## **Online Appendix J: Forest plots by intervention component**

This section presents forest plots corresponding to the analysis described in the *Subgroup analyses and investigation of heterogeneity*-section, subsection *Math and reading tests, and combined intervention components* (see in particular Figure 6-9 and Table 3). In contrast to the analyses presented in the main text, we used effect sizes that were averaged by study (or cluster) instead of all effect sizes. We again estimated random-effects models but instead of the RVE procedure in the R package *robumeta*, we used the restricted maximum likelihood option with the Knapp and Hartung adjustment in the R package *metafor* (Viechtbauer, 2010). Using study level effect sizes and this procedure provided a robustness check on the methods used in the main text. It also made the forest plots more legible. The number of effect sizes in some of the categories of intervention components otherwise made these figures difficult to read. That being said, it may still be difficult to make out the authors and effect sizes in some cases. Please see Online Appendix H for more information about each effect size and study.

As in the main text, many interventions used more than one component (i.e., included more than one instructional method, or targeted more than one content domain). Thus, the overall effect sizes in the forest plots should be interpreted as the weighted average effect size for interventions that included a certain component, not the effect size of that component in isolation. If two or more components are included in the intervention, we cannot separately identify the association with effect sizes of any component in this analysis. Below, we comment first on the general patterns and mention the few differences to the primary analysis. Then we present the forest plots for each component (instructional method and content domain) along with further information about heterogeneity.

The estimated weighted average effect sizes are, for all components, very close to the estimates presented in Table 3 in the main text. The heterogeneity was in general reduced in this analysis compared with the primary analysis. With the exception of studies targeting social-emotional content and the *tau*-squared for medium-group instruction, all heterogeneity statistics were larger in the primary analysis than in the analysis shown below. This pattern seems reasonable as averaging over effect sizes ought to for example reduce the influence of outliers and remove within-study heterogeneity. However, just as in the primary analysis, we often found evidence of substantial heterogeneity. The *Q*-test is statistically significant for all components except CAI, other methods, progress monitoring, algebra/pre-algebra, geometry, and operations. The withincomponent heterogeneity of the effect sizes is underscored by the prediction intervals, which in all cases but for CAI and geometry, included or was very close to zero. The prediction interval is shown at the bottom of each figure by the "whiskers" on the diamond indicating the average effect size and 95% confidence interval (see also Appendix L for prediction intervals based on the RVE procedure).

Figure A1. Forest plot of studies of interventions including computer-assisted instruction.



Heterogeneity:  $\tau$ -squared = 0, *I*-squared = 0%, Q(df = 27) = 22.0, p = 0.735.



Heterogeneity:  $\tau$ -squared = 0.033, *I*-squared = 69.3%, Q(df = 20) = 75.5, p < 0.0001.



Heterogeneity:  $\tau$ -squared = 0.041, *I*-squared = 55.8%, Q(df = 18) = 41.5, p = 0.0013.



Heterogeneity: *τ*-squared = 0.230, *I*-squared = 90.0%, *Q*(*df* = 17) = 115.6, *p* < 0.0001.

Figure A5. Forest plot of studies of interventions including other methods.



Heterogeneity: *τ*-squared = 0.006, *I*-squared = 37.0%, *Q*(*df* = 7) = 8.7, *p* = 0.272.

Carlson et al. (1984)	<b>├</b> ─ <b>#</b> ──┤	3.00%	-0.03 [-0.66, 0.59]
Fuchs et al. (1995)	<b>⊢ ∔</b> – {	3.02%	0.03 [-0.59, 0.66]
Gillies & Ashman (2000)	⊢ •	2.24%	0.04 [-0.80, 0.87]
Fuchs et al. (1991b)	∎	2.88%	0.04 [-0.62, 0.69]
Fuchs et al. (1994)	<b>├#</b>	2.51%	0.06 [-0.69, 0.82]
Hitchcock et al. (2011)	H <b>im</b> an	4.89%	0.08 [-0.13, 0.29]
Slavin et al. (2009)		5.12%	0.09 [-0.05, 0.23]
Mathes & Fuchs (1993)	∎	2.87%	0.10 [-0.56, 0.75]
Slavin et al. (1984a)	<b>├</b> ── <b>─</b> ─┤	2.68%	0.14 [-0.57, 0.84]
Ritchey et al. (2017)	<b>├</b> ─ <b>■</b> ─┤	3.20%	0.21 [-0.37, 0.79]
Saenz (2002)	<b>⊢</b>	2.25%	0.22 [-0.62, 1.05]
Fuchs et al. (2002)	┝╧╋╌┥	3.60%	0.25 [-0.24, 0.74]
Fuchs et al. (1997a)	╞╌┋╋╌╌┤	2.48%	0.29 [-0.47, 1.06]
Simmons et al. (2010)	È- <b>■</b>	4.21%	0.32 [-0.05, 0.68]
Calhoon et al. (2007)	┝┊╋╌┤	2.89%	0.33 [-0.32, 0.98]
Allor et al. (2001)	┝┿╋╌┥	3.11%	0.33 [-0.27, 0.93]
Top & Osguthorpe (1987)		3.53%	0.39 [-0.11, 0.90]
Klinger et al. (1998)	┝╧╌┻──┤	2.99%	0.42 [-0.21, 1.05]
Fuchs et al. (2001a)	<b>⊢</b>	1.88%	0.43 [-0.54, 1.39]
Fuchs et al. (1997b)	⊢ <u>⊢</u> ∎{	2.74%	0.43 [-0.26, 1.12]
Xin (1996)	┝┋╌┻──┤	3.02%	0.43 [-0.19, 1.05]
Slavin et al. (1984b)	■	3.32%	0.47 [-0.09, 1.02]
Fuchs et al. (2001b)	<b>├-</b> ₩	3.95%	0.50 [ 0.08, 0.92]
Nussbaum (2010)	<b>⊨_</b> ∎1	3.21%	0.54 [-0.04, 1.12]
Calhoon et al. (2006)	k <mark>⊨ −</mark>	2.90%	0.56 [-0.09, 1.21]
Fuchs et al. (1999)	<b>├</b> <u>-</u>	1.78%	0.57 [-0.44, 1.57]
Hempenstall (2008)	┝╋┥	4.54%	0.69 [ 0.40, 0.99]
Mathes et al. (2003)	┝╌╋╌┤	3.24%	0.74 [ 0.17, 1.31]
Bar-Eli & Raviv (1982)	<b>├──</b> ■──┤	2.50%	0.97 [ 0.21, 1.72]
Heller & Fantuzzo (1993)	┝──■──┤	3.19%	1.22 [ 0.64, 1.80]
White (2000)	╞──■──┤	2.29%	1.31 [ 0.49, 2.12]
Gillum (2013)	┝╼╋╌┥	3.95%	1.98 [ 1.56, 2.40]
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Heterogeneity:  $\tau$ -squared = 0.132, *I*-squared = 70.2%, Q(df = 31) = 108.3, p < 0.0001.



