The acquisition of co-referential properties of pronouns in bilingual and L2 Spanish speakers[1]

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Spanish and Moroccan Arabic (MA) share similar pronoun resolution biases: null pronouns (NPs) for [−Topic Shift] and Overt Pronouns (OPs) for [±Topic Shift] (Filiaci 2011, Bel & García-Alcaraz in press). Research couched in the Interface Hypothesis (IH) suggests that L2 learners and bilinguals overaccept OPs as [−Topic Shift]. We study whether MA speakers mirror natives in their pronominal choices in Spanish or adhere to the IH's predictions. Three groups were tested: 26 Spanish-MA bilinguals, 26 L2 advanced learners of Spanish and 34 control subjects An acceptability judgment task with three conditions was designed: pronoun (NP vs. OP), antecedent (subject [−Topic Shift] vs. object [+Topic Shift]) and clause order (main-subordinate vs. subordinate-main).
Results reveal: 1) In L1 Spanish, a specialization of OPs for [+Topic Shift] in both orders, and NPs for [−Topic Shift] only in subordinate-main order. 2) No group effect, suggesting a native-like achievement with residual optionality in some conditions.

1. Introduction

Human communication is a very complex process in which reference is but one of many factors contributing to its complexity. Reference is normally defined as the biunivocal relationship between certain linguistic expressions with previous or subsequent elements that make sense at the same discourse context to avoid repetitions and lighten the discourse. Nominal and pronominal elements (null and overt) are two key referring expressions that contribute to the organization of discourse. Roughly speaking, while a pronoun likely denotes an entity previously introduced by a salient category in the discourse (e.g. a nominal), nominal categories are used to refer to less salient or accessible referents. Psycholinguistic research has examined the factors that might influence the choice of an antecedent by the different types of pronominal anaphoric expressions and have found that speakers tend to use pronouns to refer to a prominent or salient discourse entity (Garvey, Caramazza & Yates 1975). In ambiguous referential contexts, it has also been observed that NPs refer back to topic antecedents and OPs tend to express topic change (Belletti, Bennati & Sorace 2007). Additionally, recent research has shown that anaphoric elements are sensitive to different factors such as gender, order of presentation (Arnold, Eisenband, Brown-Schmidt & Trueswell 2000, Trueswell, Papafragou & Choi 2011) or the syntactic function of the antecedent (Carminati 2002, Filiaci 2011).

The comprehension or interpretation of pronominal anaphora has aroused much interest among linguists and today constitutes an independent research domain in the language acquisition field. A large body of literature has been devoted to the acquisition of the co-referential properties of NPs and OPs, either in the L1 (Carminati 2002, Filiaci 2011, Iraola 2014, among others) or the L2 (Lozano 2006, Sorace & Filiaci 2006, Domínguez 2013, among others). The acquisition of anaphoric pronouns are particularly interesting since they reveal how speakers integrate morphosyntactic and discourse-pragmatic information, a vulnerable domain of difficult acquisition according to the IH framework (Sorace & Filiaci 2006, Sorace, Serratrice, Filiaci & Baldo 2009, see Sorace 2011 for an overview). The IH defends that linguistic phenomena that integrate syntactic and pragmatic information are a locus of optionality and instability for L2 learners and bilingual speakers and that native-like performance cannot be reached. Taking this thesis as our starting point, in the present study we examine the acquisition of third person pronominal subjects, null and overt, in Moroccan Arabic (MA)/Spanish bilinguals and native speakers of MA who are learning Spanish as a L2. Both Spanish and MA are null subject languages and consequently, both languages have NPs and OPs in their inventory of pronominal options. Here we compare populations differing in their exposure to the target language, but analogous with respect to their L2 knowledge. To do so, we compare the performance of early sequential bilinguals living in Spain and that of L2 learners learning Spanish in a foreign language classroom context.

