Project: unexplained heterogeneity

Script purpose: create tables for manuscript

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Table 1

Variance in reliability leads to positive bias in heterogeneity estimates

		Observed Effect Sizes			
		Study 1	Study 2	Study 3	
Meta-Analysis	ρ_{xy}	$\sqrt{R_{xx'}} \times \sqrt{R_{yy'}} = .6$	$\sqrt{R_{xx'}} \times \sqrt{R_{yy'}} = .7$	$\sqrt{R_{xx'}} \times \sqrt{R_{yy'}} = .8$	SD(ES)
I	0.0	0.00	0.00	0.00	0.00
II	0.3	0.18	0.21	0.24	0.03
III	0.5	0.30	0.35	0.40	0.05

Note: Reproduced from Olsson Collentine et al. (2020). The values under Study 1, 2 and 3 are observed effect sizes for that study given its measurement reliability $\sqrt{R_{xx'}} \times \sqrt{R_{yy'}}$ and the true effect size ρ_{xy} when within-study sample size is infinite. SD (ES) is the standard deviation of the observed effect sizes for meta-analysis I, II and III, equivalent to heterogeneity given infinite within-study sample sizes. Code to reproduce table: LINK

Table 2 (version 1)

Imperfect reliability leads to negative bias in heterogeneity estimates

	Observed Effect Sizes			
$\sqrt{R_{xx'}} \times \sqrt{R_{yy'}}$	Study 1	Study 2	Study 3	SD(ES)
1	0.1	0.15	0.2	0.05
0.8	0.08	0.12	0.16	0.04
0.6	0.06	0.09	0.12	0.03

Note: The values under Study 1, 2 and 3 are observed effect sizes for that study given the measurement reliability $\sqrt{R_{xx'}} \times \sqrt{R_{yy'}}$ and the true effect size of that study (first row) when within-study sample size is infinite. SD (ES) is the standard deviation of the observed effect sizes, equivalent to heterogeneity given infinite within-study sample sizes. Code to reproduce table: LINK

Table 2 (version 2)

Imperfect reliability leads to negative bias in heterogeneity estimates

	Observed Effect Sizes			
	Study 1	Study 2	Study 3	SD(ES)
$\sqrt{R_{xx'}} \times \sqrt{R_{yy'}} = 1$	0.1	0.15	0.2	0.05
$\sqrt{R_{xx'}} \times \sqrt{R_{yy'}} = 0.8$	0.08	0.12	0.16	0.04
$\sqrt{R_{xx'}} \times \sqrt{R_{yy'}} = 0.6$	0.06	0.09	0.12	0.03

Note:
The values under Study 1, 2 and 3 are observed effect sizes for that study given the measurement reliability $\sqrt{R_{xx'}} \times \sqrt{R_{yy'}}$ and the true effect size of that study (first row) when within-study sample size is infinite. SD (ES) is the standard deviation of the observed effect sizes, equivalent to heterogeneity given infinite within-study sample sizes. Code to reproduce table: LINK