
Pitfalls of neurolinguistic research in a multilingual country: how speaker identity and error probability may affect the brain's response to agreement violations

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In this talk I address the unexpected absence of a P600-effect in the ERP-results of a study on noun class agreement processing we conducted in South Africa with speakers of the Bantu language Zulu (Zeller, Bylund & Lewis 2022). A common finding of studies that use EEG to measure the brain's response to morpho-syntactic errors is a biphasic ERP-effect, consisting of an early negativity peaking between 300 and 500ms after onset of the target word (*Left Anterior Negativity* LAN) and a late positivity peaking at around 600ms after onset (P600) (Molinaro, Barber & Carreiras 2011 a.m.o.). In our study, participants read Zulu sentences where a noun either did or did not match the noun class of the preceding determiner. As predicted, we found a LAN, but against our predictions, we did not observe a P600-effect in the mismatch condition. I discuss this result in light of auditory ERP-studies that find that the P600 is affected by *speaker identity* and *error typicality*: when an agreement violation that is commonly encountered in the speech of non-native speakers is produced by a speaker with a foreign accent, the P600 has been shown to be absent (Hanulíková et al. 2012; Caffarra & Martin 2012). This suggests that the syntactic processes of conflict monitoring, repair and revision that are reflected in the P600 component are not initiated when the listener encounters an error that is considered typical, due to world knowledge and non-native speaker identity that is indexed by a foreign accent. I speculate that a similar error adjustment may have had an effect on the results of our experiment, which was conducted in a highly multilingual country and in a setting in which the probability of our participants encountering non-native speakers of Zulu was high. This environment may have modified our participants' expectations about the grammaticality of the Zulu stimuli in our experiment, leading to the absence of a P600 in the neural correlates of reading sentences that include noun class agreement violations.

References: • Caffarra, S. & C.D. Martin (2019). Not all errors are the same: ERP sensitivity to error typicality in foreign accented speech perception. *Cortex* 116, 308–320. • Hanulíková, A., van Alphen, P.M., van Goch, M.M. & A. Weber (2012). When one person's mistake is another's standard usage: The effect of foreign accent on syntactic processing. *Journal of Cognitive Neuroscience* 2, 878–887. • Molinaro, N., Barber, H.A. & M. Carreiras (2011). Grammatical agreement processing in reading: ERP findings and future directions. *Cortex* 47, 908–930. • Zeller, J., Bylund, E. & A.G. Lewis (2022). The parser consults the lexicon in spite of transparent gender marking: EEG evidence from noun class agreement processing in Zulu. *Cognition* 226, 105148.