Bilingual inhibitory control in connected speech

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Bilinguals make wrong-language intrusions extremely rarely in situations when their other language will not be understood. In the most accepted theory of how this is possible, bilinguals inhibit the non-target language to prevent interference during target-language production (Inhibitory Control Model, Green, 1998). Such inhibition can act at the level of individual lexical representations (*local inhibition*) or at the level of whole language task schemas (*global inhibition* affecting the whole language). The most robust behavioral index of inhibitory control is a naming delay of previously inhibited words from the non-target language when this language becomes target, attributed to recovery from inhibition. This effect is more pronounced or only present for bilinguals' dominant language, consistent with the Inhibitory Control Model's feature that inhibition – and hence recovery rom it – is proportional to the strength of the language it acts on (e.g., Branzi et al., 2012; Meuter & Allport, 1999; Costa & Santesteban, 2004). However, despite robust effects in picture naming, little research has investigated the effects of inhibitory control in connected speech.

The aim of this study was thus to test predictions of the Inhibitory Control Model in spontaneous connected speech in the dominant language. In Phase 1, two groups of Spanish-English bilinguals dominant in English viewed an 8-minute video with no linguistic content (a Tom-and-Jerry-type cartoon), and subsequently orally explained the story in Spanish (their non-dominant language). In Phase 2, bilinguals viewed another 8-minute video, which was the same as the previous one for one group or different from the previous one for the other group, and explained its content in English (their dominant language). Two additional groups did the same but explained the first video in English (i.e., performed the whole experiment in English). The videos were counterbalanced across participants (total N = 94). Bilinguals' English and Spanish proficiency was assessed with tests of productive vocabulary (Multilingual Naming Test, Gollan et al., 2012) and grammar knowledge (Michigan English Language Institute College English Test and Diploma of Spanish as a Foreign Language), and a language history questionnaire. The video descriptions were recorded with Audacity and are being transcribed with Praat.

The Inhibitory Control Model predicts that retrieval of the lexical representations of a previously inhibited (dominant) language will be delayed until they recover from the inhibition (and such recovery may last for at least ten minutes: Christoffels et al., 2016). In connected speech, lexical retrieval delays may be manifested in a reduced speech rate, more filled and unfilled pauses (which could be an index of lexical retrieval difficulties: Hartsuiker & Notebaert, 2009), and the use of easier-to-retrieve words such as higher-frequency words, generic words and cognates, which might be less affected by inhibition. We will thus measure the following measures: (1) speech rate; (2) unfilled pauses; (3) disfluencies such as *uh*s and *uhm*s; (4) number of unique words (Berisha et al., 2015); (5) average frequency of the words used; and (6) average similarity of the words used with their translation equivalents (i.e., a continuous measure of cognate status). Of interest is how having spoken non-dominant Spanish in Phase 1 will affect these measures during dominant English production in Phase 2. The Inhibitory Control Model predicts a slower speech rate, more unfilled pauses and disfluencies, fewer unique words, higher-frequency words and words more similar to their translation equivalents for the groups having spoken Spanish in Phase 1 relative to the groups having spoken English in Phase 1 (and such comparisons will also be performed on subsets of participants matched one-to-one on language proficiency scores and overall number of words produced). Additionally, comparing possible inhibition recovery effects between the groups describing the same videos and the groups describing different videos will inform about different effects of local and global inhibition. The results of this study will reveal if spontaneous connected speech shows predicted effects of recovery from inhibition and will thus help constrain theories of bilingual inhibitory control.