

Effects of development and non-native language exposure on the semantic processing of native language in preschoolers

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Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=9999920567121&lokasi=lokal>

Abstrak

We used event-related potentials (ERPs) to investigate the effects of non-native language (English) exposure in first-, second-, and third-year (4- to 6-year-old) preschool Japanese native children while they listened to semantically congruent and incongruent Japanese sentences. Our previous study (Takahashi et al., in press) showed that differences owing to exposure to a non-native language (English) appeared in second-year preschoolers but not in first-year preschoolers; in second-year preschoolers, the N400 onset was shorter in the children who were exposed to English than in those who were exposed to Japanese only. In the present study, we compared the ERPs recorded from each of the 3 preschool years to investigate the long-term effects of exposure to a non-native language on the development of semantic processing of the native language. The children were divided into a high degree of non-native language-exposed group (high group) and a low degree of non-native language-exposed group (low group) on the basis of their exposure to a non-native language in their kindergartens. The results showed that the N400 was observed in all age groups, whereas late positive components (LPCs) were only observed in third-year preschoolers. The effects of non-native language exposure on ERP waveforms were observed in the second- and third-year preschoolers. In second-year preschoolers, the latency of the N400 was shorter in the high group than in the low group, whereas there was no difference in the N400 offset between the high and low groups. Furthermore, the broad distribution of the N400 persisted longer in the high group than in the low group. In third-year preschoolers, the duration of the LPC was longer in the high group than in the low group. These results indicate that both the N400 and LPC are related to semantic processing for native language sentences in preschool children and that the waveforms of these components vary depending on the development and degree of exposure to a non-native language.