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45 Differential Clinical Utility of Forward, Backward and Sequencing Components of Digit Span

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Objective: Digit Span has been a core Working Memory task, with extensive research conducted on the Forward and Backward components. The latest revision of the WAIS-IV introduced the Sequencing component, designed to increase the working memory and mental manipulation demands. However, relatively little research has been done to understand how Sequencing can be interpreted in clinical settings, as compared to Forward and Backward. The purpose of this study was to investigate how effectively individual components of the Digit Span task predict performance on four independent neuropsychological measures with high working memory demands.
Participants and Methods: Subjects included 148 adults (Age: M= 39.22, SD= 13.61; Handedness= 130 right, 10 left and 8 mixed; Males = 88) with refractory epilepsy. Two subjects had primary generalized seizures while 146 subjects had complex partial seizures (EEG Localization: 44 right temporal; 60 left temporal; 24 independent bitemporal; 1 left extratemporal; 17 indeterminant). Dependent variables included the 2.4 second ISI trial of the Paced Auditory Serial Addition Task (PASAT); the sum of correct responses on Trial 1 and List B of the California Verbal Learning Test (CVLT); the DKEFS Tower Test raw score; and completion time on Part B of the Trail Making Test. The independent variables included the individual raw scores for the Forward, Backward and Sequencing components of the WAIS-IV. Hierarchical linear regression was conducted to determine the variance accounted for by each component of the Digit Span and if that variance was redundant or unique. The four dependent variables were analyzed separately with Digits Forward, Backward and Sequencing entered in a single block.
Results: PASAT: The overall model was significant, R^2= 0.36. When examining the individual components, Sequencing was the only significant predictor (β = 0.422, p < 0.001). CVLT: The overall model was significant, R^2 = 0.203. When examining the individual components, Sequencing was the only significant predictor (β = 0.410, p < 0.001). Tower Test: The overall model was significant, R^2 = 0.176. When examining the individual components, Sequencing was the only significant predictor (β = 0.373, p = 0.004). Trail Making: The overall model was significant R^2 = 0.315. When examining the individual components both Forward (β = -0.287, p =0.005) and Sequencing (β= -0.364, p < 0.001) accounted for a significant amount of the variance.
Conclusions: The combined model for Digit Span accounted for significant amounts of variance in performance on all dependent measures, ranging from 17.6% to 36%. Sequencing accounted for substantially more variance across all examined tasks. On the PASAT, CVLT and Tower Test, the variance accounted for by the components of Digit Span appears to be redundant. However, on Trail Making, both Forward and Sequencing accounted for significant amounts of variance that appear to be independent of one another. What specific task requirement(s) of the Trail Making Test versus the other measures analyzed are accounted for by Forward span is not clear. But this suggests that the individual components of the Digit Span test may measure different things across different tasks.

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46 Comparison of Anxiety Measures in a Memory Clinic Sample

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