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2. Linguistic background

2.1. Discourse-pragmatic properties of pronominal subjects in null subject languages

Morphologically rich languages, such as Spanish or Moroccan Arabic (MA), typically display highly productive paradigms in both verbal and nominal domains. In the case of Spanish, verbal forms are inflected for person and number and there is alternation between overt and null (*pro*) pronouns. The distribution of pronouns at the syntax-discourse interface is not random but regulated by the [±topic shift] pragmatic feature, whereby Determiner Phrases (DPs) typically introduce referents into discourse, OPs signal switch of reference or topic shift and NPs express same reference or topic continuity. Additionally, an OP may convey contrastive meaning but we do not address this issue in this study. In ambiguous contexts, different studies have suggested that speakers have antecedent preferences for pronouns, or, in other words, that they follow different disambiguating strategies to provide the pronoun with a complete meaning. The most influential work has been Carminati's (2002) study, in which she proposed and tested the Position of Antecedent Hypothesis (PAH) for intra-sentential contexts. Since the publication of this study many studies have put to test the hypothesis' reliability in different languages and in different contexts (Kras 2008, Filiaci 2011, Iraola 2014, among others). Originally, the PAH was a proposal of configurational analysis for Italian pronouns (null and overt) that claimed that NPs tend to recover an antecedent in subject position while OPs tend to establish co-reference with an antecedent in object position. The following example from Carminati (2002: 223) illustrates these biases:

(1)   Maria fa lo shopping con Lucia quando lei/*pro* è libera.
        'Maria goes shopping with Lucia when she/pro is free'
           A. quando LUCIA è libera   B. quando MARIA è libera
           A. 'when Lucia is free'   B. 'when Maria is free'

According to the PAH, Italian speakers interpret *pro* as co-referent with Maria and *lei* with Lucia. More recently, Filiaci (2011) has accomplished a seminal work comparing the processing of NPs and OPs in Italian and Spanish. It is the first cross-linguistic study between two null subject languages and her findings suggest a micro-variation phenomenon between these two romance languages. While in Italian there seems to exist a clear division of labor between NPs and OPs, in Spanish, such division of co-referential properties does not seem to be as clear-cut. Filiaci's results in Spanish evidence a clear specialization of NPs in retrieving elements in subject position but a less consistent pattern of behavior in the case of OPs, which can refer back to elements either in subject or object position. Likewise, Jegerski, VanPatten and Keating (2011) and Keating, VanPatten and Jegerski (2011) have found similar results for Spanish in comparable linguistic contexts. In the light of these findings, it seems that the antecedent preferences of NPs and OPs in Romance languages show convergent results for NPs. This is thought to be the case, since they appear to be clearly specialized in establishing co-reference with elements in subject position. This does not seem to hold true for OPs, which do not offer a clear picture showing varying degrees of antecedent preferences across languages. This neutral bias of the OP has also been attested in MA. Bel and García-Alcaraz (in press) examine to what extent MA pronouns also fit into the patterns constrained by the PAH and find a similar interpretative bias to the one observed in Spanish: NPs are assigned mainly to subject antecedents while OPs show a more flexible interpretative behavior.

2.2. Previous studies on the acquisition of pronominal reference

Originating in the work by Sorace (2004), Sorace and Filiaci (2006) proposed the Interface Hypothesis (IH, see Sorace, 2011 for an overview), arguing that the properties that involve the interface between syntax and other cognitive domains may not be fully acquired by bilingual and L2 speakers. Based on intra-sentential contexts, their work focused mainly in how Italian [null-subject language]-English [non-null-subject language] bilinguals and L2 learners deal with the interpretation of NPs and OPs in Italian according to Carminati's (2002) PAH. Their findings showed a consistent overuse of OPs in [−topic shift] contexts, i.e. in contexts in which they take a subject as their antecedent, among bilingual and L2 speakers; in these same contexts NPs are preferred by natives. On the contrary, the occurrence of NPs appears to be consistent across different types of speakers and learners and different language pairs given that they are rarely linked with the [+topic shift] feature. Sorace et al. (2009) characterized this instability -and optionality- both in production and comprehension as a compensatory strategy to supersede online processing demands that speakers encounter when integrating information from different linguistic levels in a non primary language. This proposal is in line with the Shallow Processing Hypothesis suggested by Clahsen and Felser (2006) in an attempt to explain L2 processing. The redundancy motivated by the

overuse of OPs is assumed to reflect the instability of OPs in the production and comprehension of non-native speakers. Similarly, the overuse of OPs would imply a less costly processing operation to implement syntax-discourse interface operations efficiently even at the cost of introducing redundancy. This strategy to dodge the cognitive load of computing and integrating syntactic and pragmatic information used by bilingual and L2 speakers has even been attested when the learner's L1 has null subjects (Margaza & Bel 2006, Sorace et al. 2009, for Greek-Spanish and Italian-Spanish, respectively; among others). Thus, it has been argued that this behavior can hardly be attributed to cross linguistic influence, as substantial overlap in pronoun realization patterns of the two languages would result in positive influence, leaving no room for an overuse of OPs. The present study aims to contribute to a better understanding of the residual optionality attested in bilinguals and L2 speakers through the study of two null subject languages that have received little attention so far: L1 Moroccan Arabic and L2 Spanish.