Heterogeneity:  $\tau$ -squared = 0.010, *I*-squared = 27.9%, Q(df = 18) = 19.7, p = 0.350.

Figure A8. Forest plot of studies of interventions including small-group instruction.



Heterogeneity:  $\tau$ -squared = 0.061, *I*-squared = 67.9%, Q(df = 117) = 363.9, p < 0.0001.

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usigning tail (2000)       0.94%       0.16 [-0.30, 0.24%         usigning tail (2010)       1.94       0.21%       0.16 [-0.30, 0.24, 0.25%         usigning tail (2010)       1.94       0.21%       0.16 [-0.30, 0.24, 0.25%         usigning tail (2010)       1.94       0.21%       0.16 [-0.30, 0.24, 0.25%         usigning tail (2010)       1.94       0.21%       0.21 [-0.21, 0.25%         usigning tail (2010)       1.94       0.21 [-0.21, 0.25%       0.22 [-0.01, 0.45%         usigning tail (2010)       1.94       0.21 [-0.21, 0.25%       0.22 [-0.01, 0.45%         usigning tail (2006)       1.94       0.25 [-0.10, 0.65%       0.22 [-0.01, 0.65%         usigning tail (2006)       1.94       0.25 [-0.40, 0.55%       0.22 [-0.01, 0.65%         usigning tail (2014)       1.95%       0.31 [-0.03, 0.55%       0.22 [-0.01, 0.65%         usigning tail (2016)       1.94       1.95%       0.31 [-0.03, 0.5%       0.22 [-0.01, 0.65%         usigning tail (2016)       1.95%       0.33 [-0.04, 0.5%       0.32 [-0.04, 0.5%       0.32 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.33 [-0.04, 0.5%       0.	, r <del>, •</del> · ·	1.52% 0.15 [-0.21, 0.51
anten et al. (2010) azgine et al. (2010) attende et al. (2011) attende et al. (2011) attende et al. (2011) attende et al. (2011) attende et al. (2010) attende et al. (2010) attende et al. (2011) attende et al. (2010) attende et al. (2010) attende et al. (2011) attende et al. (2010) attende et al. (2011) attende et al. (2010) attende et al. (2010) at		0.94% 0.15 [-0.36, 0.67
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se & hitchey et al (2017) attis et al (2010) antrel et al (2010) antrel et al (2010) antrel et al (2020) antrel et al (2020) attis et al (2020) bit al (2021) bit al (2020) bit al (2021) bit al (2020) bit al (2021) bit al (2020) bit al (2020) bit al (2021) bit al (2020) bit al (2020) conset al (2020) co	H <del>,</del> ∎-1	2.31% 0.18 [-0.06, 0.41
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attis et al. (2010)       1.2.4%       0.21 (0.21, 0.64         antrel et al. (2010)       2.2.9.062, 10.04         htst & Davie (2009)       1.1.9%       0.22 (0.02, 10.04         aughn et al. (2006a)       1.1.9%       0.22 (0.02, 10.04         inter et al. (2006)       1.1.9%       0.27 (0.01, 0.05         oiart et al. (2005)       1.1.9%       0.27 (0.04, 0.05         oiart et al. (2010)       1.9%       0.27 (0.04, 0.05         immons et al. (2010)       1.9%       0.21 (0.21, 0.22, 0.08         istat (2011)       1.9%       0.27 (0.04, 0.05         immons et al. (2010)       1.9%       0.31 (0.03, 0.06         leisent et al. (2010)       1.9%       0.33 (0.04, 0.06         leisent et al. (2010)       1.9%       0.33 (0.04, 0.06         leisent et al. (2011)       1.9%       0.33 (0.04, 0.06         leisent et al. (2012)       1.9%       0.33 (0.04, 0.06         leisent et al. (2011)       1.9%       0.33 (0.03, 0.07, 1.7, 0.77         ansford-Kaldon et al. (2011)       1.9%       0.33 (0.04, 0.05, 0.77, 0.37, 1.7, 0.73         ansford-Kaldon et al. (2010)       1.9%       0.33 (0.03, 0.07, 1.7, 0.73         leisen et al. (2014)       1.9%       0.5%       0.38 (0.03, 0.73, 1.7, 0.73         leisen	<u>⊢ ÷ • − − −</u> 1	0.79% 0.21 [-0.37, 0.79
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hrist & Davie (2009) unnery et al. (2006a) unnery et al. (2006a) eistad (2005) eistad (2005) eistad (2005) eistad (2005) olari et al. (2010) mendum et al. (2010) mendum et al. (2010) mendum et al. (2010) mendum et al. (2011) lissen et al. (2012) uchs et al. (2020) mendum et al. (2012) lissen et al. (2012) uchs et al. (2006a) mendum et al. (2017) mendum et al. (2018) mendum et al. (2019) mendum et al. (2019) mendum et al. (2010) mendum et al. (2011) lissen et al. (2012) uchs et al. (2006a) mendum et al. (2011) lissen et al. (2012) uchs et al. (2006a) mendum et al. (2010) mendum et al. (2006) mendum et al. (2007) mendum et al. (2008) mendum et al. (2008) mendum et al. (2008) mendum et al. (2004) mendum et al. (2005) mendum et al. (2004) mendum et al. (2005) mendum et al. (2004) mendum et	<u>⊢</u> ∎1	2.37% 0.22 [-0.01, 0.45
aughn et al. (2006a)       11996, 0.27 [-0.70, 0.71]         inder et al. (2014)       1789, 0.27 [-0.70, 0.75]         istald (2015)       14.74, 0.31 [-0.06, 0.65]         orient et al. (2016a)       1.99%, 0.31 [-0.06, 0.65]         immons et al. (2010)       1.99%, 0.31 [-0.07, 0.67]         orient et al. (2010)       1.99%, 0.31 [-0.07, 0.67]         immons et al. (2010)       1.99%, 0.33 [-0.14, 0.86]         orient et al. (2011)       1.99%, 0.33 [-0.14, 0.86]         inter et al. (2012)       1.99%, 0.33 [-0.14, 0.86]         inter et al. (2011)       1.99%, 0.33 [-0.14, 0.86]         inter et al. (2012)       1.99%, 0.33 [-0.14, 0.86]         inter et al. (2011)       1.99%, 0.33 [-0.14, 0.86]         inter et al. (2016a)       1.99%, 0.33 [-0.27, 0.37]         inter et al. (2016a)       1.99%, 0.34 [-0.80, 0.37]         inter et al. (1997b)       1.99%, 0.34 [-0.80, 0.37]         inter et al. (2006)       1.99%, 0.34 [-0.62, 0.12]         aughn et al. (2006)       1.99%, 0.34 [-0.22, 0.12]         inter et al. (2002)       1.99%, 0.34 [-0.22, 0.12]         inter et al. (2006)       1.99%, 0.34 [-0.2, 0.12]         inter et al. (2006)       1.99%, 0.35 [-0.43, 0.26, 1.12]         inter et al. (2006)       1.99%, 0.45 [-0.2, 1.02]         inter et al.		1.41% 0.25 [-0.14, 0.64
