

## Supplementary Results

**Primary analyses**

**Model 1: No Moderators.** Model 1 was estimated on data from 1105 participants from seventeen labs (see Table 1 for details). Of the six equal allocation multilevel multivariate compound symmetry (EAMMCS) model specifications, the *Equal Variance, Zero Correlation* specification was chosen by AIC. AIC; fixed effect estimates, standard errors, and  $z$ -statistics; and variance component estimates are shown in Supplementary Table S1.

**Model 2: Finger counting.** Model 2 was estimated on data from 343 consistent left-starters from seventeen labs and 482 consistent right-starters from seventeen labs (see Supplementary Table S2 for details). Of the six EAMMCS model specifications, the *Equal Variance, Zero Correlation* specification was chosen by AIC. AIC; fixed effect estimates, standard errors, and  $z$ -statistics; and variance component estimates are shown in Supplementary Table S3.

**Model 3: Reading/writing direction.** Model 3 was estimated on data from 1014 exclusively left-to-right readers/writers from seventeen labs and 76 not exclusively left-to-right readers/writers from eight labs (see Supplementary Table S4 for details). Of the six EAMMCS model specifications, the *Equal Variance, Zero Correlation* specification was chosen by AIC. AIC; fixed effect estimates, standard errors, and  $z$ -statistics; and variance component estimates are shown in Supplementary Table S5.

**Model 4: Handedness.** Model 4 was estimated on data from 69 left-handed participants from nine labs and 1007 right-handed participants from seventeen labs (see Supplementary Table S6 for details). Of the six EAMMCS model specifications, the *Unequal Variance, Zero Correlation* specification was chosen by AIC. AIC; fixed effect estimates, standard errors, and  $z$ -statistics; and variance component estimates are shown in Supplementary Table S7.

**Model 5: Mathematics fluency and mathematics anxiety.** Model 5 was estimated on data from 1105 participants from seventeen labs (see Table 1). See the main text for model specification

details, but note that (i) for consistency with Model 1 we employed the *Equal Variance, Zero Correlation* specification for effects for each ISI condition for each lab and (ii) the math test and AMAS were centred and scaled by their respective means and standard deviations across the 1105 participants prior to estimation of the model. Fixed effect estimates, standard errors, and *t*-statistics and variance component estimates are shown in Supplementary Table S8.

## Secondary analyses

**Purpose of experiment.** Data from several participants were not included in the primary analysis because they correctly guessed the purpose of the experiment (as assessed by the exit questionnaire). The data from these participants was analyzed separately to determine whether insight into the purpose of the experiment moderated the effect. Specifically, Model 1 was estimated on data from the 41 participants from four labs who correctly guessed the purpose of the experiment (see Supplementary Table S9 for details). Of the six model EAMMCS model specifications, the *Equal Variance, Zero Correlation* specification was chosen by AIC. AIC; fixed effect estimates, standard errors, and *z*-statistics; and variance component estimates are shown in Supplementary Table S10.

**Eye-movement contaminated trials.** Data from individual trials that were contaminated with eye movements were also not included the primary analysis. The data from these trials was analyzed separately to determine whether eye movements moderated the effect. Specifically, Model 1 was estimated on data from 10468 eye movement contaminated trials of 132 participants from five labs with contaminated trials in every combination of ISI and congruency congruency condition (see Supplementary Table S11 for details). Of the six EAMMCS model specifications, the *Fixed Effects* specification was chosen by AIC. AIC; fixed effect estimates, standard errors, and *z*-statistics; and variance component estimates are shown in Supplementary Table S12

Table S1

*Model 1 Estimates.*(a) *AIC*

Specification	AIC
Fixed Effects	264.12
Equal Variance, Zero Correlation	259.66
Equal Variance, Single Correlation	261.64
Unequal Variance, Zero Correlation	261.04
Unequal Variance, Single Correlation	260.87
No Constraints	270.83

(b) *Fixed Effect Estimates*

ISI Condition	Estimate	Std. Err.	<i>z</i>
250 ms	-0.05	0.47	-0.11
500 ms	1.06	0.44	2.43
750 ms	0.19	0.43	0.43
1000 ms	0.18	0.42	0.44

(c) *Variance Component Estimates. Estimates are presented on the standard deviation scale.*

ISI Condition	Estimate
250 ms	1.02
500 ms	1.02
750 ms	1.02
1000 ms	1.02

Table S2

*Number of participants in each finger counting group for each of the seventeen labs.*

Lab	Consistent	Inconsistent	No	Inconsistent	Consistent
	Left-starter	Left-starter	Group	Right-starter	Right-starter
Ansari	23	2	2	3	30
Bryce	13	8	2	17	21
Chen	22	0	2	0	36
Cipora	19	9	5	18	31
Colling (Szűcs)	21	3	11	3	27
Corballis	18	3	5	4	34
Hancock	22	6	0	3	23
Holmes	14	2	1	8	35
Lindemann	22	1	4	1	19
Lukavský	12	7	2	16	24
Mammarella	30	8	6	23	36
Mieth	32	10	10	16	25
Moeller	23	0	6	0	34
Ocampo	27	0	2	0	30
Ortiz-Ouellet-Lupiáñez-Santiago	10	8	4	22	10
Toomarian	19	0	0	0	42
Treccani	16	7	4	6	25

