Does bilingual inhibitory control operate over structural representations?

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Bilinguals rarely make wrong-language intrusions when their other language would not be understood. In the widely accepted Inhibitory Control Model, this is because they inhibit the non-target language to avoid interference (Green, 1998). Such inhibition happens when language task schemas (e.g., "Production in Language X") inhibit outputs of the lexico-semantic system belonging to the non-target language, or inhibit other schemas (e.g., "Production in Language Y"). But the model does not specify if inhibition also operates over syntactic representations. It may be that only lexical representations are inhibited but syntactic ones are not. It may also be that syntactic representations are inhibited too, although how such inhibition would operate depends on the architecture of the bilingual syntactic system. For example, the language task schema would not be able to send inhibition to all syntactic representations in a language if the syntactic system is shared across bilinguals' languages (Hartsuiker et al., 2004) and instead may operate only over language-tagged non-shared representations. Establishing if inhibition operates at the structural level will thus help constrain both accounts of bilingual language control and of bilingual structural representation.

The existence of structural inhibition will be tested in a picture-description experiment with Spanish-English bilinguals (for which online data collection is about to begin). The study is based on the fact that a transfer event can be expressed with both a prepositional dative (e.g., *The nun is giving a book to the pirate*) and a double object sentence in English (e.g., *The nun is giving the pirate a book*), but only with a prepositional dative in Spanish since Spanish lacks the double object structure. We will compare differences in bilinguals' double-object production rates in English before and after producing non-dative sentences in Spanish, to those of another group of bilinguals who will produce the non-dative sentences in English. Planned total sample size is 96, or 48 per group (the minimum sample size to achieve power of 0.8 given a small-sized effect (f = .12), estimated with G-Power). In Phase 1, all bilinguals will give typed descriptions of a set of 24 dative pictures in English (containing six written verbs repeated across four pictures). In Phase 2, one group will describe in Spanish a set of monotransitive pictures (e.g., a waitress eating a case), half of which have animate and half inanimate objects. During this phase, the "Production in Spanish" schema should inhibit the "Production in English" schema. If syntactic structures get inhibited in addition to lexical items, inhibition should spread at least to the English structures that are not shared with Spanish, thus affecting double objects. Another group will describe the same monotransitive pictures in English, which should not induce any inhibition. In Phase 3, all bilinguals will describe a different set of dative pictures using the same six verbs as in Phase 1. If structures get inhibited, speaking Spanish in Phase 2 would decrease double-object production rates in Phase 3 relative to Phase 1 (while speaking English in Phase 2 would not, or not to the same extent) because inhibition should) decrease the accessibility of the non-shared double-object structure. Because the study's logic hinges on detecting differences in double-object production, we need to ensure that baseline double-object production is sufficiently high. For this reason, we selected the six verbs that elicited highest rates of double objects in prior norming with the same population and materials as for the main experiment. Also, the experiment will begin with a double-object priming phase in which all bilinguals will read 16 double object sentences and answer multiple-choice comprehension questions about each of them.

To be able to interpret a lack of difference in double-object production between the two groups, we originally planned to include additional phases of single picture naming in both languages, to replicate well-attested delays of lexical access after naming in the other language, attributed to inhibition (e.g., Branzi et al., 2012). Given current suspensions of in-person testing and uncertainty about the reliability of naming latencies collected over the internet, this will be implemented in a second experiment with a currently unclear timeline.