

Spanish grammatical gender in codeswitching: evidence from eye-movements

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Codeswitching (CS) has been used as a window to explore how the properties of the two language systems interact in the mind of the bilingual (e.g. Jorschick et al. 2010, Arnaus et al. 2012, Licerias et al. 2016, Fairchild & van Hell 2017, Valdés Kroff et al. 2017, Burkholder 2018).

In this study we focus on this language contact situation by analyzing experimental data elicited via the eye tracker methodology from a group of L1 Spanish L2 English bilinguals. More specifically, given that Spanish-English bilingual communities have been shown to exhibit an overwhelming tendency to produce determiner–noun CS (1) (e.g. Licerias et al. 2008, Valdés Kroff 2016, Valenzuela et al. 2012, Fernández Fuertes & Licerias 2018, Johns et al. 2018), we formally explore the directionality of the switch (2) and the type of implicit gender agreement mechanism in the case of Spanish determiner CS (3-4).

- (1) El hombre ha apagado el fire very quickly
- (2) a. El señor está arreglando **la window** with a hammer (Spanish Determiner – English Noun)
b. The man is fixing **the ventana** con un martillo (English Determiner – Spanish Noun)
- (3) a. El señor está arreglando **la_F window_F** in SP with a hammer (gender congruent)
b. El señor está arreglando **el_M window_F** in SP with a hammer (gender non-congruent)
- (4) a. El niño está leyendo **el_M book_M** in SP for the first time (gender congruent)
b. El niño está leyendo **la_F book_M** in SP for the first time (gender non-congruent)

F=feminine; M=masculine; SP=Spanish

Using an EyeLink Portable Duo, we collected eye-movement data from 25 L2 bilingual adults with a high proficiency level of English while reading CS structures. The reading task consisted of 156 sentences (48 experimental items, 54 fillers and 54 distractors); comprehension questions followed half of the fillers (27) and half of the distractors (27) but never the experimental items. Frequencies of the target nouns were controlled using EsPal (Duchon et al. 2013) for Spanish and SUBTLEXus (Brysbaert & New 2009) for English. Three eye-tracking measures were extracted (gaze duration, regression path duration and total duration) and calculated for two target regions (the target noun and the determiner plus 4 characters preceding the determiner (in bold in examples 2-4)).

Our results show that Spanish determiner switches take longer to process than English determiner switches (2a vs. 2b) when analyzing the noun; and that processing costs are higher in the case of non-congruent Spanish determiner switches (3b and 4b) both when analyzing the noun and the determiner. These results can be linked to the status the two languages have for the bilingual participants in this experiment and, in particular, the

different status grammatical gender has in the two languages under investigation: English determiner switches (2b) are processed faster as no gender agreement mechanism needs to be enforced because English determiners bear no gender features; when a Spanish determiner appears (2a), and given the strength of grammatical gender features in Spanish (the L1 of our participants), gender agreement mechanisms are applied, which results in longer processing times; furthermore, when gender agreement operations result in non-congruent switches (3b and 4b), this is seen as a violation for these L1 Spanish bilinguals, which also results in longer processing times. This is in line with previous studies using off-line acceptability judgment data (Liceras et al. 2008, 2016, Gómez Carrero et al. 2018) as well as on-line data (Litcofsky & van Hell, 2017).

Selected References

- Burkholder, M. (2018). Language mixing in the nominal phrase: Implications of a distributed morphology perspective. *Languages*, 3(2), 10.
- Fairchild, Sarah & Janet Van Hell. 2017. Determiner-noun code-switching in Spanish Heritage speakers. *Bilingualism: Language and Cognition* 20, 150-161.
- Fernández Fuertes, R., & Liceras, J. M. (2018). Bilingualism as a first language: language dominance and crosslinguistic influence. In A. Cuza & P. Guijarro-Fuentes (Eds.), *Language acquisition and contact in the Iberian Peninsula* (pp. 159-186). Boston/Berlin: de Gruyter.
- Jorschick, L., Quick, A. E., Glässer, D., Lieven, E. & Tomasello, M. (2011). German–English-speaking children’s mixed NPs with ‘correct’ agreement. *Bilingualism: Language and Cognition*, 14(2), 173-183.
- Liceras, Juana M., Raquel Fernández Fuertes, Susana Perales, Rocío Pérez-Tattam, & Kenton Todd Spradlin. 2008. Gender and gender agreement in bilingual native and non-native grammars: a view from children and adult functional-lexical mixings. *Lingua*, 118, 827-851.
- Liceras, Juana M., Raquel Fernández Fuertes & Rachel Klassen. 2016. Language dominance and language nativeness: the view from English-Spanish code-switching. In R. E. Guzzardo Tamargo et al. (eds.) *Spanish-English codeswitching in the Caribbean and the U.S.*, 107-138. Amsterdam: John Benjamins.
- Litcofsky, K.A., & van Hell, J.G. (2017). Switching direction affects switching costs: Behavioral, ERP and time-frequency analyses of intra-sentential codeswitching. *Neuropsychologia* 97, 112–139.
- Valdés Kroff, J. R., Dussias, P. E., Gerfen, C., Perrotti, L., & Bajo, M. T. (2017) Experience with code-switching modulates the use of grammatical gender during sentence processing. *Linguistic Approaches to Bilingualism*, 7, 163-198.