

The use of pronoun interpretation biases in Spanish Heritage Speakers: the role of language experience

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In null subject languages like Spanish, while null pronouns refer to topic antecedents, overt pronouns refer to non-subject antecedents (1):

- (1) Pedro_i saludó a Carlos_j cuando él_{i/pro_i} cruzaba la calle
Pedro greeted Carlos when he crossed the street

Heritage speakers (HSs) of a null subject language (e.g., Spanish) whose second language is a non-null subject language (e.g., English) can show some optionality in the interpretation of subject pronouns in the heritage language. Previous online and offline comprehension research has shown mixed findings (e.g., Keating et al., 2011; 2016), and it is still unclear which underlying mechanisms explain the differences between HS and monolingual speakers in this domain (incomplete acquisition vs. lack of exposure). In the present study, we address this debate by testing a large group of HSs and by analyzing the role of language experience on pronoun interpretation (i.e., language proficiency, reading exposure). Furthermore, while previous studies did not control for cross-linguistic/dialectal variation of the monolinguals and HSs, we address this limitation by testing participants exposed to the same dialectal variety of Mexican Spanish.

Seventy-four HSs of Mexican Spanish with different levels of proficiency and seventy-three monolingual speakers participated in a sentence comprehension task where they had to choose the referent of an ambiguous null/explicit pronoun in anaphoric or cataphoric position (Table 1).

The results showed that HSs chose the subject antecedent significantly more often than monolingual speakers for anaphoric and cataphoric pronouns ($p < .0001$), and for null and explicit pronouns ($p < .0001$). The strong subject preference for all pronoun types is a new result for Spanish HSs, indicating high variability in pronoun preferences in this population. We interpret the subject preference for all pronoun types as a manifestation of cross-linguistic interference from English.

The analysis of individual differences in the HS participants showed a significant main effect of reading exposure ($p < .03$): HSs who read more in Spanish chose overall fewer subject-antecedent interpretations (Reading Exposure 0-50%=0.78; 51-100%=0.67). In addition, HSs who read more in Spanish chose fewer subject-antecedent interpretations for overt (ReadingExposure*AnaphoraPosition: $p < .03$) and cataphoric pronouns (Reading Exposure*AnaphoraType: $p < .009$), approaching the monolingual preferences.

The significant effect of reading exposure confirms recent results showing that pronoun interpretation biases correlate with comprehenders' print exposure in monolingual individuals (e.g., Langlois & Arnold, 2020). Thus, our results from HSs contribute to demonstrate that pronoun comprehension preferences are acquired by language experience. While we cannot completely exclude a deficit at the syntax-pragmatic interface resulting from incomplete acquisition (Sorace, 2011), our study demonstrates that lack of exposure is a contributing factor to HSs' optionality in pronoun comprehension. Thus, our results support models of pronoun biases learning stressing the importance of language exposure to explain differences observed between different bilingual populations and monolinguals (Contemori, 2019).

Table 1. Average pronoun interpretation in Heritage Speakers and Monolinguals (SD)

| | Heritage Speakers | | | Monolinguals | | |
|--|--------------------------------|--------------------------------|--------------------------------------|--------------------------------|--------------------------------|--------------------------------------|
| | Subject Antecedent (=Pedro) | Object Antecedent (=Carlos) | External referent (=Someone Else) | Subject Antecedent (=Pedro) | Object Antecedent (=Carlos) | External referent (=Someone Else) |
| Anaphora Null Pronoun Pedro saludó a Carlos cuando <i>pro</i> cruzaba la calle (Pedro greeted Carlos when (he) crossed the street) | 0.73(0.45) | 0.26(0.44) | 0.01(0.12) | 0.62(0.49) | 0.37(0.48) | 0.02(0.12) |
| Anaphora Explicit Pronoun Pedro saludó a Carlos cuando <i>él</i> cruzaba la calle (Pedro greeted Carlos when he crossed the street) | 0.57(0.50) | 0.41(0.49) | 0.02(0.13) | 0.37(0.49) | 0.60(0.49) | 0.04(0.19) |
| Cataphora Null Pronoun Cuando <i>pro</i> cruzaba la calle, Pedro saludó a Carlos (When (he) crossed the street, Pedro greeted Carlos) | 0.88(0.32) | 0.05(0.23) | 0.06(0.24) | 0.65(0.48) | 0.06(0.24) | 0.29(0.45) |
| Cataphora Explicit Pronoun Cuando <i>él</i> cruzaba la calle, Pedro saludó a Carlos (When he crossed the street, Pedro greeted Carlos) | 0.86(0.35) | 0.07(0.25) | 0.07(0.26) | 0.47(0.50) | 0.12(0.32) | 0.42(0.49) |

References

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