unnerg et al (2006) eistad (2005) cientific Learning Cooperation (2005) olari et al. (2010) regesen et al. (2012) regesen et al. (2012) regesen et al. (2013) regesen et al. (2014) regesen et al. (2016) regesen et al. (2016) regesen et al. (2017) regesen et al. (2018) regesen et al. (2018) regesen et al. (2019) regesen et al. (2010) regesen et al. (2006) regesen et al. (2007) regesen et al. (2008) regesen et al. (2008) regesen et al. (2001) regesen et al. (2003) regesen et al. (2004) regesen et al. (2004) regesen et al. (2005) regesen et al. (2005) regesen et al. (2006) regesen et al. (2006) regesen et al. (2007) regesen et al. (2008) regesen et al. (2001) regesen et al. (2003) regesen et al. (2004) regesen et al. (2004) regesen et al. (2005) regesen et al. (2003) regesen et al. (2004) regesen et al. (2004) regesen et al. (2005) regesen et al. (2005) regesen et al. (2006) regesen et al. (2007) regesen et al. (2007) regesen et al. (2008) regesen et al. (2007) regesen et al. (20		1.19% 0.27 -0.17, 0.71
ida de fai. (2014)		1.78% 0.27 -0.04, 0.59
eistad (2005) ieistad (2005) iarren et al. (2010) immons et al. (2010) immons et al. (2010) immons et al. (2010) immons et al. (2010) ieistad (2010) ieistad (2011) ieistad (2012) ieistad (2012) ieistad (2014) ieistad (2014) ieistad (2014) ieistad (2014) ieistad (2014) ieistad (2015) are of al. (2010) ieistad (2005) ieistad (2005) ieittad (2005) ieittad (2005) ieittad (2005) ieittad (2005)		0.95% 0.29 -0.22 0.81
cientific Learning Cooperation (2005) cientific Learnin	· · · · · · · · · · · · · · · · · · ·	1.47% 0.31 -0.06, 0.69
coming tail (2018)       1039       0.32 [0.16]       0.81         immons et al. (2010)       150%       0.33 [0.14]       0.84         operated al. (2020)       2.95%       0.34 [0.19]       0.56         ielesen et al. (2011)       107%       0.28 [0.37, 112]       0.58%       0.34 [0.19]       0.56         unst et al. (2014)       0.58%       0.57 [0.37, 1.12]       0.58%       0.38 [0.03]       0.77, 1.12         unst et al. (2014)       16.3%       0.38 [0.03]       0.77, 1.12       0.58%       0.38 [0.03]       0.77, 1.12         unst et al. (2014)       16.3%       0.38 [0.03]       0.77, 1.12       0.58%       0.45 [0.02]       0.77, 1.12         unst et al. (2014)       16.97%       0.43 [0.05]       0.77       0.68%       0.45 [0.02]       0.77         unst et al. (2006)       10.97%       0.45 [0.02]       0.58%       0.45 [0.02]       0.65%       0.45 [0.02]       0.65%       0.56 [0.02]       0.65%       0.56 [0.02]       0.55 [0.04]       0.51 [0.07]       0.53%       0.64 [0.09]       0.53%       0.65 [0.02]       0.65%       0.56 [0.02]       0.55 [0.04]       0.55 [0.04]       0.55 [0.04]       0.55 [0.04]       0.55 [0.04]       0.55 [0.04]       0.55 [0.04]       0.55 [0.04]       0.55 [0.04] </td <td>9</td> <td>199% 0.31[0.03.0.60</td>	9	199% 0.31[0.03.0.60
immons et al. (2010)       immons et al. (1999)       1.50%       0.33       0.04       0.85         ordex et al. (2009)       immons et al. (2011)       0.84%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.4%       0.35       1.0.27       0.35       1.0.4%       0.35       1.0.27       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.35       1.0.3%       0.45       1.0.5%       0.45       1.0.5%       0.45       1.0.5%       0.45       1.0.5%       0.45       1.0.5%       0.45       1.0.5%       0.45       1.0.5%       0.45       1.0.5%       0.45       1.0.5%       1.0.5%       0.5%       1.0.5%<		1 03% 0.32 [-0.16 0.81
minute tail (2009)       1070       0.33 [0.14, 0.05         olock et al. (2009)       1070       0.33 [0.14, 0.05         mendum et al. (2011)       2.95%       0.34 [0.19, 0.55         uichs et al. (2016a)       1.59%       0.38 [0.03, 0.77         ansford-Kaldon et al. (2011)       1.63%       0.39 [0.05, 0.73         uichs et al. (2016a)       1.63%       0.39 [0.05, 0.73         lice at al. (1997b)       0.65%       0.44 [0.22, 1.10]         uichs et al. (2005)       1.63%       0.45 [0.05, 0.88         locat et al. (2006c)       1.64%       0.45 [0.05, 0.88         locat et al. (2005)       1.64%       0.45 [0.05, 0.88         locat et al. (2006c)       1.64%       0.45 [0.02, 0.05         locat et al. (2007)       0.41%       0.55 [0.09, 1.27         aughn et al. (2006)       1.11%       0.53 [0.24, 0.07         uich set al. (2010)       1.11%       0.53 [0.24, 0.07         arx & Keller (2010)       1.11%       0.55 [0.09, 1.27         arx & Keller (2010)       1.11%       0.55 [0.09, 1.27         are et al. (2015)       1.11%       0.55 [0.04, 0.77         are et al. (2010)       1.11%       0.55 [0.04, 0.77         are et al. (2011)       1.11%       0.55 [0.04, 0.77     <		1 50% 0 33 -0 04 0 69
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Heterogeneity:  $\tau$ -squared = 0.023, *I*-squared = 48.6%, Q(df = 72) = 139.8, p < 0.0001.

