

# Concurrent Validity Study Comparing the WJ-III COG, NEPSY, and D-KEFS in areas of Attention

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These data were drawn from a archival sample of 472 case studies that were conducted by students in the School Neuropsychology Post-Graduate Certification Program (2001 - 2008). There were 329 males (69.7%) and 140 females (29.7%) and 3 not identified (.6%) in the sample. There were 104 Caucasians (22.0%), 12 African-Americans (2.5%), 36 Hispanic/Latino Americans (7.6%), 3 Asian-Americans (.6%), 7 Bi-racial (1.4%), 3 Foreign National (.6%), and 310 with ethnicity not identified (65.7%). The range of the ages of the sample was 3.4 to 19.8.

### School Neuropsychology Conceptual Model (Miller, 2007)

Selective/Focused Attention	N	Mean (SD)
• WJIII-COG Auditory Attention	268	96.40 (12.96)
• NEPSY Auditory Attention and Response Set Total	218	8.67 ( 5.74)
- Auditory Attention	166	8.96 ( 2.86)
- Response Set	172	7.91 ( 3.01)
• NEPSY Visual Attention	228	9.17 ( 3.26)
Sustained Attention		
• WJIII-COG Pair Cancellation	268	93.06 (12.59)
• NEPSY Auditory Attention and Response Set Total	218	8.67 ( 5.74)
- Auditory Attention	166	8.96 ( 2.86)
- Response Set	172	7.91 ( 3.01)
Shifting Attention		
• NEPSY Auditory Attention and Response Set Total	218	8.67 ( 5.74)
- Auditory Attention	166	8.96 ( 2.86)
- Response Set	172	7.91 ( 3.01)
• D-KEFS		
- Trail Making Test (Condition 4 - Switching)	192	7.04 ( 4.23)
- Verbal Fluency (Condition 3 - Switching)	172	7.98 ( 3.24)
- Color-Word Interference (Condition 4 - Switching)	159	7.39 ( 3.25)
- Design Fluency (Condition 3 - Switching)	152	8.30 ( 2.92)
Divided Attention		
• WJIII-COG Auditory Working Memory	280	95.38 (14.78)

### Exploratory Factor Analyses

**Factor Analysis Variables:** All variables except NEPSY-AA & NEPSY-RS

Factor	Eigenvalue	% of variance	Cumulative Variance
1	3.20	35.56%	35.56%
2	1.34	14.91%	50.47%
3	1.18	13.10%	63.57%

### Factor Loadings:

	Factor 1	Factor 2	Factor 3
<u>WJIII-COG Scores</u>			
-Auditory Attention	-.17	<b>.80</b>	.27
- Pair Cancellation	.28	.04	<b>.67</b>
-Auditory Working Memory	.31	<b>.67</b>	.04
<u>NEPSY Scores</u>			
- Aud. Attention/Response Set	<b>.88</b>	-.07	.05
-Visual Attention	.18	.04	<b>.84</b>
<u>D-KEFS Scores</u>			
- Trail Making Test (4)	.43	.39	.34
-Verbal Fluency (3)	.44	<b>.54</b>	-.47
-Design Fluency (3)	<b>.71</b>	.24	.18
-Color Word Interference (4)	<b>.67</b>	.14	.19

Shifting      Verbal/Auditory      Visual  
Attention      Attention      Attention

### Factor Labels:

	WJIII COG Measures				NEPSY Measures				D-KEFS Measures			
WJIII COG Measures		WJAA	WJPC	WJAWM	AARS	AA	RS	VA	TMT(4)	VF(3)	CW(4)	DF(3)
	WJAA	-----	.30 ( <b>&lt;.001</b> )	.35 ( <b>&lt;.001</b> )	-.05 (.58)	.10 (.27)	.09 (.31)	.15 (.09)	.29 (.001)	.11 (.25)	.14 (.16)	.16 (.12)
	WJPC	-----	-----	.27 ( <b>&lt;.001</b> )	.20 (.02)	.26 (.003)	.38 ( <b>&lt;.001</b> )	.48 ( <b>&lt;.001</b> )	.38 ( <b>&lt;.001</b> )	.09 (.37)	.31 (.002)	.42 ( <b>&lt;.001</b> )
	WJAWM	-----	-----	-----	.24 (.004)	.32 ( <b>&lt;.001</b> )	.36 ( <b>&lt;.001</b> )	.20 (.02)	.22 (.02)	.34 ( <b>&lt;.001</b> )	.35 ( <b>&lt;.001</b> )	.33 (.001)
NEPSY Measures	AARS	-----	-----	-----	-----	.41 ( <b>&lt;.001</b> )	.42 ( <b>&lt;.001</b> )	.17 (.02)	.36 (.02)	.23 (.17)	.50 (.001)	.54 (.001)
	AA	-----	-----	-----	-----	-----	.61 ( <b>&lt;.001</b> )	.16 (.04)	.19 (.24)	.23 (.20)	.47 (.004)	.42 (.02)
	RS	-----	-----	-----	-----	-----	-----	.34 ( <b>&lt;.001</b> )	.34 (.02)	.18 (.30)	.62 ( <b>&lt;.001</b> )	.51 (.003)
	VA	-----	-----	-----	-----	-----	-----	-----	.33 (.02)	-.15 (.37)	.24 (.14)	.33 (.001)
D-KEFS Measures	TMT(4)	-----	-----	-----	-----	-----	-----	-----	-----	.29 ( <b>&lt;.001</b> )	.29 ( <b>&lt;.001</b> )	.33 ( <b>&lt;.001</b> )
	VF(3)	-----	-----	-----	-----	-----	-----	-----	-----	-----	.18 (.04)	.32 ( <b>&lt;.001</b> )
	CW(4)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	.37 ( <b>&lt;.001</b> )
	DF(3)	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

### Implications:

- WJIII Auditory Working Memory and the D-KEFS Trail Making Test (Condition 4 - Switching) are the two measures that are most highly correlated with all of the other measures.
- Many of the WJIII COG, NEPSY, and D-KEFS measures that reportedly measure attention are intercorrelated; however, they are neurocognitively complex. Many of these tests are not factorially pure in that they require multiple components of attention (e.g., selective, sustained, and shifting attention).
- The factor analysis indicated that all of the tests are measuring some general aspect of attention. However, several tests do load on a factor that could be labeled shifting attention, another set of tasks load on a verbal/auditory factor, and a final factor that could be labeled visual attention.