The processing of intra-sentential anaphoric subject pronouns in L2 Spanish
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The difficulties that adult L2 learners encounter in acquiring discourse constraints on the distribution of overt and null subject pronouns in null-subject languages have been widely reported (Sorace & Filliaci, 2006; Sorace, 2011). In addition to developing the representation of these syntax-discourse properties, they also have to acquire an online parsing bias – Carminati’s (2002) Position of the Antecedent Strategy (PAS). The PAS constrains the resolution of intra-sentential anaphoras in null-subject languages, like Italian, by assigning matrix subjects as the antecedents of embedded null subject pronouns as pro in (1a), and matrix objects as the antecedents of their overt counterparts as lei in (1b). Nevertheless, other null-subject languages assign either the matrix subject or object as the antecedent of the embedded overt subject pronoun (Spanish: Filiaci, 2011; Moroccan Arabic: Bel & García-Alcaraz, forthcoming). As per non-null subject languages, ambiguous embedded subject pronouns tend to refer to matrix subjects (English: Arnold et al., 2000; Gernsbacher, 1989; McDonald & MacWhinney, 1995; among others).

Existing L2 studies on intrasentential anaphora resolution employ offline techniques, and show inconclusive findings. Some advance instabilities at the syntax-pragmatics interface acquisition (i.e., non-native interpretive over-extension of overt subject pronouns to the matrix subject antecedent) (English-Italian near-natives: Sorace & Filiaci, 2006; Belletti et al., 2007; English-Spanish intermediate and advanced learners: Jegerski et al., 2011; Keating et al., 2011). In contrast, others claim native-like performance (Croatian-Italian near-natives: Kras, 2008; English-Spanish advanced learners: Valenzuela et al., 2011). In these studies, it is difficult to determine what modulates these opposite outcomes. This is because they did not manipulate the role of L2 proficiency, the L1-L2 pair, sensitivity to morphosyntactic information, and cognitive limitations in the resolution of intra-sentential anaphoras. The present study is the first to address the online operativeness of the PAS by examining the role of L1 (Moroccan Arabic vs. English), L2 proficiency (low vs. high), morphosyntactic bias (null vs. overt subject pronouns), semantic bias (subject vs. object), and cognitive demands (working memory) in the L2 online processing of Spanish subject pronouns.

L1 English (48 low, 31 high proficiency) and L1 Moroccan Arabic (36 low, 25 high proficiency) learners of L2 Spanish and 32 Spanish native speakers completed a language background questionnaire, a proficiency test based on the DELE, a non-linguistic working memory test, and a non-cumulative word-by-word self-paced reading task with a yes-no question after each of the 111 sentences. The 24 experimental sentences had 4 conditions: null/overt pronoun and subject/object semantic bias (El músico saluda al bombero mientras pro /él lleva un casco/disco en la mochila ‘The musician greets the fireman while Ø /he carries a helmet/disc in the backpack’). Experimental sentences were controlled for length; matrix subjects/objects and embedded objects were controlled for length, gender (half ms, half fs), and only appeared once in the entire experiment; and matrix verbs had neutral implicit causality for interpreting the pronoun as co-referent with either the subject or the object (bias range =59%-47%, based on Goikoetxea et al., 2008).
Results reveal no significant main effects with respect to RTs concerning semantic bias. Hence, subject and object biases were processed identically. By contrast, there were interpretive semantic bias main effects in all participants according to which the subject bias was preferred over the object bias, as predicted by the PAS. As for L1 effects, Arabic learners processed PPs slower than English learners and Spanish natives, due to differences in the writing system and basic word order (Perpiñán, 2010). Importantly, Arabic learners were more subject biased than English learners due to positive transfer. Along these lines, Arabic low intermediate learners were more subject biased than English intermediate and advanced learners in null but not in overt pronoun sentences. Significant differences were found with regard to L2 proficiency effects. Spanish natives, and all advanced learners (both L1 Arabic and L1 English) are more subject biased in overt than null pronoun sentences. This effect suggests that the more advanced, the more native-like interpretive patterns are obtained. Also, there were working memory effects for all participants: faster RTs in the embedded verb and embedded object, the critical disambiguating region that is more cognitively taxing, in higher than lower span subjects. As for the interpretation patterns, high working memory participants are more subject biased in sentences with subject than object antecedents, because sentences with subject antecedents are cognitively more taxing than sentences with object antecedents. To conclude, L1 transfer, proficiency level, and cognitive capacities seem to modulate the mapping of the syntax-pragmatics interface properties regarding the interpretation scope of null subject pronouns and overt subject pronouns at the intra-sentential level. Moreover, this linguistic phenomenon seems not to constitute a special learnability difficulty in adult second language acquisition.

(1)  
   a. La mamma dà un bacio alla figlia, mentre pro, si mette il cappotto.  
   b. La mamma dà un bacio alla figlia, mentre lei si mette il cappotto.  
   ‘The mother kisses her daughter, while pro / she is wearing her coat.’  
   (Sorace & Filliaci, 2006: 352)

Selected References