Figure A10. Forest plot of studies of interventions targeting decoding.



Heterogeneity: *τ*-squared = 0.037, *I*-squared = 60.8%, *Q*(*df* = 90) = 233.3, *p* < 0.0001.

Denton et al. (2004) Swanson & O'Connor (2009) Fives et al. (2013) Baker et al. (2017b) Block (2008) Borman et al. (2009) Vaughn et al. (2016) Campuzano et al. (2009) Wanzek & Roberts (2012) Arvans (2010) Fuchs et al. (1991b) Therrien et al. (2006) Wanzek et al. (2017) Rouse & Krueger (2004) Vadasy & Sanders (2008b) Gilbert et al. (2013) Wolff (2011) Wanzek et al. (2016) Mathes & Fuchs (1993) Jacob et al. (2016) Smith et al. (2016) Torgesen et al. (2006) Burns et al. (2004) Vadasy & Sanders (2008c) Vaughn et al. (2006b) Vaughn et al. (2010) Gattis et al. (2010) Gattis et al. (2010) Gattis et al. (2010) Gattis et al. (2010) Saenz (2002) Christ & Davie (2009) Vaughn et al. (2010) Saenz (2002) Christ & Davie (2009) Vaughn et al. (2010) Gatti et al. (2011) Fuchs et al. (2010) Amendum et al. (2011) Fuchs et al. (2010) At Otaiba et al. (2010) At Otaiba et al. (2005) Block et al. (2010) At Otaiba et al. (2005) Vaughn et al. (2005) Vaughn et al. (2005) Solari et al. (2010) At Otaiba et al. (2010) At Otaiba et al. (2005) Vaughn et al. (2005) Vaughn et al. (2005) Vaughn et al. (2005) Vaughn et al. (2005) Block et al. (2010) At Otaiba et al. (2010) At Otaiba et al. (2006) Torgesen et al. (2010) At Otaiba et al. (2006) Torgesen et al. (2010) At Otaiba et al. (2007) Begeny et al. (2010) O'Chonnor et al. (2002) Begeny et al. (2011) Mathes et al. (2004) Blachman et al. (2004) Begeny et al. (2012) Meier & Invernizzi (2001) RE Model		$\begin{array}{c} 1.34\%\\ 0.93\%\\ 2.85\%\\ 1.61\%\\ 2.85\%\\ 1.60\%\\ 3.46\%\\ 3.19\%\\ 1.06\%\\ 3.46\%\\ 3.19\%\\ 1.06\%\\ 0.90\%\\ 0.76\%\\ 3.46\%\\ 2.68\%\\ 2.01\%\\ 2.66\%\\ 2.45\%\\ 2.68\%\\ 2.01\%\\ 2.66\%\\ 0.90\%\\ 4.21\%\\ 3.17\%\\ 1.68\%\\ 0.94\%\\ 2.07\%\\ 1.30\%\\ 3.07\%\\ 1.30\%\\ 1.70\%\\ 0.60\%\\ 1.92\%\\ 1.64\%\\ 2.00\%\\ 1.31\%\\ 0.92\%\\ 1.64\%\\ 2.00\%\\ 3.84\%\\ 1.17\%\\ 2.16\%\\ 2.00\%\\ 3.84\%\\ 1.17\%\\ 2.16\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 1.64\%\\ 0.92\%\\ 0.75\%\\ 0.94\%\\ 1.11\%\\ 1.52\%\\ 0.75\%\\ 0.94\%\\ 1.10\%\\ 1.50\%\\ 0.75\%\\ 0.94\%\\ 1.09\%\\ 1.00\%$	$\begin{array}{c} -0.14 \ [-0.65, \ 0.36] \\ -0.11 \ [-0.75, \ 0.54] \\ -0.10 \ [-0.36, \ 0.16] \\ -0.09 \ [-0.54, \ 0.35] \\ 0.00 \ [-0.58, \ 0.58] \\ 0.01 \ [-0.37, \ 0.38] \\ 0.01 \ [-0.19, \ 0.20] \\ 0.01 \ [-0.21, \ 0.24] \\ 0.02 \ [-0.58, \ 0.61] \\ 0.04 \ [-0.40, \ 0.47] \\ 0.04 \ [-0.62, \ 0.69] \\ 0.05 \ [-0.68, \ 0.78] \\ 0.06 \ [-0.14, \ 0.25] \\ 0.08 \ [-0.23, \ 0.39] \\ 0.08 \ [-0.29, \ 0.46] \\ 0.08 \ [-0.29, \ 0.46] \\ 0.08 \ [-0.29, \ 0.46] \\ 0.10 \ [-0.56, \ 0.75] \\ 0.10 \ [-0.56, \ 0.75] \\ 0.10 \ [-0.56, \ 0.75] \\ 0.10 \ [-0.21, \ 0.38] \\ 0.10 \ [-0.56, \ 0.75] \\ 0.10 \ [-0.22, \ 0.36] \\ 0.14 \ [-0.29, \ 0.57] \\ 0.15 \ [-0.49, \ 0.79] \\ 0.15 \ [-0.21, \ 0.51] \\ 0.15 \ [-0.24, \ 0.57] \\ 0.15 \ [-0.24, \ 0.57] \\ 0.15 \ [-0.24, \ 0.57] \\ 0.25 \ [-0.14, \ 0.64] \\ 0.27 \ [-0.17, \ 0.71] \\ 0.29 \ [-0.22, \ 0.81] \\ 0.31 \ [-0.33, \ 0.96] \\ 0.31 \ [-0.36, \ 0.67] \\ 0.33 \ [-0.50, \ 0.70] \\ 0.34 \ [0.19, \ 0.50] \\ 0.35 \ [-0.21, \ 0.91] \\ 0.33 \ [-0.50, \ 0.70] \\ 0.34 \ [0.19, \ 0.50] \\ 0.35 \ [-0.21, \ 0.91] \\ 0.35 \ [-0.21, \ 0.91] \\ 0.36 \ [-0.19, \ 1.32] \\ 0.57 \ [-0.44, \ 0.71] \\ 0.56 \ [-0.19, \ 1.32] \\ 0.57 \ [-0.44, \ 0.71] \\ 0.56 \ [-0.19, \ 1.32] \\ 0.57 \ [-0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.58 \ [0.44, \ 0.71] \\ 0.55 \ [0.44, \ 0.71] \\ 0.55 \ [0.44, \ 0.71] \\ 0.55 \ [0.44, \ 0.71] \\ 0.55 \ [0.44, \ 0.71] \\ 0.55 \ [0.44, \ 0.71] \\ 0.55 \ [0.44, \ 0.71] \\ 0.55 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] \\ 0.56 \ [0.44, \ 0.71] $
		100.0070	0.20[0.17,0.02]
	-1 0 1 2 3 Effect size		