3. Research questions

In this paper we address the following three research questions:

RQ.1: Is the PAH operative in non-biased ambiguous intra-sentential contexts in Spanish? Does sentence clause order have an effect on the resolution of pronouns?
RQ.2: Do MA speakers of Spanish know the differences in the interpretative properties of null and overt third person subject pronouns in Spanish?
RQ.3: Do MA-Spanish bilinguals (i.e. early sequential bilinguals) differ from L2 learners in their mastery of these properties? Furthermore, does the different amount of language exposure that bilinguals and L2 learners receive have an impact on their knowledge of null and overt pronouns?

4. Method: participants, procedure and stimuli

Participants in the current study included 26 early sequential MA-Spanish bilinguals, 26 MA L2 learners of Spanish and a control group of 34 native speakers of Spanish. A sociolinguistic background questionnaire was administered to the two experimental and control groups. The sequential MA-Spanish bilinguals were teenagers (mean age 13.88; range 12-17) recruited from secondary schools (from 7th to 10th grade) in Spain. They all belonged to immigrant working families from Morocco whose native language is MA. They arrived in Spain before the age of 6, and some of them were even born in Spain and, therefore, had very early contact with Spanish. Their family language is MA and Spanish is the environmental language; they clearly recognized MA as their dominant language and also reported a good knowledge of Spanish. Their differing knowledge of Spanish was assessed via a criteria-based evaluation of two spoken and written texts that they were asked to produce. A specialist in Spanish as a foreign language determined their proficiency level and placed them into different levels following the CEFR (Common European Framework of Reference for Languages). Only those with a Spanish proficiency level of B2 or higher on the CEFR scale (independent user: vantage or upper intermediate level) were selected. The L2 learners were adult students (mean age 24.03; range 20-36) of Spanish at the Instituto Cervantes of Marrakech (Morocco) with a B2 proficiency level according to CEFR. Their first language is MA and none of them reported high proficiency in a different null subject language (besides MA and Spanish). The control group was formed by university students (average age 22.09; range 20-25) and they all were native speakers of Castilian Spanish.

An untimed pen-and-paper acceptability judgment task (AJT) was designed in order to collect information on the participants' interpretation of ambiguous NPs and OPs in Spanish. The test included two sentence items: in the first one, two characters of the same gender were introduced by a proper name; in the second either a null or overt pronoun appeared in subject position. For each item a third continuation sentence was introduced to provide an interpretation that favored either the subject or the object character. Participants were requested to judge the acceptability of the third sentence in a four-value Likert scale (1=totally unacceptable, 4= perfectly acceptable). The experimental sentences were completely ambiguous and there were no semantic clues that helped to disambiguate the pronoun, since according to Goikoetxea, Pascual and Hacha (2008) the verbs included in the first clause were neutral in terms of the implicit causality. In other words, the verbs incorporated in the first clause of the experimental items were not semantically biased towards the character in subject or object position.

Each set of items tested three conditions, with two levels each: type of pronoun (null vs. overt), position of the antecedent (subject vs. object) and sentence clause order (main-subordinate clause vs. subordinate-main clause). Subordinates were temporal adjunct clauses introduced by *cuando*, 'when', and *mientras*, 'while'. Biological gender of the characters was controlled across conditions. The AJT included a total of 64 experimental items (8 per condition level) combined with 80 fillers. All items were

counterbalanced and randomized across two lists. Participants were arbitrarily assigned to either list 1 or list 2. Examples for each condition are provided in (2) and (3) above:

(2)   Main-Subordinate clause order:
        Fernando investigó a Antonio cuando *pro*/él trabajaba para el gobierno.
        a.   Fernando trabajaba para el gobierno.   *(Subject interpretation)*
        b.   Antonio trabajaba para el gobierno.   (O*bject interpretation)*
        'Fernando investigated Antonio when Ø /he worked for the government'
        'Fernando worked for the government' vs. 'Antonio worked for the government'

