The Puzzle of Processing Speed, Memory and Executive Function Impairments in Schizophrenia: Fitting the Pieces Together

Supplemental Information

Table S1. Exploratory Factor Analysis* Six-Factor Solution of Processing Speed, Executive Functioning and Memory Measures.

	Factor					
	1	**2**	**3**	**4**	**5**	**6**
Simple Motor Speed	**0.67**	-0.06	0.10	-0.01	0.00	0.01
Visual Scanning	**0.60**	-0.03	-0.20	0.06	-0.03	0.05
Letter Fluency	-0.07	**0.77**	-0.02	0.13	-0.25	-0.09
Semantic Fluency	-0.11	**0.77**	-0.04	0.01	-0.05	0.07
Switching Fluency	0.07	**0.70**	0.08	-0.20	**0.21**	0.04
Spatial Span Backward	0.09	0.07	**0.90**	-0.11	-0.06	-0.05
Spatial Span Forward	-0.05	-0.03	**0.65**	0.16	-0.21	0.07
Visual Pattern Task	-0.19	-0.19	**0.39**	0.10	0.28	0.04
Digit Span Forward	-0.03	-0.06	0.07	**0.82**	-0.14	-0.03
Number-Letter Sequencing	0.15	0.15	0.03	**0.49**	0.34	-0.03
Tower Task	-0.09	-0.09	-0.12	-0.08	**0.67**	-0.06
Letter Number Sequencing	**0.26**	-0.09	-0.01	0.06	**0.36**	**0.25**
Listening Memory Span	0.02	0.14	0.22	0.20	**0.34**	0.09
WCST	**-0.28**	0.15	-0.11	0.04	**0.31**	0.14
Number Sequencing	0.30	0.03	0.07	-0.01	-0.09	**0.63**
Letter Sequencing	0.33	-0.05	-0.08	-0.07	0.02	**0.53**

*Using principal axis factoring and an oblique rotation (promax).

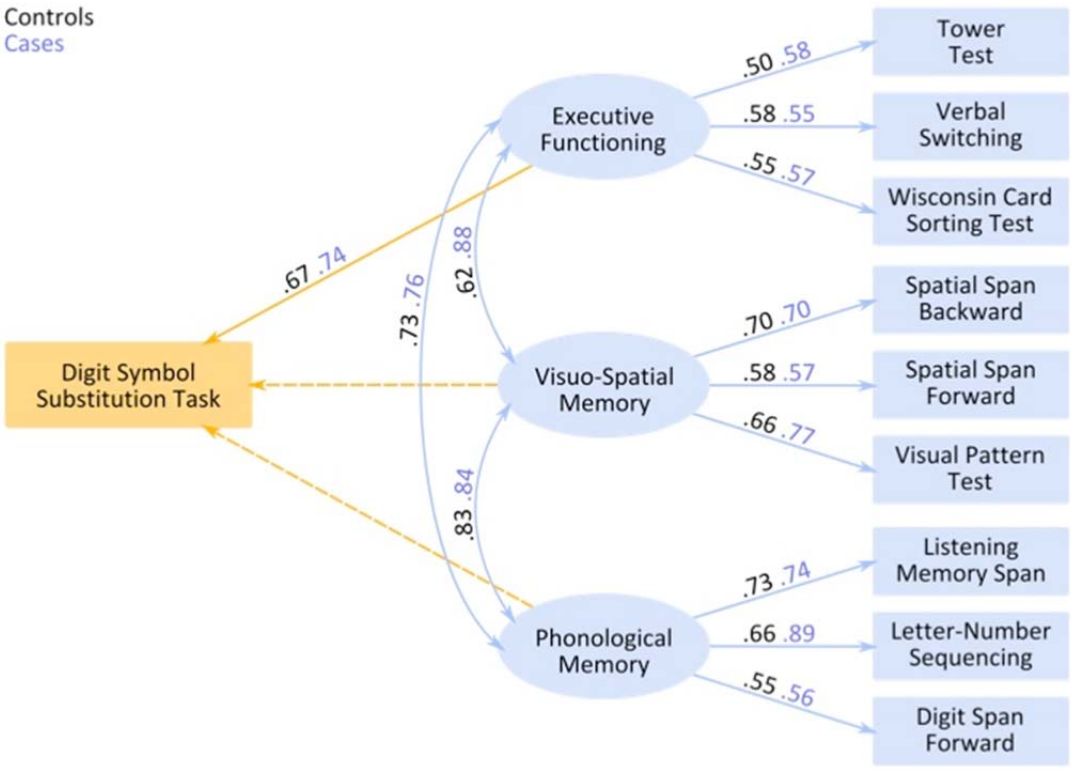


Figure S1. Final Model of Memory and Executive Functioning for Controls and Cases. The measurement model is shown on the right in blue and consists of three factors: executive functioning, visuo-spatial memory and phonological memory. The structural model is shown on the left in orange and consists of a one-path solution with a path from executive functioning to the digit-symbol substitution task.

