

Recent research has shown that in everyday communication both languages a bilingual person knows are pre-activated regardless of which language is required in a given setting. The question stemming from these findings is how are bilinguals able to efficiently use the language proper for a given context. The involvement of activation and inhibition mechanisms seems to be the answer, but a thorough understanding of these mechanisms remains a crucial aim of numerous psycholinguistic and neurolinguistic studies.

Inhibitory control is one of the executive function indispensable in everyday life, both at the conscious level, and in the context of highly automatised processes, such as, language processing. Thus far, most research examining a decrease in inhibitory control was conducted with patients showing deficits in executive functions. Recently, however, an attempt was made to induce changes in inhibition efficiency in healthy participants by manipulating experimental conditions. To this aim, a non-linguistic task was used, involving high inhibition demands. This task was followed by a task that required the participants to process the meaning of words in French. The results showed that weak associative links between two words (e.g., *devil-FORK*) were strengthened due to a decrease in inhibitory efficiency induced by the high inhibition demands task, which was visible in the increase in semantic priming.

Results of this study are crucial for many research areas, but they also require further thorough empirical investigation. First, they should be corroborated with methods offering insight into various stages of semantic processing. In the next step, they should be expanded. If, indeed, a temporary decrease in domain general inhibition efficiency induced in experimental settings impacts the strength of associative connections between words, this impact should be equally probable within a language, but also in a cross-language context.

The aim of the proposed research is therefore to test this assumption in the native language (Polish) context, and in the cross-language (English-Polish) context. To investigate it, we plan to conduct EEG experiments and the event-related potential technique, with a special focus on the N400 component. Numerous studies have shown that the N400 amplitudes are modulated by the strength of semantic and associative relations between words, in that strongly associated words (e.g., *spoon-FORK*) evoke smaller N400 amplitudes than unrelated words (e.g., *window-FORK*), dubbed as the semantic priming effect.

In the within-language context, we will test word pairs in Polish, while in the cross-language context, English-Polish word pairs (e.g., *spoon-WIDELEC*) will be used. In both contexts, the language task will be preceded by a high inhibition demands or low inhibition demands task. We expect that after participants completed the high inhibition task, both within- and cross-language associative links will be strengthened, which will be visible in an increased semantic priming effect (larger difference between the N400 amplitudes for the associated and unrelated word pairs after completion of the high inhibition demands than low inhibition demands task).

To the best of our knowledge, this is the first attempt at testing whether and to what extent a decrease in inhibition efficiency induced by experimental manipulation in a study with healthy participants impacts the strength of associative connections in a within-language and between-language context, as reflected in the electrophysiological results. The expected results will be important for a number of research areas. Most importantly, they will offer insight into the dynamic nature of language and its dependency on the efficiency of inhibition mechanisms. In the context of bilingual language processing, it will facilitate the understanding of the extent to which the strength of associative cross-language links can be modulated by efficiency in inhibition.