Heterogeneity:  $\tau$ -squared = 0.026, *I*-squared = 48.9%, Q(df = 55) = 115.4, p < 0.0001.

Figure A12. Forest plot of studies of interventions targeting multiple reading domains.



Heterogeneity: *τ*-squared = 0.049, *I*-squared = 74.4%, *Q*(*df* = 102) = 336.2, *p* < 0.0001.

Dunsmuir et al. (2008)	⊦ <b>_</b> ∎1	2.50%	-0.17 [-0.58, 0.24]	
Fälth et al. (2015)	<b>├───</b> ■ <mark>──</mark> ─┤	1.25%	-0.15 [-0.87, 0.56]	
Arens et al. (2012)	H∰H	4.06%	-0.04 [-0.23, 0.16]	
Lesaux et al. (2014)	ŀ≢H	4.04%	-0.00 [-0.20, 0.19]	
Borman et al. (2009)	<b>⊢</b>	2.69%	0.01 [-0.37, 0.38]	
Arvans (2010)	<b>⊢</b>	2.36%	0.04 [-0.40, 0.47]	
Lesaux et al. (2010)	⊢∔∎−−₁	3.10%	0.08 [-0.24, 0.40]	
Rouse & Krueger (2004)	⊦₩-1	4.10%	0.08 [-0.11, 0.26]	
Gilbert et al. (2013)	;   <b>⊒</b>	3.39%	0.08 [-0.20, 0.36]	
Hitchcock et al. (2011)	; ├ <del>ॼ</del> -┤	3.90%	0.08 [-0.13, 0.29]	
Wanzek et al. (2016)	- <b>:</b> ■	3.37%	0.10 [-0.19, 0.38]	
Given et al. (2008)	<u> </u>	1.10%	0.11 [-0.67, 0.89]	
Burns et al. (2004)	· · · · · · · · · · · · · · · · · · ·	1.47%	0.15 [-0.49, 0.79]	
Cantrell et al. (2016)		4.55%	0.16 0.04 0.28	
Torgesen et al. (2006)	, ▶ <b>₽</b> 4	2.30%	0.18 [-0.26, 0.63]	
Gattis et al. (2010)		2 41%	0 21 [-0 21 0 64]	
Cantrell et al. (2010)	, , = , , <b>⊢-∰-</b> -1	3 78%	0 22 [-0 01 0 45]	
Vadasy & Sanders (2011)		2 51%	0.22 [-0.01, 0.40]	
Torgesen et al. (1000)		2.0170	0.25 [-0.10, 0.04]	
Hatebor et al. (2006)		2.1070	0.20 [-0.20, 0.75]	
Scientific Learning Cooperation (2005)		2.2170	0.30[-0.13, 0.73]	
Scientific Learning Cooperation (2003)		3.30%		
Solari et al. $(2018)$		2.09%	0.32 [-0.16, 0.81]	
Vadasy et al. (2006)		0.92%	0.34 [-0.33, 1.21]	
Vadasy & Sanders (2008a)		1.91%	0.36 [-0.16, 0.88]	
Vadasy & Sanders (2007)		1.58%	0.41 [-0.20, 1.01]	
Denton et al. (2010)	┝╋┤	4.02%	0.43 [ 0.24, 0.63]	
Vaughn et al. (2006c)	l <u>i</u> ∎−−−1	1.43%	0.49 [-0.16, 1.15]	
Al-Hazza (2002)	<b>⊢</b> <u></u> <b>−</b> −−−−−1	0.96%	0.52 [-0.33, 1.37]	
Torgeson et al. (2010)	<b>├──■</b> ──┤	2.22%	0.53 [ 0.07, 1.00]	
O'Shaughnessy & Swanson (2000)	┝┋╴╸╸	1.20%	0.54 [-0.20, 1.28]	
Vadasy & Sanders (2010)	<b>├</b> ── <b>●</b> ──┤	2.15%	0.57 [ 0.09, 1.04]	
May et al. (2015)	H■H	4.43%	0.58 [ 0.44, 0.71]	
Jenkins et al. (2004)	<b>}</b> −−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−	1.80%	0.60 [ 0.06, 1.15]	
Case et al. (2010)	<del>∲</del>	1.20%	0.64 [-0.09, 1.38]	
Caggiano (2007)	<u>⊨</u>	1.48%	0.67 [ 0.03, 1.31]	
Hempenstall (2008)	┝╼╌┤	3.27%	0.69 [ 0.40, 0.99]	
O'Connor et al. (2002)	<u>⊧</u> {	1.20%	0.71 [-0.02, 1.44]	
Ming (2007)	⊦ <u> </u>	0.88%	0.80 [-0.09, 1.69]	
Blachman et al. (2004)	┝──■──┤	2.03%	0.90 [ 0.40, 1.39]	
Vadasy et al. (2000)	<b>⊢</b>	1.57%	0.95 [ 0.34, 1.56]	
Rashotte et al. (2001)	<b>⊢</b>	1.30%	0.99 0.30, 1.69	
Meier & Invernizzi (2001)	<b>⊢</b> ∎1	1.67%	1.31 [ 0.73, 1.90]	
		400.000/	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
KE Model	·····	100.00%	0.31 [ 0.21, 0.40]	
	-1 -0 5 0 0 5 1 1 5 2			
	-i -0.0 0 0.0 i i.0 Z			
	Effect size			

