

Title: Delayed recall in cochlear implant users: MoCA and CVLT-3

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Abstract

Introduction: Hearing impairment and dementia are two of the most prevalent concerns for the aging population. One of the most widely used assessments for cognitive impairment is delayed recall. Recent work using the Montreal Cognitive Assessment (MoCA) suggests that delayed recall may pose a specific challenge for cochlear implant (CI) recipients. In order to better understand the delayed recall abilities of CI recipients, we administered the MoCA and the California Verbal Learning Test, Third Edition (CVLT-3).

Methods: 18 experienced CI users, all with post-lingual hearing loss, participated in this study. All participants completed the MoCA and CVLT-3. For the CVLT-3, both traditional scoring as well as a newer scoring method (the Item-Specific Deficit Approach, or ISDA) were employed. Speech understanding was quantified using the AzBio Sentence Test. Correlational and MANOVA tests were used for analyses.

Results: MoCA and CVLT-3 performance did not relate. With the exception of learning slope, CVLT-3 immediate recall measures and the ISDA encoding and consolidation metrics were highly related. With the exception of cued recall, equivalent CVLT-3 delayed-recall measures related to the ISDA retrieval index. Higher speech scores were correlated with higher CVLT-3 performance and lower ISDA encoding and retrieval deficits; however, there was no relationship between speech performance and MoCA performance. With participants split into two groups of higher and lower performance on the AzBio, higher performers demonstrated less of an encoding and retrieval deficit. The consolidation deficit between groups was equivalent.

Conclusion: No relationship was found for performance between the MoCA and the CVLT-3 or ISDA. ISDA encoding and retrieval indices demonstrated a strong relationship with equivalent CVLT-3 subtests and the memory processes that they are thought to reflect. The ISDA was also more sensitive to individual differences in speech performance for encoding and retrieval than the MoCA or CVLT-3, suggesting that it could be useful for assessing cognitive abilities associated with delayed recall in CI recipients.