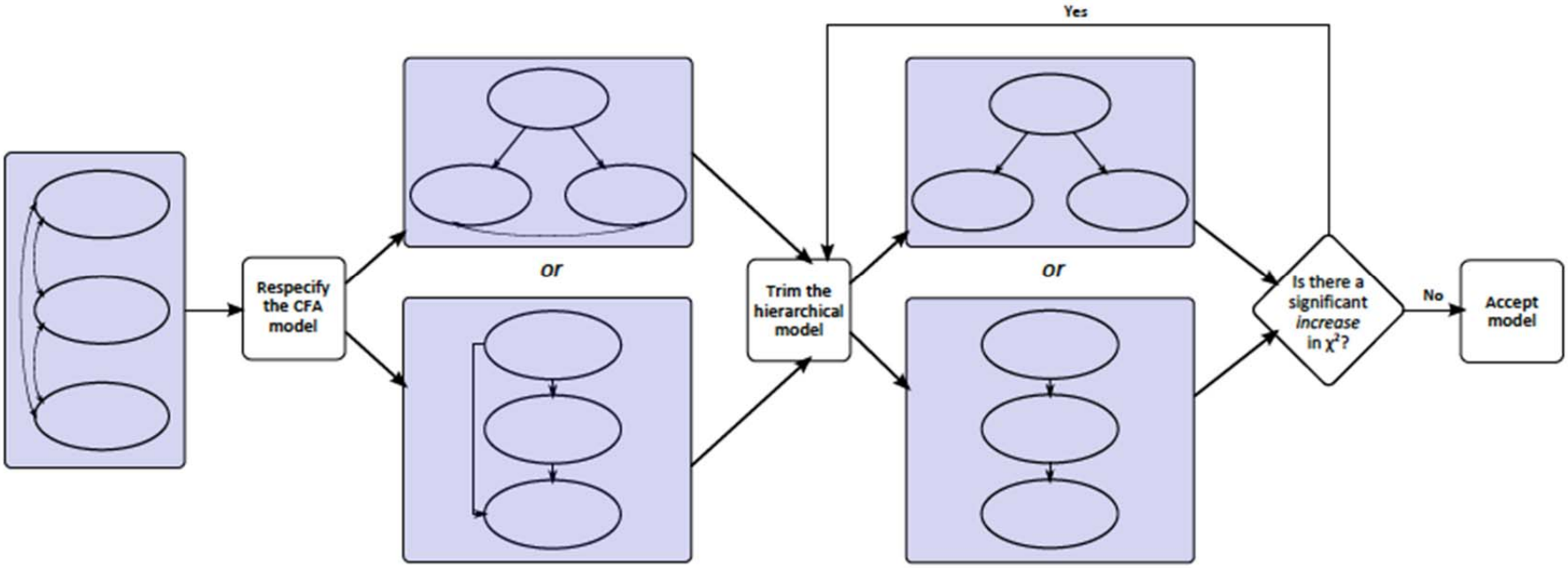
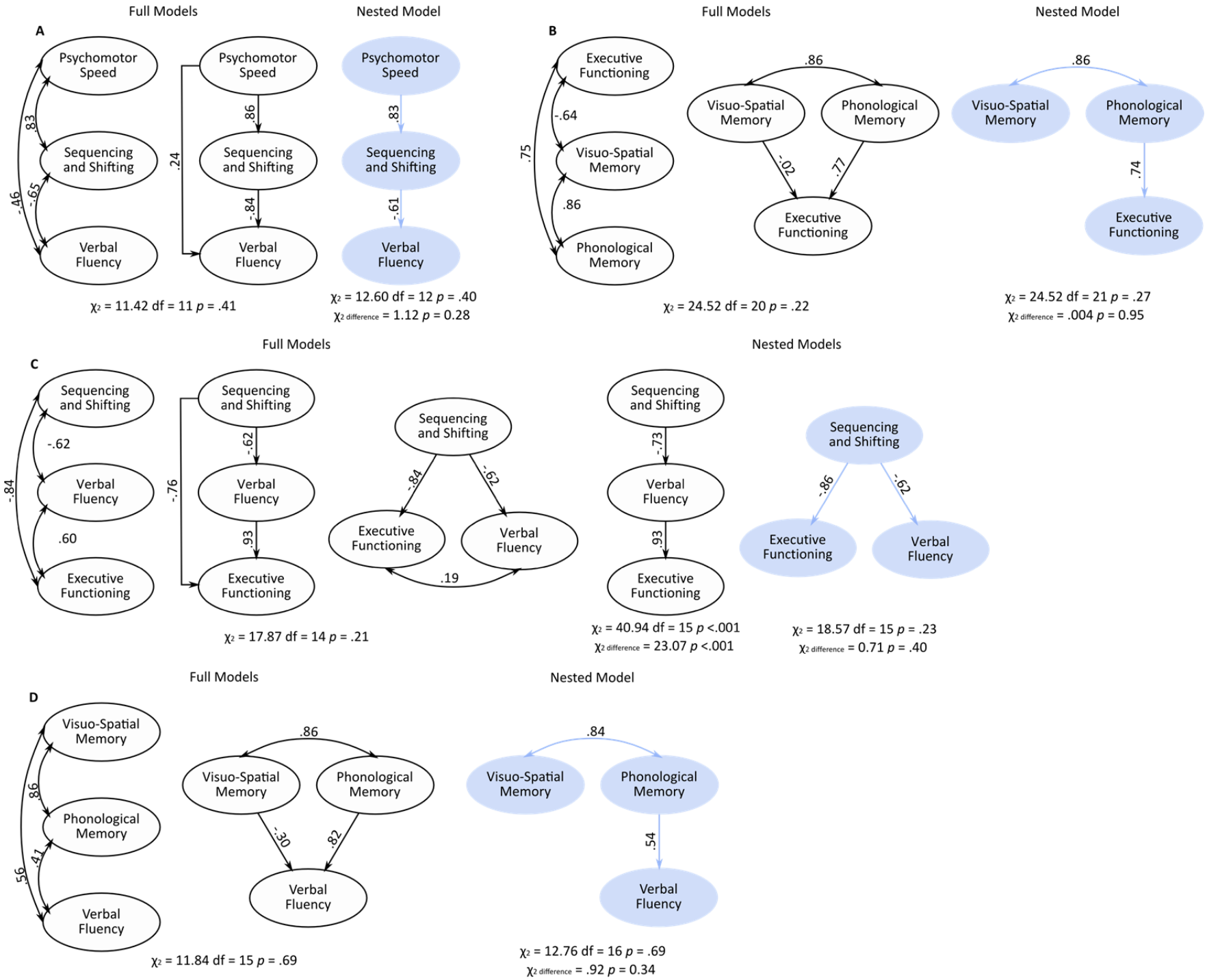


