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Poster: Nonverbal Cognitive Assessment for Special-Needs or Non-English ADHD or LD Cases

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The Cattell-Horn-Carroll Theory (Willis, 2011) posits several components of general intelligence (e.g., fluid reasoning, visual-spatial memory, and processing speed examined in this study). In regards to measures of general intelligence, nonverbal cognitive measures can reduce verbal load and more accurately appraise non-verbal and non-native English speakers (Johnsen, 2017). In the present study, researchers hypothesized participants with ADHD, the most common neuropsychiatric disorder (Thomas et al., 2015)

commonly associated with memory difficulties, would score lower on memory and attention tests than LD and no-diagnosis p



A random sample of 44 individuals with no disabilities were matched on age, ethnicity, and parental educational level to a group of 82 individuals diagnosed with ADHD and 43 individuals diagnosed with a Reading Learning Disorder (169 total participants: 37.3% female; 34.3% ethnic minorities).

Materials included a demographic questionnaire and the Leiter International Performance Scale 3rd Edition (L-3), a nonverbal measure of intellectual functioning (Roid et al, 2013). Diagnoses were verified with standardized measures in school and clinical settings.

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- Significant main effect ($\eta_p^2 = .099$; $p = .001$) for Attention Sustained (AS), a timed subtest requiring finding and marking target objects. Participants with LD-Reading scored lower than those with ADHD or No Dx. When ethnic differences were controlled, AS differences remained significant.
- Significant main effect ($\eta_p^2 = .142$; $p < .001$) for Forward Memory (FM), touching a series of pictures in the correct order. Participants with LD-Reading scored lower than those with ADHD or No Dx. When ethnic differences were controlled, FM differences remained significant.
- Significant main effect ($\eta_p^2 = .054$; $p = .029$) for Reverse Memory (RM), touching picture series in reverse order. Participants with LD-Reading scored lower than those with No Dx. When ethnic differences were controlled, RM differences remained significant.
- Stepwise regression was moderately successful ($\Delta R^2 = .09$; $p = .001$) in predicting diagnosis groups on the basis of Forward Memory (FM).

Table 1.

Descriptive Data and Significant Differences in Leiter-3 Sub-Scores by Diagnostic Group Using a General Linear Model Analyses of Variance.

Subtest	Group	N	M	SD	df	MS	F	Sig.	Partial η^2
FM	No Dx	44	10.41	2.787					
	AD/HD	81	9.35	3.168					
	LD-Reading	42	7.06	3.473					
	Total	167	9.06	3.372	3,163	89.11	8.97	<.001	.142
AS	No Dx	44	10.94	2.531					
	AD/HD	81	10.33	2.882					
	LD-Reading	42	8.44	3.277					
	Total	167	10.01	3.036	3,163	50.58	5.98	<.001	.099
RS	No Dx	44	10.33	3.329					
	AD/HD	81	9.63	3.058					
	LD-Reading	42	8.39	3.432					
	Total	167	9.50	3.285	3,163	32.15	3.09	<.029	.054

Note: FM = Forward Memory; AS = Attention Sustained; RM = Reverse Memory

- The Leiter uses no oral language for instructions and does not require a verbal response from participants
- These findings show lower scores for those diagnosed with a reading learning disability on three subscales involving sustained attention, forward memory and reverse memory when compared to those with ADHD or no diagnosis
- These results were sustained even when sex and ethnicity were controlled.
- These results suggest that reading LD likely involves underlying processes that affect attention and memory as well as reading per se.
- Understanding how memory affects those with reading LD can help to better inform treatment and accommodation recommendations for both academic and professional settings.



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