

## **When your native language does (not) matter: Neural correlates of language similarity in non-native language comprehension and production**

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While language similarity is featured in anecdotal accounts of multilinguals communicating in a non-native language, the empirical effects on non-native language comprehension and production remain unclear. In particular, the neural correlates of potential language similarity effects are largely unexplored.

In a series of experiments, we investigated the effect of language similarity between the native (L1) and the non-native language on cross-linguistic influence (CLI) in late language learners with moderate non-native proficiency. More specifically, we examined whether a high language similarity between the L1 and the non-native language modulated the so-called gender congruency effect and the cognate facilitation effect. The former effect is characterised by a processing advantage for gender congruent compared to incongruent items across two languages, and the latter by an advantage in processing cognates over non-cognates. We tested Italian-Spanish speakers (high language similarity group) and German-Spanish speakers (low language similarity group) in a syntactic-violation and a picture-naming paradigm, where we manipulated both gender congruency and cognate status. We measured EEG, particularly focusing on the P300 and the P600 component. Across both paradigms, we predicted a processing advantage for the similar language pair Italian-Spanish over the less similar pair German-Spanish.

Our results indicated that first, we found CLI effects at the behavioural level in non-native comprehension and production. Second, and more importantly, we only found evidence for a language similarity effect in non-native comprehension, but not production. This was reflected both at the behavioural and the neural level, with distinct behavioural and neural signatures across the two groups. These findings suggest that language similarity impacts non-native comprehension, but has a limited effect on non-native production, possibly due to the existing asymmetry in language learners' comprehension vs. speaking proficiency. Our results have important implications for characterising non-native language processing mechanisms and the organisation of multiple languages in the multilingual brain.

*Keywords: language similarity, cross-linguistic influence, gender congruency effect, cognate facilitation effect, non-native comprehension, non-native production, P300, P600, late language learners*