Heterogeneity:  $\tau$ -squared = 0.046, *I*-squared = 63.5%, Q(df = 41) = 110.5, p < 0.0001.

	:		
Dunsmuir et al. (2008)	┝──■┼┤	1.46%	-0.17 [-0.58, 0.24]
Fives et al. (2013)	, ⊨∎;⊣	2.59%	-0.10 [-0.36, 0.16]
Baker et al. (2017b)		1.30%	-0.09 [-0.54, 0.35]
Denton et al. (2004)		0.78%	-0.07 [-0.68, 0.53]
Arens et al. (2012)	┝╼╤╌┥	3.41%	-0.04 [-0.23, 0.16]
Lesaux et al. (2014)	┝╋┤	3.38%	-0.00 [-0.20, 0.19]
Block (2008)		0.85%	0.00 [-0.58, 0.58]
Borman et al. (2009)		1.63%	0.01 [-0.37, 0.38]
Vaughn et al. (2016)		3.36%	0.01 [-0.19, 0.20]
Wanzek & Roberts (2012)		0.81%	0.02 [-0.58, 0.61]
Campuzano et al. (2009)		3.07%	0.04 [-0.17, 0.26]
Torgesen et al. (2006)		1.61%	0.05 [-0.33, 0.44]
Wanzek et al. (2017)		3.30%	0.06 [-0.14, 0.25]
Deuteo & Krueger (2004)		2.00%	
Cilbert et el. (2012)		3.50%	
$W_{apzok}$ of al. (2013)		2.40%	
(2010)		4 46%	0.10[-0.13, 0.30]
Given et al. (2008)		0.50%	0.10[-0.01, 0.22]
Smith et al. (2016)		2 99%	0 14 1-0 09 0 361
Drummond et al. $(2010)$		3.58%	0.14[-0.03, 0.00] 0.14[-0.04] 0.32]
Burns et al. (2004)		0.72%	0.15 [-0.49 0 79]
Vadasy & Sanders (2008c)		1 74%	0 15 [-0 21 0 51]
Vaughn et al. (2006b)		1.02%	0 15 [-0 36, 0.67]
Cantrell et al. (2016)		4.44%	0.16 0.04, 0.28
Vaughn et al. (2010)		2.86%	0.18 [-0.06, 0.41]
Ritchey et al. (2017)		0.85%	0.21 [-0.37, 0.79]
Mayfield (2000)		1.05%	0.21 [-0.30, 0.72]
Torgesen`et al. (1999)		1.20%	0.21 [-0.25, 0.68]
Cantrell et al. (2010)	∳ <b>_∎</b> _	2.95%	0.22 [-0.01, 0.45]
Christ & Davie (2009)	<b>⊢ =</b> − −	1.59%	0.25 [-0.14, 0.64]
Vaughn et al. (2006a)	⊦ <del>∶ ■</del>	1.32%	0.27 [-0.17, 0.71]
O'Connor et al. (2010)	┝╶╪╌┻──┤	0.76%	0.29 [-0.33, 0.90]
Kidd et al. (2014)		1.03%	0.29 [-0.22, 0.81]
Simmons et al. (2010)		1.72%	0.31 [-0.06, 0.67]
Scientific Learning Cooperation (2005)		2.38%	0.31 [ 0.03, 0.60]
Vadasy et al. (2006)		0.41%	0.34 [-0.53, 1.21]
BIOCK et al. (2009)		3.90%	
Amendum et al. (2011)		0.91%	
Fuchs of al. $(2016a)$		1 8 3 %	0.37 [-0.37, 1.12] 0.38 [ 0.03, 0.73]
Gupp et al. (2010a)		1.00%	
Ransford-Kaldon et al. (2011)		1 89%	0 39 [ 0 05 0 73]
Fuchs et al. (2016b)		1.05%	0 43 [ 0 10 0 77]
Al Otaiba et al. (2005)		0.87%	0 45 [-0 12 1 02]
Vaughn et al. (2006c)	<u>↓                                     </u>	0.69%	0.49 [-0.16, 1.15]
Al-Hazza (2002)	<u>⊢ − − − − − − −</u> − − − − − − − − − − − −	0.43%	0.52 [-0.33, 1.37]
Calhoon et al. (2006)	· + · · · · · · · · · · · · · · · · · ·	0.69%	0.56 -0.09, 1.21
Marx & Keller (2010)	· · · · · · · · · · · · · · · · · · ·	1.88%	0.56 0.22, 0.90
May et al. (20Ì5) Ú	<b>⊢⊞</b> -I	4.17%	0.58 [ 0.44, 0.71]
Case et al. (2010)	<b>⊢</b>	0.56%	0.64 [-0.09, 1.38]
Caggiano (2007)	<u>}</u> −−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−	0.72%	0.67 [ 0.03, 1.31]
O'Connor et al. (2002)	<u>⊨</u>	0.56%	0.71 [-0.02, 1.44]
Mackiewicz (2010)	i <b>⊢</b> +	0.73%	0.76 [ 0.12, 1.39]
Ming (2007)	l <u>↓</u> l	0.39%	0.80 [-0.09, 1.69]
RE Model		100.00%	0.19 [ 0.14, 0.25]
	-1 -0.5 0 0.5 1 1.5 2		
	Effect size		