Table S3

*Model 2 Estimates.*(a) *AIC*

Specification	AIC
Fixed Effects	665.97
Equal Variance, Zero Correlation	637.31
Equal Variance, Single Correlation	639.00
Unequal Variance, Zero Correlation	638.57
Unequal Variance, Single Correlation	640.13
No Constraints	646.51

(b) *Fixed Effect Estimates*

ISI Condition	Finger counting group	Estimate	Std. Err.	<i>z</i>
250 ms	Consistent Right-starter	0.29	0.72	0.40
250 ms	Consistent Left-starter	0.12	0.83	0.14
500 ms	Consistent Right-starter	1.24	0.66	1.88
500 ms	Consistent Left-starter	0.18	0.74	0.24
750 ms	Consistent Right-starter	0.13	0.67	0.19
750 ms	Consistent Left-starter	-0.03	0.73	-0.04
1000 ms	Consistent Right-starter	0.50	0.63	0.79
1000 ms	Consistent Left-starter	0.42	0.69	0.61

(c) *Variance Component Estimates. Estimates are presented on the standard deviation scale. 39% of the variance is estimated to be at the lab-level and 61% at the group-level.*

ISI Condition	Estimate
250 ms	1.74
500 ms	1.74
750 ms	1.74
1000 ms	1.74

Table S4

*Number of participants in each of the reading/writing direction groups for each of the seventeen labs.*

Lab	Exclusively	Not exclusively
	Left-to-Right	Left-to-Right
Ansari	55	5
Bryce	59	2
Chen	39	21
Cipora	76	6
Colling (Szűcs)	55	10
Corballis	60	4
Hancock	53	1
Holmes	54	6
Lindemann	47	0
Lukavský	58	3
Mammarella	103	0
Mieth	79	14
Moeller	54	9
Ocampo	55	4
Ortiz-Ouellet-Lupiáñez-Santiago	54	0
Toomarian	56	5
Treccani	57	1

Table S5

*Model 3 Estimates.*(a) *AIC*

Specification	AIC
Fixed Effects	495.58
Equal Variance, Zero Correlation	448.05
Equal Variance, Single Correlation	449.41
Unequal Variance, Zero Correlation	451.89
Unequal Variance, Single Correlation	453.44
No Constraints	457.83

(b) *Fixed Effect Estimates*

ISI Condition	Reading/Writing Direction	Estimate	Std. Err.	<i>z</i>
250 ms	Exclusively LTR	0.10	0.59	0.17
250 ms	Not exclusively LTR	-1.65	1.17	-1.41
500 ms	Exclusively LTR	0.91	0.56	1.62
500 ms	Not exclusively LTR	2.21	1.51	1.46
750 ms	Exclusively LTR	0.24	0.56	0.43
750 ms	Not exclusively LTR	-2.25	1.25	-1.80
1000 ms	Exclusively LTR	0.29	0.55	0.53
1000 ms	Not exclusively LTR	-1.27	1.23	-1.03

(c) *Variance Component Estimates. Estimates are presented on the standard deviation scale. 10% of the variance is estimated to be at the lab-level and 90% at the group-level.*

ISI Condition	Estimate
250 ms	1.71
500 ms	1.71
750 ms	1.71
1000 ms	1.71

Table S6

*Number of participants in each handedness group for each of the seventeen labs.*

Lab	Left- handed	Right- handed
Ansari	4	56
Bryce	4	57
Chen	5	55
Cipora	3	79
Colling (Szűcs)	7	58
Corballis	9	55
Hancock	6	48
Holmes	4	56
Lindemann	5	42
Lukavský	7	54
Mammarella	6	97
Mieth	14	79
Moeller	4	59
Ocampo	4	55
Ortiz-Ouellet-Lupiáñez-Santiago	3	51
Toomarian	10	51
Treccani	3	55



Table S7

*Model 4 Estimates.*(a) *AIC*

Specification	AIC
Fixed Effects	598.41
Equal Variance, Zero Correlation	473.56
Equal Variance, Single Correlation	475.56
Unequal Variance, Zero Correlation	470.86
Unequal Variance, Single Correlation	472.48
No Constraints	480.12

(b) *Fixed Effect Estimates*

ISI Condition	Handedness Group	Estimate	Std. Err.	<i>z</i>
250 ms	Right-handed	-0.03	0.42	-0.07
250 ms	Left-handed	-1.83	1.25	-1.46
500 ms	Right-handed	0.95	0.54	1.76
500 ms	Left-handed	1.69	1.19	1.42
750 ms	Right-handed	0.24	0.65	0.37
750 ms	Left-handed	-1.92	1.28	-1.50
1000 ms	Right-handed	0.12	0.75	0.16
1000 ms	Left-handed	-2.51	1.27	-1.98

(c) *Variance Component Estimates. Estimates are presented on the standard deviation scale. 12% of the variance is estimated to be at the lab-level and 88% at the group-level.*

