Working memory storage capacity and executive control in advanced language learners

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Working memory refers to the brain system that allows us to hold information on-line and manipulate it for short periods of time (Baddeley, 1992) and is crucial in performing complex tasks such as language learning and language processing (Baddeley, 2003). Two subsystems are particularly relevant for language aptitude: the phonological loop and the central executive. The phonological loop consists of a storage system for verbal and acoustic information and a subvocal rehearsal system. The central executive is an attentional-controlling system that permits maintaining or suppressing information and coordinating or switching between tasks. Even though their importance for language aptitude is widely accepted, research into the relationship between both subsystems is surprisingly scarce. In the current study we compare advanced language learners’ storage capacity to three executive functions: updating, inhibiting and shifting. Storage capacity was measured by means of a forward and backward digit span task. The executive functions were tested using computer-based response tasks, viz. a 2-back task, an Attention Network Test, a Simon task and a Switch task. Participants are 60 undergraduate students who have obtained a Bachelor’s degree in Applied Language Studies and are currently pursuing a Master’s degree in interpreting, translation or multilingual communication. They are considered highly advanced language learners with a L2 proficiency level of C1 or above. Although we hypothesized that high performers on the digit task would also score well on the executive control tasks, the results suggest that this is not the case across all executive tasks. In the paper presentation, these results will be discussed in greater depth alongside the methodology used.

References


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