

Lexico-semantic processing in bilinguals as indexed by event-related potentials

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Reaction time studies on language comprehension in bilinguals have frequently revealed increased reaction times (RTs) for the non-native than the native tongue (e.g., Dijkstra et al. 1998; Dijkstra et al. 1999; de Groot et al. 2002; Moreno et al. 2008). This result supports the temporal delay assumption of the Bilingual Interactive Activation Plus Model (BIA+; Dijkstra and van Heuven 2002), which postulates that the activation of semantic representations is delayed in the non-native relative to the native tongue due to a lower subjective frequency of non-native items in non-dominant bilingual speakers. Interestingly, several event-related potential (ERP) studies have further confirmed this assumption, as a delay in the N400 peak latency has been observed for the non-native relative to the native tongue (e.g., Phillips et al. 2004; Moreno and Kutas 2005; Newman et al. 2012; van Heuven and Dijkstra 2010). In the current study, we investigated bilingual lexico-semantic processing as indexed by three ERP components (P200, N400, and Late Positive Complex (LPC)). 23 late proficient unbalanced Polish – English bilinguals performed a semantic decision task in response to Polish and English word dyads. We found larger P200 amplitudes for English than Polish utterances, which might reflect potentially lower frequency of the non-native lexical items. Also, in line with the temporal delay assumption, we observed a delay in the N400 peak latency and longer reaction times for English than Polish word pairs. Additionally, within the same time window, a reduction in the N400 amplitude was observed, which might be accounted for by a possibly smaller interconnectivity among the non-native than native lexical items. Finally, within the LPC time window, ERP amplitudes were modulated by the complexity of the semantic relations represented in the word dyads. The present findings will be further discussed in reference to current models of monolingual and bilingual language processing.

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