(3)   Subordinate-Main clause order:
        Cuando Sheila vio a Natalia, *pro*/ella estaba nerviosa.
        a.   Sheila estaba nerviosa.   (*Subject interpretation)*
        b.   Natalia estaba nerviosa.   *(Object interpretation)*
        'When Sheila saw Natalia, pro was nervous. Natalia was nervous'
        'Sheila was nervous' vs. 'Natalia was nervous'

5. Results

Focusing first on main-subordinate clause order, no important divergences were found between groups, nor were there significant differences between pronoun types. Participants from the three groups accepted to a considerable extent co-reference readings for almost every condition except for the case of OPs referring to subject antecedents among native speakers and L2 learners (see Table 1). From these data it seems that NPs allow the two readings, whereas OPs tend to be interpreted as linked to the preceding object. The picture is somewhat different in subordinate-main clause order: no great differences between the three groups were attested. The differences appear when comparing NPs and OPs referential choices: while interpretations of NPs are clearly biased toward referents in the preceding subject position (the mean value of acceptance is higher than 3 and even reaches the maximum acceptance value among natives, 3.46). OPs remain neutral, since they co-refer both subject and object antecedents to a similar degree with only a slight bias toward objects among natives.

Table 1. Antecedent preferences of pronouns in Spanish
(mean and standard deviation)(maximum score = 4)

	Main-subordinate			
	Null pronoun		*Overt pronoun*	
Group	*Subject Antecedent*	*Object Antecedent*	*Subject Antecedent*	*Object Antecedent*
Spanish native (control)	2.75 (0.28)	2.96 (0.46)	2.14 (0.42)	3.03 (0.47)
Early sequential bilinguals	2.85 (0.30)	3.00 (0.50)	2.61 (0.44)	3.03 (0.61)
Spanish L2 learners	2.74 (0.38)	2.54 (0.48)	2.16 (0.48)	2.81 (0.63)

	Subordinate-main			
	Null pronoun		*Overt pronoun*	
Group	*Subject Antecedent*	*Object Antecedent*	*Subject Antecedent*	*Object Antecedent*
Spanish native (control)	3.46 (0.41)	2.17 (0.49)	2.40 (0.43)	3.22 (0.46)
Early sequential bilinguals	3.25 (0.53)	2.46 (0.75)	2.74 (0.72)	2.78 (0.49)
Spanish L2 learners	2.64 (0.70)	2.39 (0.39)	2.40 (0.69)	2.63 (0.74)

Repeated measures ANOVAs were run on all within-subjects variables and *Group* as between-subjects factor. A significant main effect of *Pronoun* ($F(1, 40) = 7,157$, $p = .011$) and the corresponding interactions were observed (all *p* values <.005). No significant effect for *Antecedent*, *Clause Order* and *Group* alone was found. Hence, the main effect of *Pronoun* confirmed that NPs and OPs behave differently, as previously reported.
        Additionally, separate analyses for each group were conducted. The analysis performed on the native control group yielded a main effect of *Pronoun* ($F(1, 16) = 7.900$, $p = .013$); no main effect of *Antecedent* or *Clause Order* was attested. There were also significant interactions between *Order×Antecedent, Pronoun×Antecedent* and *Pronoun×Antecedent×Order* (all *p* values <.001).
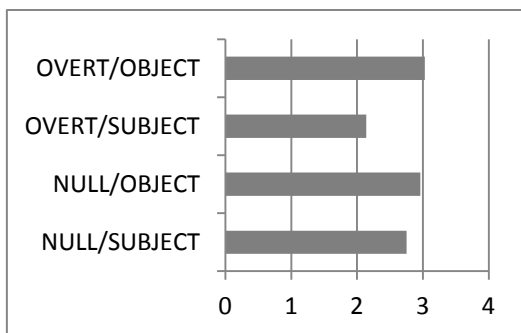
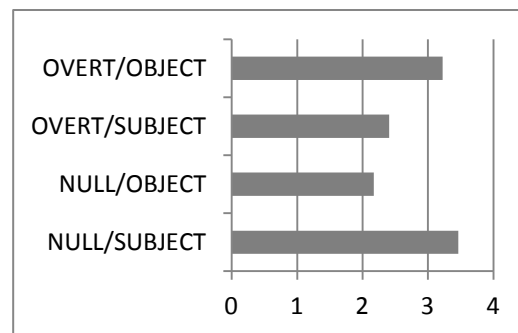*Figure 1. Antecedent preferences for main-subordinate clause order (native speakers)*

Figure 2. Antecedent preferences for subordinate-main clause order (native speakers)

