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Brain responses to verbal mismatches and case marking mismatches: adolescents vs. adults

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Abstract

This study investigated Korean adolescents behavioral and neural responses to the semantic and syntactic anomalies in Korean compared with adults, focusing on the case marking mismatches. EEG data were collected from 16 Korean adolescents (12 males, aged 12-14 years) using a picture sentence verification task regarding (A) verbal mismatch [AGENT-NOM + Verb/*Verb] (e.g., - /*; Brother-ka catches/*bites) and (B) case marker mismatch [AGENT-NOM/*ACC + Verb] (e.g., -/*- ; Brother-ka/*-lul catches). The behavioral results showed 95% accuracy of their judgment regardless of conditions. The ERP data revealed differences between the conditions: N400 was elicited for verbal mismatches as well as for case marker mismatches. The results are different from data collected from Korean adults, where the syntactic anomalies elicited early negativity at the case marker in addition to the N400 at the verb. The different ERP responses between adults and adolescents to the syntactic anomalies provide evidence for the continuous development of human brains.