

Appendix
Supplemental Materials

Table A1

Model 1 parameter estimates (coefficients, variances, and covariances)

Parameter	Variable(s)	Std. Beta	CI (low)	CI (high)	beta	SE	z	p
Coefficients	SES->Reading	0.49	0.34	0.60	17.17	2.21	7.76	<0.001
	SES->Math	0.40	0.25	0.54	13.66	2.53	5.39	<0.001
	SES->Verbal	0.48	0.40	0.58	1.33	0.17	7.96	<0.001
	SES->EF	0.37	0.20	0.54	0.34	0.09	3.93	<0.001
	Verbal->Reading	0.09	-0.06	0.25	1.17	0.89	1.31	0.190
	EF->Reading	0.30	0.10	0.49	11.23	4.06	2.77	0.006
	Verbal->Math	-0.09	-0.29	0.08	-1.12	1.15	-0.97	0.331
	EF->Math	0.57	0.37	0.82	21.08	5.89	3.58	<0.001
Variances	Verbal WM	0.54	0.20	0.73	0.87	0.23	3.84	<0.001
	Inhibition	0.94	0.84	0.99	0.02	0.00	6.30	<0.001
	Spatial WM	0.82	0.69	0.92	1.59	0.21	7.55	<0.001
	Planning	0.81	0.69	0.92	0.01	0.00	7.58	<0.001
	Reading	0.48	0.38	0.55	498.94	52.91	9.43	<0.001
	Math	0.43	0.26	0.55	433.35	77.40	5.60	<0.001
	Verbal	0.77	0.66	0.84	5.06	0.70	7.20	<0.001
	EF	0.86	0.70	0.96	0.65	0.19	3.33	<0.001
	SES	1.00	1.00	1.00	0.86	0.00	—	NA
Covariances	Math<->Reading	0.61	0.47	0.71	283.45	58.45	4.85	<0.001
	Verbal<->EF	0.45	0.29	0.59	0.81	0.20	4.04	<0.001

Note. SES = Socioeconomic Status. Verbal = Verbal Fluency. EF = Executive Function. WM = Working Memory. CI (low) and CI (high) represent the lower and upper bounds of the 95% confidence interval for the point estimate, respectively. SE = Standard Error.

Table A2

Model 2 parameter estimates (coefficients, variances, and covariances)

Parameter	Variable(s)	Std. Beta	CI (low)	CI (high)	beta	SE	z	p
Coefficients	SES->Reading	0.52	0.40	0.63	18.16	2.13	8.53	<0.001
	SES->Math	0.45	0.33	0.57	15.40	2.13	7.24	<0.001
	SES->Verbal WM	0.26	0.13	0.39	0.36	0.09	3.86	<0.001
	SES->Verbal Fluency	0.48	0.38	0.58	1.33	0.17	7.96	<0.001
	SES->Inhibition	0.19	0.08	0.31	0.03	0.01	2.95	0.003
	SES->Spatial WM	0.06	-0.07	0.19	0.09	0.10	0.87	0.386
	SES->Planning	0.19	0.05	0.33	0.02	0.01	2.69	0.007
	Verbal WM->Reading	0.17	0.05	0.30	4.33	1.64	2.64	0.008
	Verbal Fluency->Reading	0.16	0.04	0.28	2.02	0.71	2.85	0.004
	Inhibition->Reading	-0.01	-0.13	0.10	-3.59	14.00	-0.26	0.798
	Spatial WM->Reading	0.05	-0.09	0.18	1.12	1.54	0.73	0.466
	Planning->Reading	0.03	-0.09	0.15	9.32	17.00	0.55	0.583
	Verbal WM->Math	0.24	0.12	0.37	6.02	1.63	3.69	<0.001
	Verbal Fluency->Math	0.05	-0.09	0.19	0.65	0.86	0.76	0.449
	Inhibition->Math	-0.02	-0.13	0.09	-4.89	12.93	-0.38	0.705
	Spatial WM->Math	0.14	-0.01	0.27	3.11	1.59	1.96	0.050
	Planning->Math	0.14	0.02	0.25	39.56	17.86	2.21	0.027
Variances	Reading	0.51	0.40	0.57	529.90	46.67	11.35	<0.001
	Math	0.54	0.42	0.61	545.12	48.03	11.35	<0.001
	Verbal WM	0.93	0.85	0.98	1.51	0.16	9.26	<0.001
	Verbal Fluency	0.77	0.66	0.86	5.06	0.70	7.19	<0.001
	Inhibition	0.96	0.90	0.99	0.02	0.00	6.45	<0.001
	Spatial WM	1.00	0.96	1.00	1.95	0.19	10.21	<0.001
	Planning	0.96	0.89	1.00	0.01	0.00	8.12	<0.001
	SES	1.00	1.00	1.00	0.86	0.00	—	NA
Covariances	Math<->Reading	0.64	0.53	0.74	345.16	46.24	7.47	<0.001
	Verbal Fluency<->Verbal WM	0.33	0.21	0.44	0.91	0.19	4.90	<0.001
	Inhibition<->Verbal Fluency	0.08	-0.05	0.21	0.02	0.02	1.16	0.248
	Spatial WM<->Verbal Fluency	0.20	0.07	0.33	0.64	0.24	2.70	0.007