Figure S2. The Original Confirmatory Factor Model Shown on the Far Left Is Respecified as a Mathematically Equivalent Hierarchical Model. The model respecification is done in one of two ways: 1) the least cognitively complex factor leads to the two more complex factors, or 2) the least complex factor leads to the factor of medium complexity which then leads to the most complex factor. Next individual paths are systematically dropped from the model. If there is a significant increase in χ^2, then the model is considered unsuitable, the dropped path is reinstated, and a different path is dropped from the model. If the increase in χ^2 is non-significant, then the path is permanently dropped from the model.


Full Models
Nested Model
A
Psychomotor Speed
Sequencing and Shifting
Verbal Fluency
.83
-.65
-.46
.24
.86
-.84
.83
-.61
χ2 = 11.42 df = 11 p = .41
χ2 = 12.60 df = 12 p = .40
χ2 difference = 1.12 p = 0.28
Full Models
Nested Model
B
Executive Functioning
Visuo-Spatial Memory
Phonological Memory
.75
-.64
.86
.86
-.02
.77
.74
χ2 = 24.52 df = 20 p = .22
χ2 = 24.52 df = 21 p = .27
χ2 difference = .004 p = 0.95
Full Models
Nested Models
C
Sequencing and Shifting
Verbal Fluency
Executive Functioning
-.84
-.62
.60
-.76
-.62
.93
-.84
-.62
.19
-.73
.93
-.86
-.62
χ2 = 17.87 df = 14 p = .21
χ2 = 40.94 df = 15 p <.001
χ2 difference = 23.07 p <.001
χ2 = 18.57 df = 15 p = .23
χ2 difference = 0.71 p = .40
Full Models
Nested Model
D
Visuo-Spatial Memory
Phonological Memory
Verbal Fluency
.86
.41
.56
.86
-.30
.82
.84
.54
χ2 = 11.84 df = 15 p = .69
χ2 = 12.76 df = 16 p = .69
χ2 difference = .92 p = 0.34

