Memory-related Cognitive Abilities in Computer-Assisted L2 Learning

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Extending past research on the role of cognitive factors as individual differences in SLA, the current study investigated the role of phonological short-term memory, working memory and declarative long-term memry in the earliest stages of the acquisition of vocabulary and syntax in L2 Navajo. A total of 38 L1-Greek adults were recruited and they completed three cognitive tasks. Subsequently, participants engaged in language instruction through the language learning application Duolingo. Upon completion of the assigned linguistic units, they were assessed through a test comprised of a word recognition, a word translation and a grammaticality judgment task. A series of standard multiple regression analyses were conducted to determine whether and to what extent memory-related cognitive abilities predicted outcome measures of syntax and vocabulary. The findings revealed that none of the cognitive abilities considered was a significant predictor of accuracy in the word recognition task. However, declarative memory was the most significant predictor of accuracy in the word translation task, to which phonological short-term memory also contributed. Unlike working memory, declarative long-term memory strongly predicted syntactic accuracy. Interestingly, the extent to which learning was distributed was a significant factor across all outcome measures and there were moderate age-effects in the acquisition of syntax. Overall, the results of the present study supported the importance of declarative long-term memory in L2 acquisition of vocabulary and syntax and provided mixed evidence on the role of phonological short-term memory in adult second language learners.