Heterogeneity: *τ*-squared = 0.016, *I*-squared = 43.7%, *Q*(*df* = 54) = 95.4, *p* = 0.0004.



Heterogeneity:  $\tau$ -squared = 0.014, *I*-squared = 33.4%, Q(df = 12) = 17.2, p = 0.143.



Heterogeneity: *τ*-squared = 0.083, *I*-squared = 74.8%, *Q*(*df* = 5) = 26.0, *p* < 0.0001.



Heterogeneity:  $\tau$ -squared = 0, *I*-squared = 0%, Q(df = 9) = 3.09, p < 0.961.

Figure A18. Forest plot of studies of interventions targeting multiple math domains.

Coats (2013)	⊦ <del>∎ ]</del>	3.06%	-0.20 [-0.43, 0.03]
Fien et al. (2016)	<b>⊢</b> ∎+I	2.94%	-0.13 [-0.38, 0.12]
Deke et al. (2012)		4.32%	0.00 [-0.03, 0.04]
Fryer (2011)	⊢∔	3.24%	0.02 [-0.19, 0.23]
Campuzano et al. (2009)	⊢∎⊣	3.20%	0.04 [-0.17, 0.26]
Wang & Woodworth (2011)	<b>-</b> ∰-	3.31%	0.05 [-0.15, 0.25]
Fuchs et al. (1994)	<u>⊢</u>	0.80%	0.06 1-0.69, 0.821
Hallstedt et al. (2018)		2 21%	0.06[-0.29]0.42]
Slavin et al. (1984a)		0.95%	0.06 [-0.61 0.74]
Bettinger (2012)		3 23%	0.07 [-0.14 0.28]
Swapson of al. $(2014a)$		1 00%	0.08[0.54, 0.20]
Euclose et al. $(2014a)$		2 4 2 0/	0.00 [-0.04, 0.70]
$\frac{1}{2013} = \frac{1}{2012}$		J.4270	0.10[-0.09, 0.29]
Clarke et al. (2013)		2.10%	0.11[-0.25, 0.46]
Clarke et al. $(2014)$		1.71%	0.11[-0.33, 0.55]
Fuchs et al. (1991a)		0.69%	0.11 [-0.71, 0.93]
Foster et al. (2018)		2.92%	0.11 [-0.14, 0.36]
Campbell & Brigman (2005)	l;∎-1	3.13%	0.16 [-0.07, 0.38]
Foster et al. (2016)	l <del>∶≡</del> -1	2.77%	0.17 [-0.10, 0.44]
Clarke et al. (2011)	<b>⊨</b> ∎⊣	3.45%	0.19 [ 0.01, 0.38]
Clarke et al. (2016a)	[-■-	2.82%	0.25 [-0.02, 0.51]
Fuchs et al. (2002)	┝╴╺╴╴┥	1.51%	0.25 [-0.24, 0.74]
Rutt (2014)	┝╼╌┥	2.76%	0.27 [-0.00, 0.54]
Fuchs et al. (2009)	⊦ <mark>⊢ ■</mark> → I	1.81%	0.28 [-0.15, 0.70]
Fuchs et al. (1997a)	<b>⊢ → → →</b>	0.79%	0.29 [-0.47, 1.06]
Swanson et al. (2012)	<b>⊢ −</b> − − − − − − − − − − − − − − − − −	0.92%	0.33 [-0.36, 1.02]
Bryant et al. (2011)		2.57%	0.33 [ 0.03, 0.63]
Fuchs et al. (2005)		2.21%	0.33 [-0.02, 0.69]
Gersten et al. (2015)	-■-	3.43%	0.34 0.15, 0.52
Hansson (2014)		1.39%	0.37 [-0.16, 0.89]
Swanson et al. (2014b)		0.81%	0.37 [-0.38, 1.12]
Clarke et al. (2016b)		1.93%	0.37 [-0.03, 0.78]
Pasnak et al. (2009)	┝╌╋╌┥	2.65%	0.38 1 0.09, 0.671
Fuchs et al. (2016b)		2 34%	0.38[0.05]0.71]
Kidd et al. (2014)		1 34%	0 42 [-0 12 0 96]
Xin (1996)		1 09%	0 43 [-0 19 1 05]
Slavin et al. (1984b)		1 28%	0 47 [-0 09 1 02]
Euchs et al. $(2013b)$		3 32%	0.48[0.28 0.68]
Fuchs et al. (1996)		0.62%	0.40[0.20, 0.00]
Fuchs of al. $(2010)$		1 04%	0.52 [ 0.12 0.02]
$\left[ \frac{2010}{2} \right]$		1.9470	0.52[0.12, 0.92]
Dypon at al. $(2012)$		1.7770	0.55 [ 0.11, 0.96]
Dyson et al. (2013)		1.75%	
$F_{\text{tracks}} = \frac{1}{2} \left( \frac{2012}{2} \right)$		1.91%	
Fuchs et al. (2016c)	∎	2.30%	0.63 [ 0.29, 0.97]
Fuchs et al. (2014b)	<b>├-₩-</b> ┤	2.44%	0.65 [ 0.33, 0.96]
Fuchs et al. (2008a)	<b>⊢</b>	0.90%	0.85 [ 0.15, 1.55]
	↓ <b>→ ● → → ↓</b>	0.80%	0.97 [ 0.21, 1.72]
Heller & Fantuzzo (1993)	<u>⊢</u>	1.20%	1.22 [ 0.64, 1.80]
White (2000)		0.70%	1.31 [ 0.49, 2.12]
RE Model		100.00%	0.26[0.10.0.34]
	L	100.0070	0.20[0.18, 0.04]
	1 0 1 0 0		
	-1 U I Z 3		
	Effect size		