E

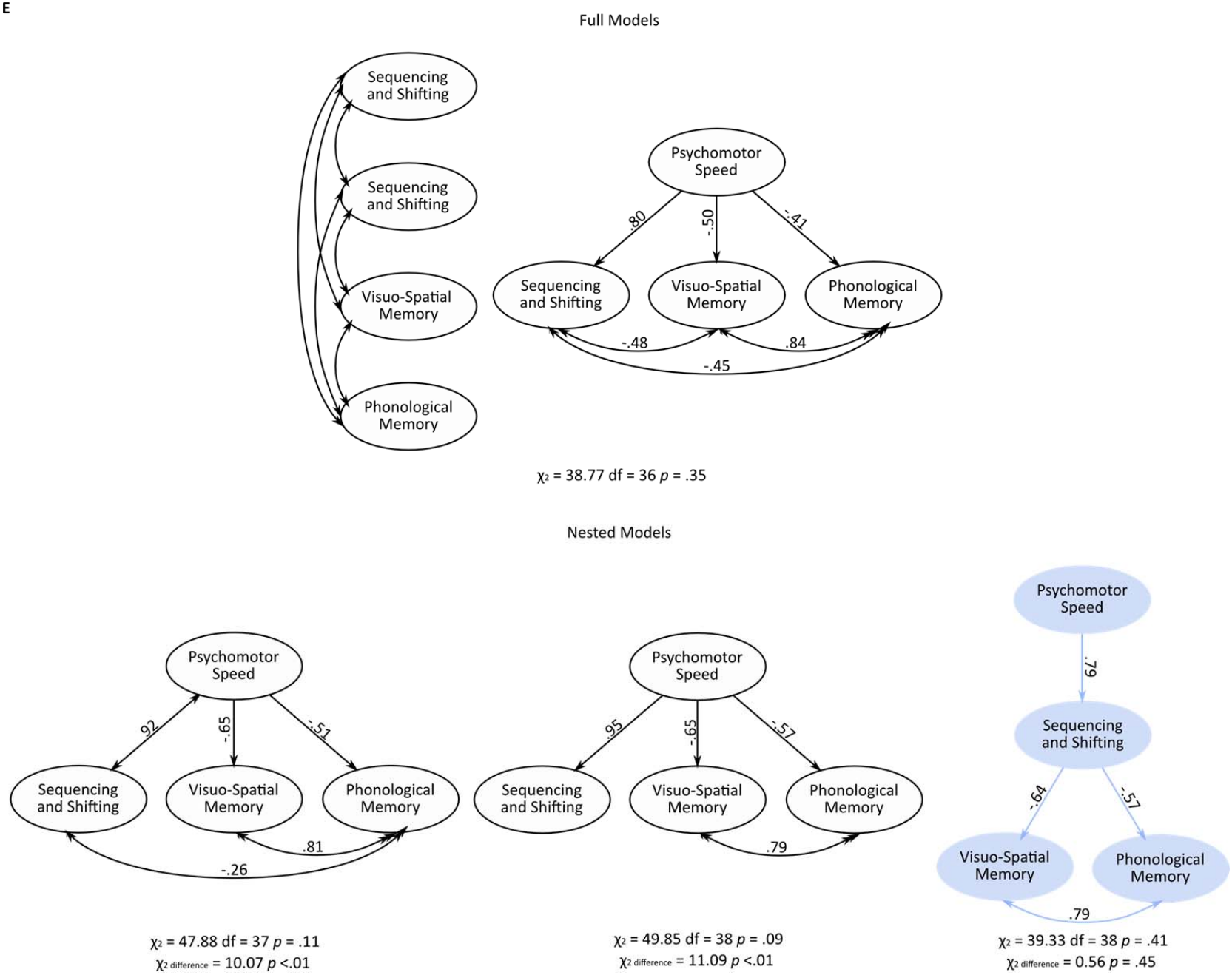


Figure S3. Exploratory Hierarchical Modeling of (**A**) Processing Speed, (**B**) Memory and Executive Functioning, (**C**) Executive Functioning, (**D**) Memory and Verbal Fluency, (**E**) Processing Speed and Memory.