Table A2 continued

Parameter	Variable(s)	Std. Beta	CI (low)	CI (high)	beta	SE	z	p
	Planning<->Verbal Fluency	0.07	-0.07	0.21	0.02	0.02	1.01	0.314
	Inhibition<->Verbal WM	0.15	0.01	0.29	0.02	0.01	2.01	0.045
	Spatial WM<->Verbal WM	0.27	0.12	0.43	0.47	0.14	3.32	<0.001
	Planning<->Verbal WM	0.23	0.07	0.40	0.03	0.01	2.52	0.012
	Spatial WM<->Inhibition	0.03	-0.15	0.20	0.01	0.02	0.36	0.722
	Planning<->Inhibition	0.12	-0.04	0.28	0.00	0.00	1.51	0.132
	Planning<->Spatial WM	0.25	0.10	0.39	0.04	0.01	3.34	<0.001

Note. SES = Socioeconomic Status. WM = Working Memory. CI (low) and CI (high) represent the lower and upper bounds of the 95% confidence interval for the point estimate, respectively. SE = Standard Error.

Table A3

Results of parallel models with single EF mediator

EF Mediator	Outcome	EF Ratio	Verbal Fluency Ratio
Verbal WM	Reading	0.08	0.12
	Math	0.14	0.06
Spatial WM	Reading	0.01	0.16
	Math	0.02	0.11
Planning	Reading	0.02	0.17
	Math	0.07	0.14
Inhibition	Reading	0.00	0.17
	Math	0.01	0.15
Full Model	Reading	0.08	0.12
	Math	0.16	0.04

Note. Each model tested mediation of SES associations with reading and math achievement by verbal fluency and a single EF mediator. EF Ratio is the proportion of the total SES-achievement effect mediated by the EF variable. Verbal Fluency Ratio is the proportion of the total SES-achievement effect mediated by the verbal fluency, while controlling for the given EF variable. WM = Working Memory.

Table A4

Results of models with mediation paths constrained to zero for each EF mediator

Constrained Mediator	Chi Sq Diff	p	Outcome	EF Ratio	Verbal Fluency Ratio
Verbal WM	26.53	<0.001	Reading	0.01	0.14
			Math	0.04	0.10
Spatial WM	6.38	0.095	Reading	0.07	0.12
			Math	0.16	0.06
Planning	13.39	0.004	Reading	0.06	0.12
			Math	0.11	0.04
Inhibition	6.87	0.076	Reading	0.07	0.12
			Math	0.15	0.04
None (Full Model)			Reading	0.08	0.12
			Math	0.16	0.04

Note. Each model tested mediation of SES associations with reading and math achievement by verbal fluency and a set of EF mediators, while constraining a given mediation path to zero (e.g., when Verbal WM is the Constrained Mediator, paths from SES to Verbal WM and from Verbal WM to Reading to Math are manually set to zero. Chi Sq Diff is the increase in model Chi Square, relative to the full unconstrained model. Significant reduction in model fit is indicated by p values less than 0.05. EF Ratio is the proportion of the total SES-achievement effect mediated by the set of EF variables. Verbal Fluency Ratio is the proportion of the total SES-achievement effect mediated by the verbal fluency. WM = Working Memory.

Table A5

Results of latent variable models omitting a single EF mediator

Omitted Variable	Outcome	EF Ratio	Verbal Fluency Ratio
Verbal WM	Reading	0.09	0.13
	Math	0.25	0.03
Spatial WM	Reading	0.20	0.07
	Math	0.41	-0.07
Planning	Reading	0.17	0.05
	Math	0.35	-0.10
Inhibition	Reading	0.17	0.06
	Math	0.37	-0.09
None (Full Model)	Reading	0.17	0.07
	Math	0.37	-0.08

Note. Each model variation omitted one of the four indicators from the EF measurement model while estimating all other parameters identically to Model 1. Thus, each model estimated SES->EF->Achievement effects for a slightly different version of EF. EF Ratio is the proportion of the total SES-achievement effect mediated by the latent EF variable for the given set of EF indicators. Verbal Fluency Ratio is the proportion of the total SES-achievement effect mediated by the verbal fluency. WM = Working Memory.