In main-subordinate clause order, the analyses revealed an effect both for *Pronoun* and *Antecedent* (both *p* values < .001); in subordinate-main clause order, however, only *Antecedent* and the interaction *Antecedent×Pronoun* were found to be significant (both *p* values < .005). As the results in Figure 1 and 2 reveal, OPs show a constant pattern across different sentence orders while NPs present a different behavior depending on clause order: only a null-subject pronoun in a main clause that follows the subordinate clause seems to straightforwardly fit in the PAH as proposed for null subject languages, i.e. the presence of NPs displays a strong interpretation bias towards subject antecedents only in this order. Paired t-tests for NP and OP antecedent preferences in the two different orders separately also confirmed these trends. Whereas in main-subordinate clause order the results were significant only for OPs ($p = $.000), in subordinate-main order the results were significant for both NPs and OPs (both $p = $.000).

In short, on the one hand, the occurrence of NPs in native Spanish only show a clear tendency towards subject antecedents interpretations when the subordinate clause precedes the main clause; on the other hand, OPs appear to be strongly associated with object antecedents by our native speakers regardless of sentence order. This is unexpected and appears to be in conflict with previous findings for Spanish (Filiaci 2011, Jegerski et al. 2011, among others). Perhaps this divergence may be attributed to the nature of our task since our participants are not forced to make a choice as in Jegerski et al.'s experiment but they are asked to judge how probable both pronouns are in different syntactic but semantically neutral contexts.

Let's now focus our attention to group comparison statistics. We conducted two one-way between-groups ANOVAs, one for each clause order (main-subordinate vs. subordinate-main), in order to compare the groups' mean scores for pronoun and antecedent. In main-subordinate clause order (see Figure 3), an effect of *Group* arises in both NP-object ($p = $.031) and OP-subject conditions ($p = $.012). Slight differences were confirmed by post hoc Tukey tests in some cases: in the null pronoun-object antecedent condition the bilingual group differed significantly from the L2 learners group ($p = $.049) and in the overt pronoun-subject antecedent condition bilinguals differed significantly from L2 learners ($p = $.036) and also from natives ($p = $.017).
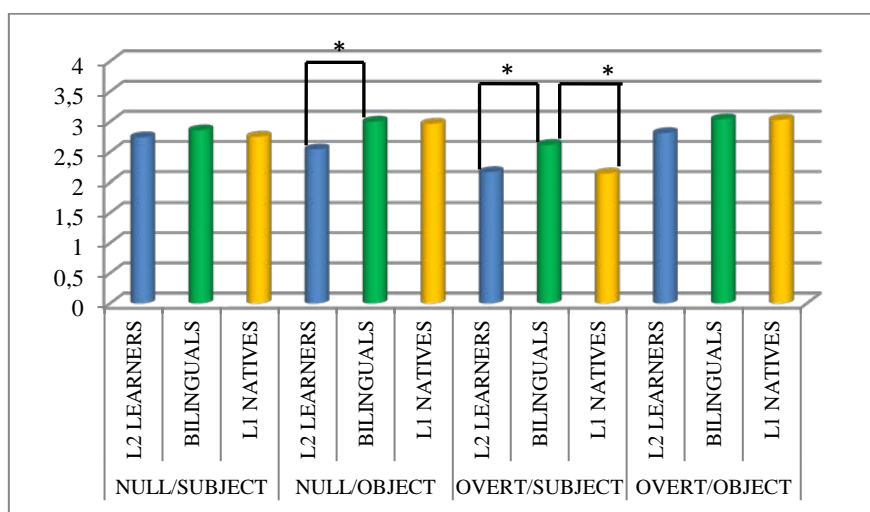