Heterogeneity:  $\tau$ -squared = 0.033, *I*-squared = 67.9%, Q(df = 47) = 156.7, p < 0.0001.

Figure A19. Forest plot of studies of interventions targeting number sense.



Heterogeneity: *τ*-squared = 0.030, *I*-squared = 57.0%, *Q*(*df* = 29) = 66.7, *p* < 0.0001.

RE Model	3∳	100.00%	0.28 [ 0.21, 0.36
Fuchs et al. (2008a)	<b>⊢</b>	1.03%	0.85 [ 0.15, 1.55
Fuchs et al. (2014b)	<b>⊢∎</b> _1	3.62%	0.65 [ 0.33, 0.96
Γoll et al. (2012)	<b>├──■</b> ──┤	2.56%	0.60 [ 0.19, 1.00
Dyson et al. (2015)	<b>├──■</b> ──┤	2.29%	0.57 [ 0.13, 1.01
Jordan et al. (2012)	<b>⊢</b> ∎	2.32%	0.55 [ 0.11, 0.98
<sup>=</sup> uchs et al. (2010)	<b>⊢_</b> ∎I	2.63%	0.52 [ 0.12, 0.92
Fuchs et al. (2013b)	⊢∎⊣	5.90%	0.48 [ 0.28, 0.68
Xin (1996)	<b>⊢</b>	1.28%	0.43 [-0.19, 1.05
Kidd et al. (2014)	<b>⊢</b>	1.64%	0.42 [-0.12, 0.96
Fuchs et al. (2016b)	<b>⊢_</b> ∎1	3.39%	0.38 [ 0.05, 0.71
Pasnak et al. (2009)	<b>⊢-</b> ∎1	4.09%	0.38 [ 0.09, 0.67
Clarke et al. (2016b)	<b>—</b>	2.61%	0.37 [-0.03, 0.78
Swanson et al. (2014b)	<b>⊢</b>	0.92%	0.37 [-0.38, 1.12
Gersten et al. (2015)	⊦∎⊣	6.26%	0.34 [ 0.15, 0.52
Fuchs et al. (2005)	<b>⊨</b> −1	3.14%	0.33 <mark>[</mark> -0.02, 0.69
Bryant et al. (2011)	<u>}∎</u> }	3.90%	0.33 [ 0.03, 0.63
Fuchs et al. (1997a)	F	0.89%	0.29 <mark>[</mark> -0.47, 1.06
Fuchs et al. (2002)	<b>⊢ −</b> − − 1	1.90%	0.25 <b>[</b> -0.24, 0.74
Clarke et al. (2016a)	<b>€</b> -∎-1	4.49%	0.25 <mark>[</mark> -0.02, 0.51
Fuchs et al. (2014a)	⊦∎⊣	6.16%	0.24 [ 0.05, 0.43
Fuchs et al. (2009)	<b>⊢</b>	2.42%	0.20 [-0.22, 0.62
Clarke et al. (2011)	} <del>∎</del> ⊣	6.31%	0.19 [ 0.01, 0.38
Foster et al. (2016)	⊦₌∎1	4.36%	0.17 <b>[</b> -0.10, 0.44
Foster et al. (2018)	⊢	4.74%	0.11 [-0.14, 0.36
Fuchs et al. (1991a)	F	0.77%	0.11 [-0.71, 0.93
Clarke et al. (2014)	<b>⊢_</b> ∎i	2.23%	0.11 [-0.33, 0.55
Dyson et al. (2013)	<b>⊢</b>	3.07%	0.11 [-0.25, 0.46
Hallstedt et al. (2018)	<b>⊢</b> ∎−−1	3.12%	0.06 [-0.29, 0.42
Wang & Woodworth (2011)	F <b>₩</b> -1	5.86%	0.05 [-0.15, 0.25
Fuchs et al. (1995)	<b>⊢</b>	1.28%	0.03 [-0.59, 0.66

Heterogeneity:  $\tau$ -squared = 0.015, *I*-squared = 36.2%, Q(df = 30) = 48.3, p = 0.056.



Heterogeneity: *τ*-squared = 0.039, *I*-squared = 49.4%, *Q*(*df* = 16) = 31.0, *p* = 0.014.

Figure A22. Forest plot of studies of interventions targeting general academic skills.



Heterogeneity:  $\tau$ -squared = 0.021, *I*-squared = 58.0%, Q(df = 10) = 25.7, p = 0.004.



Heterogeneity: *τ*-squared = 0.028, *I*-squared = 64.4%, *Q*(*df* = 30) = 95.9, *p* < 0.0001.



Heterogeneity:  $\tau$ -squared = 0.30, *I*-squared = 90.6%, Q(df = 12) = 93.2, p < 0.0001.