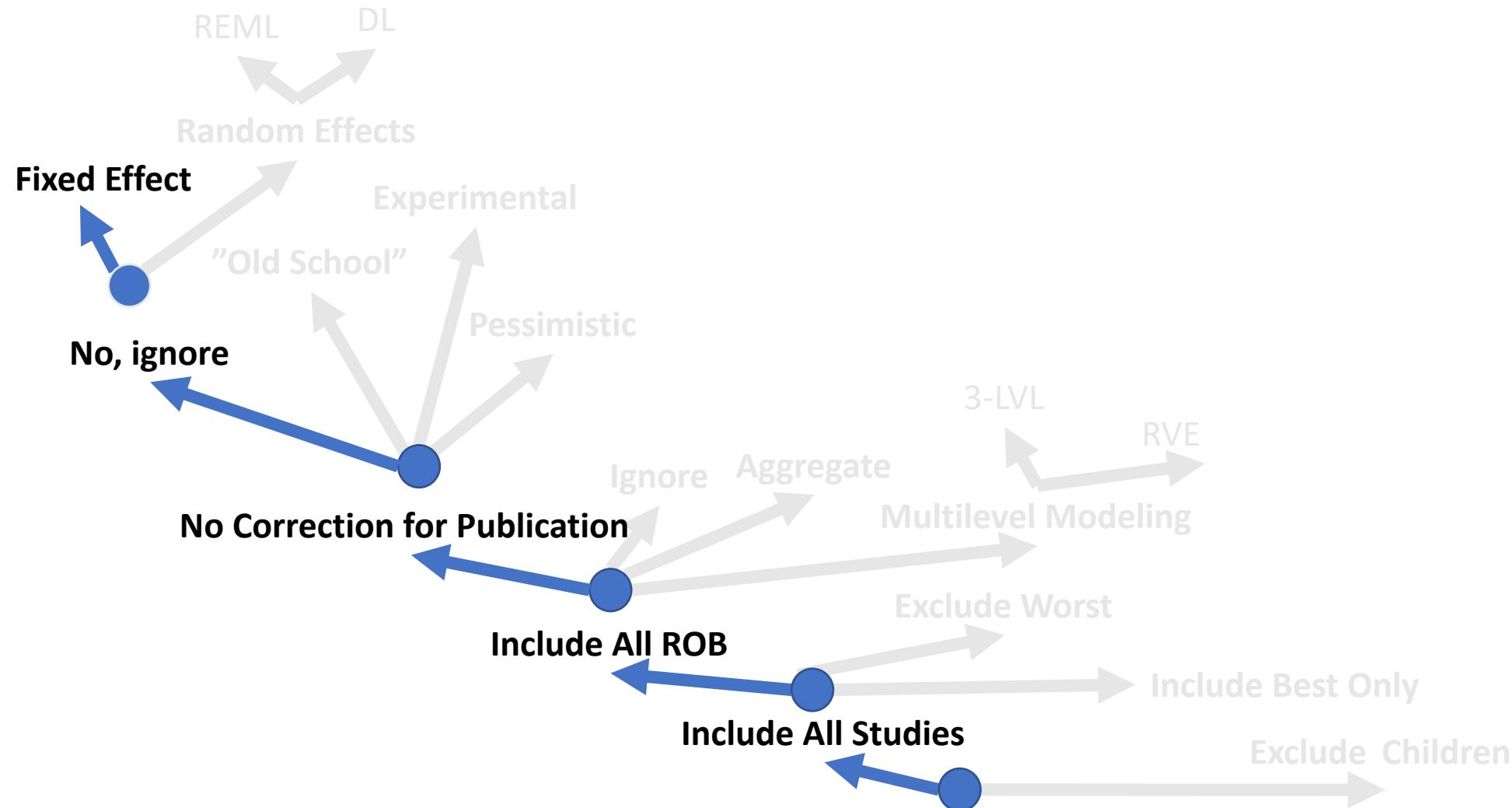
Correction for Publication Bias



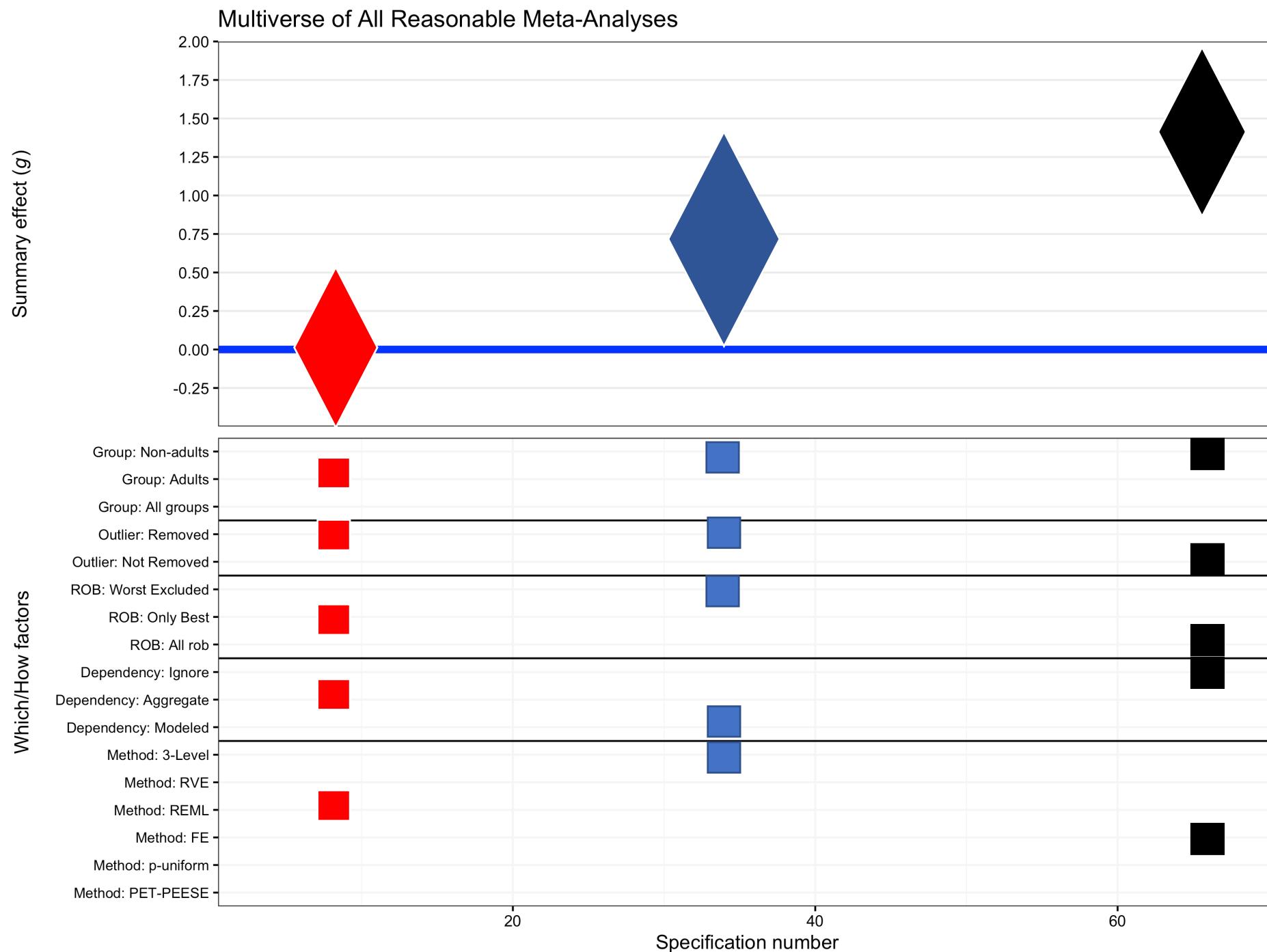
Correction for Publication Bias

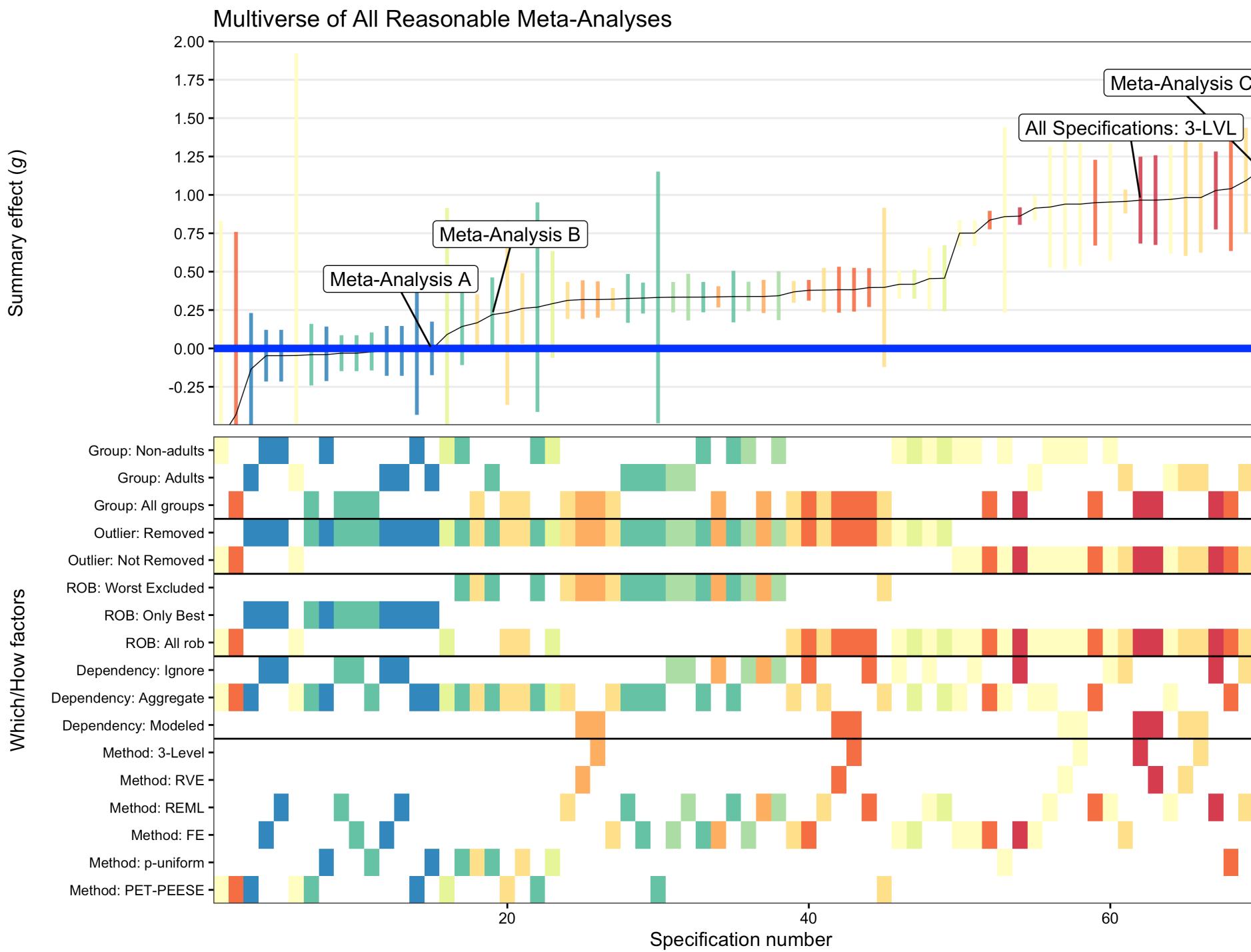


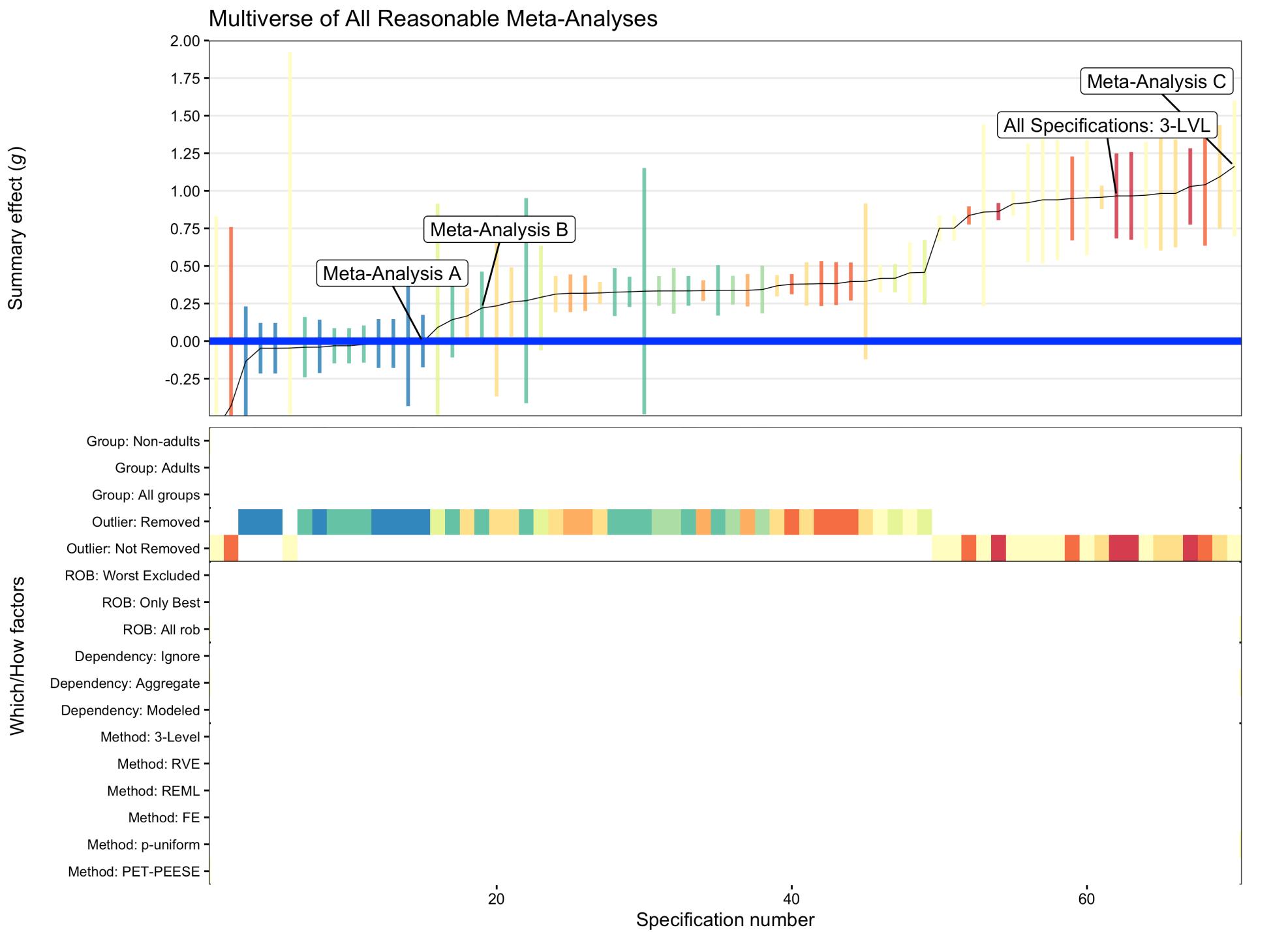