Figure 3. Antecedent preferences for main-subordinate clause order

In subordinate-main clause order, a main effect of *Group* was revealed in the two remaining conditions: NPs referring to subject antecedents ($p = .001$) and OPs referring to object antecedents ($p = .018$). L2 learners differed from both the natives ($p = .001$) and the bilinguals ($p = .019$) in the null pronoun-subject antecedent condition and from natives in the overt pronoun-object antecedent condition ($p = .020$) as confirmed by post hoc Tukey tests (see Figure 4).
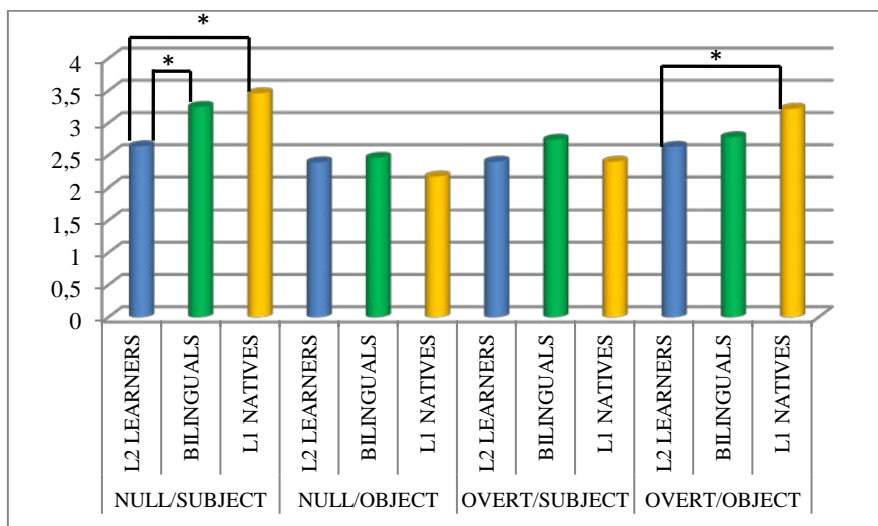

Figure 4. Antecedent preferences for subordinate-main clause order

To summarize the results above, the effect of pronoun type is significant for all groups, being that subordinate-main clause order is the one that displays a clearer pattern for antecedent choices of pronouns. In this specific clause order, some differences have been found between the L2 learners and the control groups since L2 learners do not select subject antecedents for NPs and object antecedents for OPs to the same extent as natives; this finding seems to suggest that full convergence has not yet been truly reached. Finally, some divergences have also been attested between bilinguals and natives: unlike Spanish L1 speakers, OPs are biased to subject antecedents in main-subordinate clause order among bilinguals, which seems to reveal a certain degree of indeterminacy with overt pronouns.

6. Discussion

In this section we try to shed light on the original questions that motivated this study. First, we address the co-referential preferences of NPs and OPs in L1Spanish in order to have a clearer picture of the native behavior and next, we discuss whether the two experimental groups demonstrate a complete acquisition of the patterns of reference attested in L1 Spanish or, on the contrary, show residual optionality to resolve pronominal anaphora.

RQ.1: Is the PAH operative in non-biased ambiguous intra-sentential contexts in Spanish? Does sentence clause order have an effect on the resolution of pronouns?

The PAH appears to be fully operative in subordinate-main order while results for main-subordinate order do not straightforwardly fit into the PAH approach. In experimental items in which the subordinate clause preceded the main clause participants showed a clear bias toward interpreting NPs as referring to the subject of the previous subordinate sentence and OPs as referring to the object. Nevertheless, in the opposite order (main-subordinate), while OPs are specialized to recover an element in object position, a slight or almost neutral bias has been attested for null pronoun-subject antecedent condition. Our findings for NPs are consistent with Filiaci's (2011) work, which evidences a clear specialization for NPs retrieving subject antecedents in subordinate-main order and a more flexible interpretation of pronouns produced in main-subordinate contexts. On the other hand, her data, unlike our results, pointed out an absence of specialty of OPs towards an element in subject or object position. Jegerski et al. (2011) and Keating et al. (2011) argue in the same line. One possible explanation for this different interpretative behavior between our results and previous research is the fact that none of the previous work controlled

for the implicit causality of verbs, a fact that could be a source of the discrepancies found in our experimental results.

Leaving the co-referential preferences of OPs aside, next we seek to shed light on the most solid preference of NPs when the subordinate clause precedes the main clause showing a clear association with the subject antecedent. According to Bever and Townsend (1979) and Garnham, Oakhill and Cain (1998) the processor is sensitive to main and subordinate clause order and computational differences arise when processing these two orders. Computing subordinate-main utterances is a more demanding process that consumes more cognitive resources than when the processor deals with a subordinate clause following the main one. As a consequence, in subordinate-main contexts, when in the main clause a NP occupies the subject position the same reference reading is favored because it is the neutral and less demanding reading; hence, the NP is linked to the preceding subject. As for OPs, due to the important resources employed in computing a first subordinate clause, when the OP occurs the information remains active and as a result the two preceding referents remain potential candidates to be recovered by the OP. Thus, the interpretation of the OP is more likely due to chance albeit there is some bias to refer back to object antecedents.

