

Bilinguals' referential choice in intra-sentential code-switching

Appropriate references are a prerequisite for successful communication, but bilingual speakers may differ in their choice of referential expressions depending on the language selected in a specific context, such as in a unilingual vs. codeswitching context. The present research examines referential choice in intra-sentential code-switching in Spanish-English bilinguals when the language of production is Spanish, the non-dominant language. Different sets of referential expressions are available to bilinguals in Spanish and English (null/overt pronouns and noun phrases in Spanish; overt pronouns and noun phrases in English), which can create conflict in a code-switching context. In an on-going experiment, Spanish-English bilinguals read aloud a sentence fragment including two referents and completed the fragment orally either using the same language (fragment: Spanish; completion: Spanish) or code-switching (fragment: English; completion: Spanish). The code-switching condition may be more cognitively effortful because the speaker has to inhibit the language just used, incurring into a processing cost (Meuter & Allport, 1999), and because Spanish is the non-dominant language of the bilingual speakers. Under cognitive load, bilinguals may experience decreased activation of the referents in their discourse model, determining an increased use of null pronouns that are more economical for the speaker. Alternatively, code-switching may determine increased cross-linguistic interference from the language just used (English), with an increased production of noun phrases and overt pronouns, the forms used in English in the similar contexts.

A sentence completion task was created where sentence fragments contained two antecedents with similar gender (Jesus, Pablo), one in subject position and one in object position. The fragment included a subject-biased (a) or an object-biased implicit causality verb (b). The verb bias aimed at eliciting references to the preceding subject and to the preceding object in equal numbers. The two language conditions (same-language and code-switching) were blocked and the two blocks were administered 15-20 minutes apart. Participants' sentence completions were classified according to: (i) the type of referential expression produced (null/overt pronoun and noun phrases; dependent variable), (ii) the referent of the referential form (referring to the subject or object antecedent; factor Antecedent type) (iii) the condition (same-language: Spanish-Spanish; code-switching: English-Spanish; factor Condition).

Thirty* Spanish-English bilinguals were recruited. Mixed-effects logistic regression showed that participants produced significantly fewer null pronouns in the code-switching condition compared to the same-language condition, both in reference to the preceding subject and to the preceding object antecedent (Antecedent*Condition interaction: $p < 0.0001$). In addition, bilinguals produced significantly more overt pronouns in reference to the object antecedent compared to the subject antecedent, regardless of the condition (main effect of Antecedent: $p < 0.04$). Finally, a significant Antecedent*Condition interaction showed that bilinguals produced significantly more noun phrases in the code-switching condition compared to the same-language condition in reference to the subject antecedent, while a difference between the two conditions was not significant for noun phrases produced in reference to the object antecedent. The interaction further revealed that more noun phrases were produced in reference to the object antecedent in the code-switching condition and in the same-language condition, respectively.

The preliminary results showed that bilinguals' referential choice is sensitive to the demands of code-switching, and participants are more explicit in their choice of referring expressions in Spanish, their non-dominant language, when they switch language (i.e., producing fewer null pronouns in reference to subject and object antecedents, and more noun phrases in reference to subject antecedents). The results also suggest that intra-sentential code-switching may determine cross-linguistic interference, with an increase use of referential forms that is typical of the language recently inhibited.

*Data collection is currently ongoing.

Examples of sentences of the production task material (adapted from Authors, 2021)

- (a) Subject-biased implicit causality verb:
 1. Code-switching: Jesus bored Pablo because...
 2. Same language: Jesus aburrió a Pablo porque....

- (b) Object-biased implicit causality verb:
 1. Code-switching: Jesus admired Pablo because...
 2. Same language: Jesus admiró a Pablo porque....

Table 1. Null and overt pronouns and noun phrases produced in the code-switching and same-language condition (out of the number of noun phrases and pronouns produced).

Condition	Null pronouns	Overt Pronouns	Noun Phrases
<i>Referent: preceding subject</i>			
Same Language: Spanish-Spanish	0.92	0.04	0.04
Code-switching: Spanish-English	0.69	0.07	0.24
<i>Referent: preceding object</i>			
Same Language: Spanish-Spanish	0.66	0.03	0.31
Code-switching: Spanish-English	0.46	0.14	0.41

References

Meuter, R. F. I., & Allport, A. (1999). Bilingual language switching in naming: Asymmetrical costs of language selection. *Journal of Memory and Language*, 40(1), 25–40.