Correlation Between Learning and Memory Performance on a Computerized Cognitive Assessment and a Pencil-and-Paper Traditional Neuropsychological Measure

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Background

- A growing number of computerized neuropsychological assessment devices (CNADs), such as Cognivue Clarity®, are a feasible alternative to traditional, comprehensive neuropsychological batteries
- Unlike traditional neuropsychological batteries, CNADs demand less time and feature automated administration and scoring, which can afford swift screening for potential cognitive impairments

Purpose

Given the potential efficiency of CNADs, the current study aimed to evaluate whether performance across measures of learning and memory within the Cognivue Clarity® was similar to performance on a traditional pencil-and-paper verbal learning and memory measure.

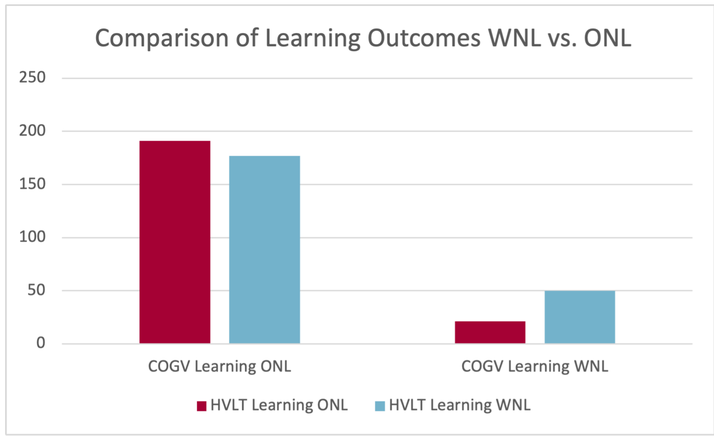
Participants and Methods

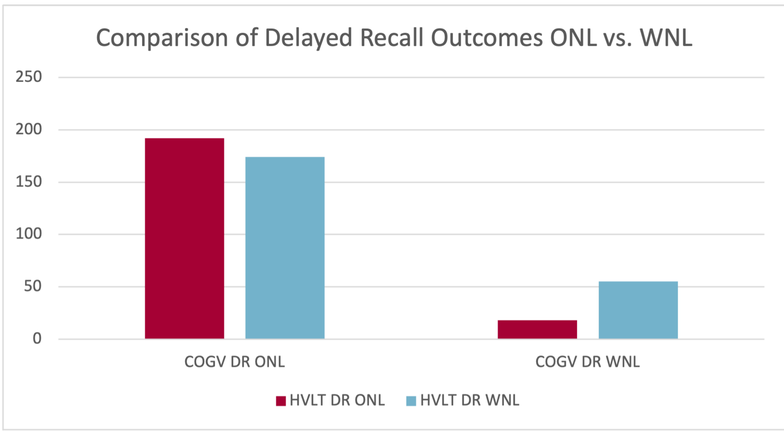
Participants: The study cohort consisted of 439 individuals with an average age of 72.88 (*SD* = 7.93) and education level of 15.48 (*SD* = 2.41) who underwent comprehensive neuropsychological assessment and completed the Cognivue Clarity® in an outpatient community neurological clinic

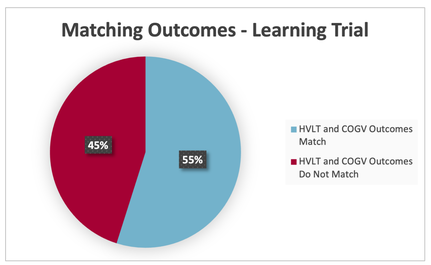
Methods: Participants' test scores were coded into two categories: within normal limit (WNL) and outside normal limit (ONL), such that for:

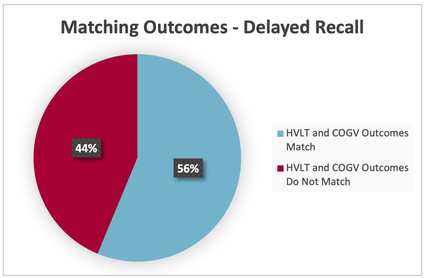
- HVLT: Scores that fell in the Exceptionally Low range to Below Average (<2nd percentile – 8th percentile) were coded as ONL, and scores that fell in the Low Average range to Exceptionally High range (9th percentile – ≥98th percentile) were coded as WNL
- Cognivue Memory Index (verbal and nonverbal): Scores that fell in the Moderate to Severe cognitive impairment (<50) were coded as ONL, and scores that fell in the Low Cognitive Impairment to Normal Cognitive Function (51 - ≥75) were coded as WNL

To examine whether performance on a traditional pencil-and-paper verbal learning and memory measure, the Hopkins Verbal Learning Test-Revised (HVLT-R), was similar to performance on the Cognivue Clarity's® measures of learning and memory, analysis were run via Pearson's Chi-Square Test of Independence









	COGV Learning ONL	COGV Learning WNL
HVLT Learning ONL	191	21
HVLT Learning WNL	177	50

Key:
COGV = Cognivue
WNL= Within Normal Limits

	COGV DR ONL	COGV DR WNL
HVLT DR ONL	192	18
HVLT DR WNL	174	55

Key:
ONL = Outside Normal Limits
DR= Delayed Recall

Results

- The relationship between learning performance on Cognivue Clarity® versus paper-and-pencil verbal learning was significant X^2 (1, N = 439), = 11.0, p<.001
- The relationship between delayed recall on Cognivue Clarity® and paper-and-pencil verbal delayed recall memory was significant X^2 (1, N = 439), = 17.75, p<.001

References

References available upon request:
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Conclusions

- ONL performance on the Cognivue Clarity's® Memory Index was a robust predictor of ONL performance on a traditional, pencil-and-paper measure of verbal learning and memory
- The sensitivity of the Cognivue Clarity® Memory Index to changes in memory functioning may be greater than use of a traditional, pencil-and-paper measure of verbal learning and memory alone

Future directions:

- Future research exploring the predictive utility of the Cognivue Clarity® Memory Index on traditional, pencil-and-paper measures of nonverbal learning and memory may be beneficial