

Code-switched relative clause constructions and bilingual sentence processing: an eye-tracking study

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It has been argued that monolinguals and bilinguals differ in how they resolve ambiguities in relative clause attachment. Sentences (1) and (2) contain a complex NP of the type “NP of NP” followed by a relative clause (RC). Cuetos and Mitchell (1988) first noted that sentences as in (1) and (2) are parsed differently depending on the language:

(1) She kissed the brother(NP1) of the poet(NP2) that was on the balcony.

(2) Ella besó al hermano(NP1) del poeta(NP2) que estaba en el balcón.

In English (1), the poet is on the balcony whereas in the same sentence in Spanish (2), it is the brother who is on the balcony.

Languages can be grouped according to the parsing strategy for monolinguals: high attachment (Spanish, French, Greek, Italian, Japanese, etc.) and low attachment (English, Arabic, Brazilian Portuguese, Romanian, etc.). Studies on attachment preferences for bilinguals have shown that L1 influence and amount of language exposure play an important role in parsing preferences (Dussias 2003; Dussias and Sagarra 2007; Fernández 2003). Dussias and Sagarra (2007) found that Spanish-dominant bilinguals with limited exposure to English preferred high attachment in both languages, while bilinguals with extensive exposure to English preferred low attachment in both English and Spanish. Previous research has not extended relative clause attachment strategies to code-switched sentences in order to discern whether the directionality of the language switch will affect bilinguals’ parsing strategies.

Using eye-tracking, this research examines parsing strategies in code-switched sentences to address the following research questions:

- i. Does language dominance play a role in parsing strategies?
- ii. Does direction of the language code-switch affect processing?
- iii. Does the direction of the language code-switch affect processing differently based on individual’s language dominance?

The predictions were that bilinguals will have longer looking times in the disambiguating region when the forced attachment does not correspond to the preferred attachment strategy of bilinguals’ dominant language. The direction of switch was predicted to have an effect only with the lower proficiency group.

Three groups of bilinguals (simultaneous bilinguals, L2 Spanish, and L1 Spanish) were tested on their parsing strategies of Spanish/English code-switched ambiguous relative clauses. Participants were tested on sentences that forced the attachment of the relative clause as either high or low (Table 1). Results show that the two English dominant groups, both the L2 Spanish and the Early Bilinguals, had slower reading times in Spanish across the board. In contrast, the L1 Spanish group had similar reading times in both languages, despite being adult learners of their L2 English, which may indicate that, as in Dussias and Sagarra (2007), language exposure plays an important role. That is, while the L1 Spanish group is dominant in Spanish, they were living in an English environment at the time of testing. Our data support the findings of Fernández (2003) who found that bilinguals use language-independent sentence processing routines, associated with their dominant language. Results will be discussed in terms of processing costs and language dominance.

Table 1: Examples of experimental sentences

Spanish-English — High Rosa habló con la primaNP1 de mi maridoNP2 [that was pregnant for the first time].
Spanish-English — Low Rosa habló con el maridoNP1 de mi primaNP2 [that was pregnant for the first time].
English-Spanish — High He argued with the boyfriendNP1 of my sisterNP2 [que trabaja como actor en Hollywood].
English-Spanish — Low He argued with the sisterNP1 of my boyfriendNP2 [que trabaja como actor en Hollywood].

Figure 1: Total looking times in disambiguating region for Spanish to English (sp-en) and English to Spanish (en-sp) sentences that forced the attachment of the relative clause as either high or low. Results further broken down by high Spanish proficiency (90%+) and low Spanish proficiency groups (89%-).