ISI Condition	Estimate
250 ms	0.01
500 ms	1.57
750 ms	2.19
1000 ms	2.71

Table S8

*Model 5 Estimates.**(a) Fixed Effect Estimates*

Effect	Estimate	Std. Err.	<i>t</i>
250 ms ISI	-0.03	0.44	-0.07
500 ms ISI	0.88	0.44	2.02
750 ms ISI	0.01	0.44	0.02
1000 ms ISI	0.21	0.44	0.48
250 ms ISI $\times$ Maths test	-0.15	0.42	-0.35
500 ms ISI $\times$ Maths test	-0.80	0.42	-1.90
750 ms ISI $\times$ Maths test	-0.24	0.42	-0.57
1000 ms ISI $\times$ Maths test	0.08	0.42	0.18
250 ms ISI $\times$ AMAS	-0.66	0.40	-1.66
500 ms ISI $\times$ AMAS	0.29	0.40	0.73
750 ms ISI $\times$ AMAS	-0.21	0.40	-0.54
1000 ms ISI $\times$ AMAS	-0.57	0.40	-1.44
250 ms ISI $\times$ Maths test $\times$ AMAS	-0.12	0.39	-0.30
500 ms ISI $\times$ Maths test $\times$ AMAS	-0.38	0.39	-0.98
750 ms ISI $\times$ Maths test $\times$ AMAS	-0.24	0.39	-0.63
1000 ms ISI $\times$ Maths test $\times$ AMAS	0.22	0.39	0.56

*(b) Variance Component Estimates. Estimates are presented on the standard deviation scale.*

ISI Condition	Estimate	Additional Effects	Estimate
250 ms	0.85	Participant	0.00
500 ms	0.85	Maths Test	0.61
750 ms	0.85	AMAS	0.33
1000 ms	0.85	Maths test $\times$ AMAS	0.50

Table S9

*Number of participants who correctly guessed the purpose of the experiment for each lab.*

Lab	<i>n</i>
Cipora	7
Holmes	6
Mammarella	7
Mieth	21

Table S10

*Model 1 Estimates (only participants who correctly guessed the purpose of the experiment).*

(a) *AIC*

Specification	AIC
Fixed Effects	80.21
Equal Variance, Zero Correlation	71.39
Equal Variance, Single Correlation	73.39
Unequal Variance, Zero Correlation	73.83
Unequal Variance, Single Correlation	75.83
No Constraints	85.42

(b) *Fixed Effect Estimates*

ISI Condition	Estimate	Std. Err.	<i>z</i>
250 ms	1.49	2.21	0.67
500 ms	0.36	2.32	0.16
750 ms	-0.68	2.17	-0.31
1000 ms	1.15	2.37	0.48

(c) *Variance Component Estimates. Estimates are presented on the standard deviation scale.*

ISI Condition	Estimate
250 ms	3.08
500 ms	3.08
750 ms	3.08
1000 ms	3.08

Table S11

*Number of participants tested with an eye-tracker, number of participants analyzed in our secondary analysis of eye movement contaminated trials, and number of eye movement contaminated trials in the analysis (total number of eye movement contaminated trials) at each combination of ISI and congruency condition for each lab.*

Lab	Participants	Analysed	Trial Type	250 ms	500 ms	750 ms	1000 ms
Colling (Szűcs)	52	18	Congruent	64 (88)	93 (133)	109 (173)	107 (162)
			Incongruent	71 (97)	95 (144)	103 (140)	95 (142)
Lukavský	61	29	Congruent	158 (182)	201 (240)	235 (278)	252 (292)
			Incongruent	146 (176)	202 (238)	231 (280)	233 (282)
Moeller	64	53	Congruent	593 (600)	723 (734)	774 (787)	851 (868)
			Incongruent	621 (635)	711 (729)	774 (802)	842 (858)
Ortiz-Ouellet-Lupiañez-Santiago	28	18	Congruent	127 (135)	165 (177)	176 (186)	184 (197)
			Incongruent	130 (138)	147 (157)	167 (174)	160 (175)
Treccani	30	14	Congruent	89 (99)	113 (136)	129 (139)	133 (152)
			Incongruent	99 (109)	116 (126)	124 (144)	125 (141)

Table S12

*Model 1 Estimates (only eye movement contaminated trials).*(a) *AIC*

Specification	AIC
Fixed Effects	120.28
Equal Variance, Zero Correlation	122.28
Equal Variance, Single Correlation	124.28
Unequal Variance, Zero Correlation	127.98
Unequal Variance, Single Correlation	129.75
No Constraints	139.65

(b) *Fixed Effect Estimates*

ISI Condition	Estimate	Std. Err.	<i>z</i>
250 ms	-5.35	6.27	-0.85
500 ms	-2.65	4.95	-0.54
750 ms	-5.52	3.98	-1.39
1000 ms	3.86	4.17	0.93

(c) *Variance Component Estimates. Estimates are presented on the standard deviation scale.*

ISI Condition	Estimate
250 ms	0
500 ms	0
750 ms	0
1000 ms	0