

Noun-phrase production as a window to language selection: an ERP study

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Speakers often experience more difficulties while naming objects in a non-native language compared to their native language. However, where do these difficulties originate? One source for this difficulty is cross-linguistic influence (CLI), which is a result of parallel activation of the native and non-native language. In order for speakers to succeed at non-native production, they need to mitigate CLI effects and select the target language of production prior to articulation. Another important question explored in this study is related to the locus of target language selection during the production process.

We addressed these two issues by examining the implications of CLI for the time course of the individual production stages and the locus of target language selection in non-native production. We exploited two phenomena to gain insight into the individual production stages from a behavioural and neurocognitive perspective. First, we studied the gender-congruency effect, which reflects CLI at the level of grammatical gender processing and was previously linked to the lemma retrieval stage and early phonological processing stages in Romance languages. Second, we explored the cognate facilitation effect indexing CLI during the phonological encoding stages. Our event-related potentials (ERPs) of interest were the P300 as an index for conflict monitoring and attentional resources, as well as the N400 as an index for parallel activation and lexical integration.

Thirty-three German late learners of Spanish named pictures by producing NPs (e.g., determiner + noun: [*la flor*] “the flower”). We manipulated gender congruency (congruent/incongruent) and cognate status (cognate/non-cognate) across languages and recorded participants’ naming accuracy, naming latencies and EEG.

Our results provide evidence for CLI of the gender systems and the phonological systems in non-native NP production. Participants were more accurate at naming congruent nouns compared to incongruent nouns. Further, P300 voltage amplitudes were significantly modulated by gender congruency and cognate status. In contrast, we did not find evidence for an N400 effect. We argue that the P300 effect demonstrates the mitigation of CLI effects between the target and non-target language. In contrast, the N400 effect appears to be either absent, or delayed and masked by articulatory artefacts.

The results suggest that both the target and non-target language remain active at least until the phonological encoding stages and that the target language is likely selected in later phonological processing stages. Moreover, the results highlight the P300 as a critical index for CLI.

Our study has important theoretical implications for characterising the time course of non-native NP production and the resulting delays in non-native naming. Finally, this study also addresses the critical issue of the locus of target language selection, which has implications for theoretical models on native and non-native word production.

References

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