

INHIBITORY CONTROL IN BILINGUAL STROOP TASKS: EVIDENCE FROM ERPs AND REACTION TIME

Bilingual speakers have been hypothesised to exhibit an inhibitory control advantage when making automatic cognitive decisions (e.g. Goldfarb & Tzelgov, 2007). Furthermore, cross-linguistic Stroop tests (in which the shown word is in one language, but the priming language is different), have shown the within-language Stroop effect is larger than the between-language effect (*idem*, p.180). The present study, which will result in a Master's level thesis, will examine this hypothesised bilingual inhibitory control advantage using a version of the Stroop colour word test (Stroop, 1935; MacLeod, 1991), reaction times, and electroencephalography (EEG). Combinations of EEG methods and bilingual Stroop tests are rare, making this study unique and potentially impactful.

Stimuli will include both L1 prompts and L2 priming, and L2 prompts and L1 priming, making this study unique in the field of Stroop tasks, ERPs, and bilingualism. Specifically, the following research questions will be addressed:

- (1) Do bilinguals show increased EEG amplitudes and faster ERP latency when presented with Stroop stimuli than monolinguals?
- (2) Do monolinguals show slower latency effects as a result of the Stroop task than bilinguals?
- (3) Does an L1 prime followed by an L2 stimulus cause a different Stroop effect than an L2 prime followed by an L1 stimulus?
 - a. Are EEG amplitudes affected by L1/L2 stimulus/priming differences?
 - b. Is latency (both ERP and RT) affected by L1/L2 stimulus/priming differences?

Following from the literature, bilinguals are expected to show a weaker between-language Stroop effect than a within-language effect due to their reported cognitive suppression advantage (e.g. Goldfarb & Tzelgov, 2007). Further to this, it is expected bilinguals will generally show shorter RTs than monolinguals. Lastly, following Marian et al. (2013), it could be suggested the Stroop effect is greater when the dominant language is the on-screen language.

Experimental methodology conducted up until the point of the conference date will be explained in the 20-minute presentation, as well as any preliminary findings that may have resulted from the project at that stage.

References

- Goldfarb, L., and Tzelgov, J. (2007) The Causes of the Within-Language Stroop Superiority Effect and its Implications. *The Quarterly Journal of Experimental Psychology*, 60(2), 179-85.
- MacLeod, C. (1991) Half a Century of Research on the Stroop Effect: An Integrative Review. *Psychology Bulletin*, 109, 163-203.
- Marian, V., Blumenfeld, H.K., Mizrahi, E., Kamina, U., and Cordes, A. (2013) Multilingual Stroop Performance: Effects of Trilingualism and Proficiency on Inhibitory Control. *International Journal of Multilingualism*, 10(1), 82-104.
- Stroop, J.R. (1935) Studies of Interference in Serial Verbal Reactions. *Journal of Experimental Psychology*, 18, 643-62.