The multiverse of meta-analyses

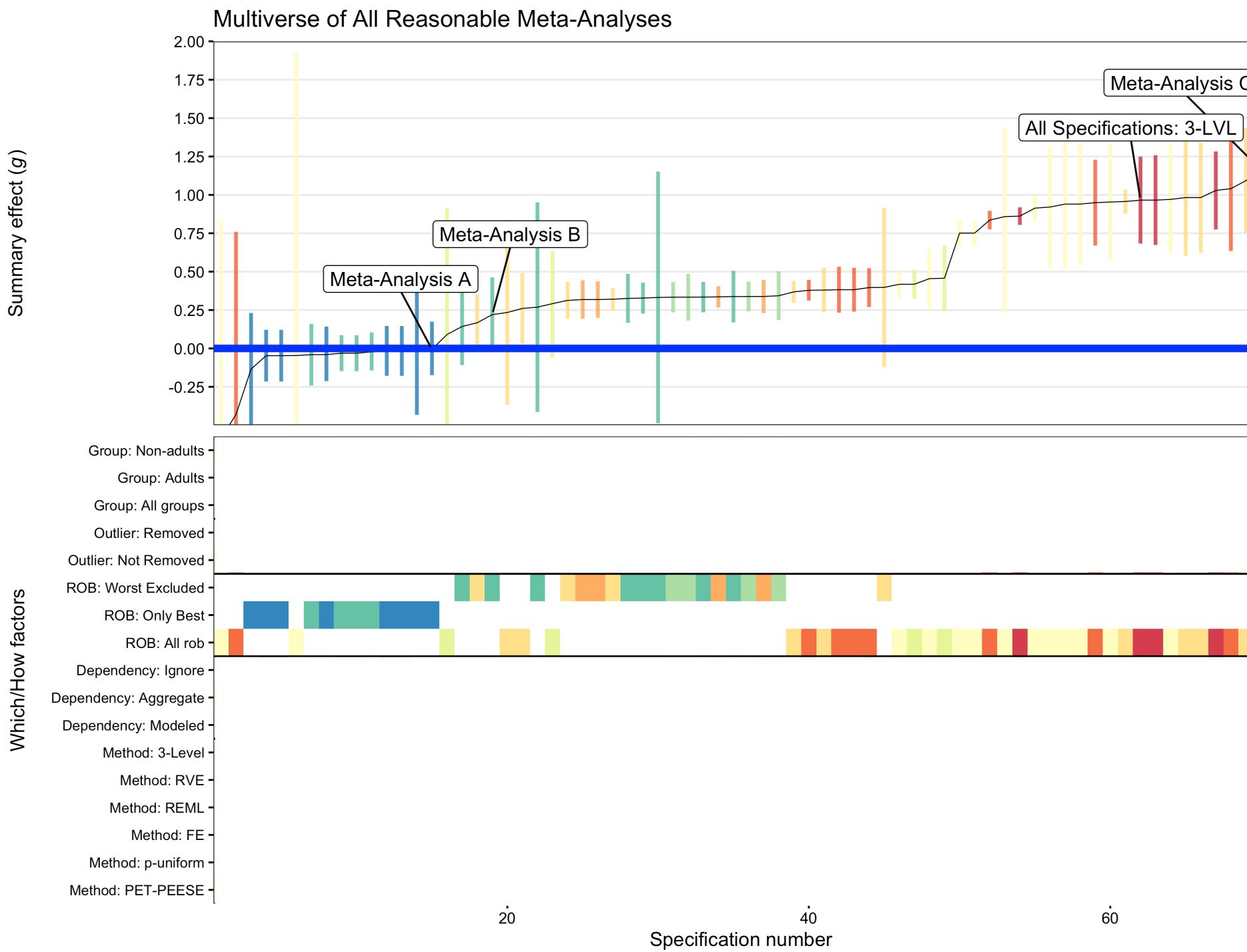


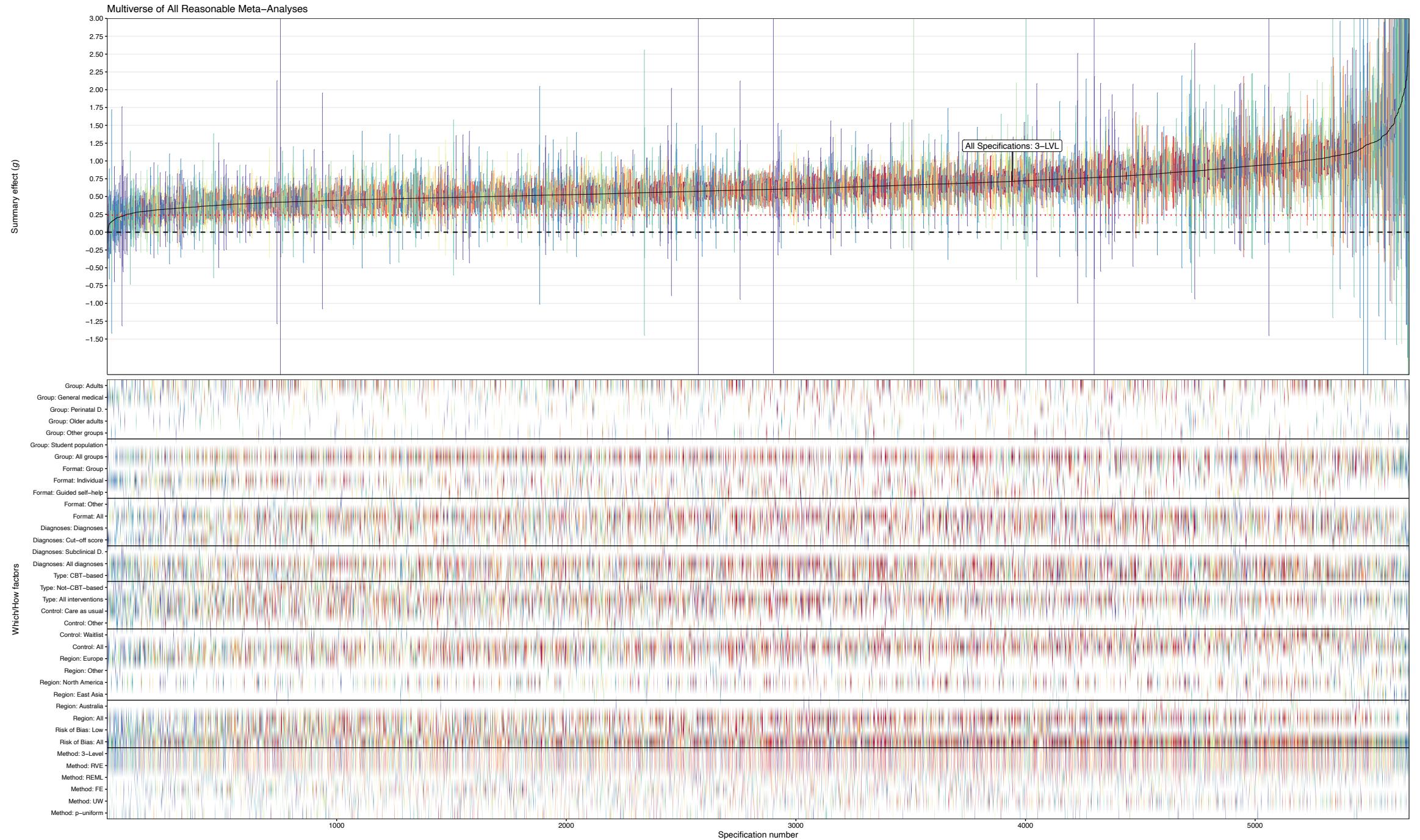
Visualizing the Multiverse of Meta-Analyses











Suggested Reading

Review Article

Which Data to Meta-Analyze, and How?

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Martin Voracek, Michael Kossmeier, and Ulrich S. Tran

Department of Basic Psychological Research and Research Methods, Faculty of Psychology, University of Vienna, Austria



Voracek, M., Kossmeier, M., & Tran, U. S. (2019). Which data to meta-analyze, and how? *Zeitschrift für Psychologie*.
<https://doi.org/10.1027/2151-2604/a000357>

R code for correlational meta-analyses: <https://osf.io/ac96w/>

Open access

Protocol

BMJ Open Exploring the efficacy of psychological treatments for depression: a multiverse meta-analysis protocol

Constantin Yves Plessen ^{1,2} Eirini Karyotaki ^{1,3} Pim Cuijpers ¹

Plessen, C. Y., Karyotaki, E., & Cuijpers, P. (2022). Exploring the efficacy of psychological treatments for depression: a multiverse meta-analysis protocol. *BMJ open*, 12(1), e050197.
<http://dx.doi.org/10.1136/bmjopen-2021-050197>

Thank you

 OSF Slides



Code for all analyses and figures



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