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The Role of Procedural Memory in Grammatical Processing Speed in 5-6-Year-Old Persian-Speaking Children

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Abstract

Previous research has demonstrated the critical role of procedural memory in language acquisition, especially in rule-based aspects such as syntax. Based on Ullman's (2001) model, which distinguishes between declarative and procedural memory functions in language processing, this study examined the relationship between procedural memory and grammatical processing speed in Persian-speaking children. Furthermore, the effect of the gender variable on the performance of the subjects was also evaluated. Twenty-three right-handed monolingual Persian-speaking children aged 5 to 6 years old (11 girls and 12 boys) participated in the study. To match children in terms of intelligence quotient, the Raven Progressive Color Matrices test was initially administered. Then, the participants were administered a test of procedural memory ability based on a sequential reaction-time task and a test of grammatical processing speed using a sentence-picture matching task. For conducting both tests, PsychoPy software was utilized. According to the findings, no significant correlation was observed between the reaction time of the procedural memory and grammatical processing tests in children (p=0.630). Data analysis also indicated that the gender variable did not have a significant effect on the children's performance (girls p=0.316; boys p=0.652). The conclusions showed that there was no relationship between procedural memory capacity and grammatical processing speed in 5-6-year-old Persian-speaking children. In other words, improved procedural memory performance has not resulted in faster grammatical processing. In addition, no difference in performance between the boys and girls subjects was found.

Keywords: Grammatical processing speed, Procedural memory, Ullman's model (2001), Persian-speaking children

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The Second International Biennial Conference on the Science of Language & the Brain (SOLAB 2025) 9-10 October