RQ.2: Do MA speakers of Spanish know the differences in the interpretative properties of null and overt third person subject pronouns in Spanish?

Overall, no differences among groups were attested. Therefore, our results suggest that the complete acquisition of the co-referential patterns of NPs and OPs is possible for both bilinguals and L2 learners when resolving anaphora in Spanish. Nevertheless, according to the IH (Sorace & Filiaci 2006, Sorace et al. 2009, among others) some residual optionality has been detected in bilinguals and in advanced learners of Spanish when interpreting pronominal forms. To be more specific, L2 learners differ from native controls when computing subordinate-main order, an order in which L1 Spanish speakers show a clear division of labor between NPs (selecting a subject antecedent) and OPs (selecting an object antecedent). In this specific clause order, while bilinguals display a comparable comprehension of the two pronouns under scrutiny, L2 learners do not seem to show in-depth knowledge of the pragmatic properties that regulate the use of both NPs and OPs since their rates of acceptance for the null pronoun-subject condition and the overt pronoun-object condition are significantly lower. Concerning the opposite clause order (main-subordinate), an overuse of OPs in [-topic shift] contexts is detected among bilinguals. This overextension of pronouns for retrieving subject antecedents has been broadly attested among bilinguals in previous literature (Sorace 2004, Serratrice 2007, Sorace et al. 2009, among others) although no overacceptance of OPs has been found for L2 learners in the present study. The question of why overextention of overt pronouns especially affects bilinguals still remains an open question.

RQ.3: Do MA-Spanish bilinguals (i.e. early sequential bilinguals) differ from L2 learners in their mastery of these properties? Furthermore, does the different amount of language exposure that bilinguals and L2 learners receive have an impact on their knowledge of null and overt pronouns?

As reported in RQ2, although the statistical analysis did not reveal significant differences between the two experimental groups, particular divergences were detected between sequential bilinguals and L2 learners in the interpretation of pronouns in specific conditions. Taking into account that participants of both experimental groups have similar levels of proficiency in Spanish, the discrepancies detected in some conditions might be attributed to different input exposure rates. Previous research (Montrul 2008, Pires & Rothman 2009, Unsworth 2013, among others) defend that one of the causes of variability outcomes in bilinguals depends on the quantity and quality of the language they are exposed to. While our bilingual teenagers have acquired Spanish in a naturalistic environment and are continuously exposed to the target language in their daily life, L2 learners have learned Spanish through formal instruction and their input and practice of the target language is reduced to the language classroom space and time. According to Shin and Cairns (2012), development has an impact on the acquisition of pronominal interpretation properties and practice is fundamental to acquire complex linguistic phenomena in which the speaker has to integrate different factors (syntactic and pragmatic information) at the same time s/he has to deal with the added value of ambiguity. Moreover, it should be noted that third person overt pronouns, unlike NPs, are relatively infrequent in natural input and the poverty of OP occurrences in spontaneous data has been proposed as one of the causes for the delay in the L1 acquisition of overt pronouns (Shin & Cairns 2012). Taking these facts into account, in the case of our experimental groups, the underrepresentation of a linguistic element whose acquisition is highly dependent on input practice must have some cost, especially considering that neither formal instruction nor instructional input address this issue explicitly.

Additionally, it is important to highlight that there exist a second factor that differentiates bilinguals and L2 speakers and can shed some light to better understand the divergences observed. Previous research argues in favor of the critical period hypothesis (see Bialystok 2001 for an overview) that claims that starting to learn a second language at an earlier age, which correlates with earlier and more extensive exposure, leads to superior outcomes. Our groups differ considerably in this respect, since while bilingual speakers started their contact with Spanish before the age of 6 (early acquisition), the mean age of onset for L2 speakers is 24.03 years, an onset clearly after whatever age is considered 'critical'. As a consequence, the more accurate interpretation of NPs and OPs attested among bilinguals, in comparison to L2 learners, not only should not be surprising but expected.

7. Conclusions

Summing up our findings, we have given evidence that pronominal anaphora resolution in Spanish seems to be very sensitive to different contextual conditions, particularly when the semantic and pragmatic ambiguity remains constant across all conditions. The experimental design presented in the present paper provides a complementary perspective to the previous research on pronoun resolution in Spanish. With respect to comparison between groups, overall, bilinguals and L2 speakers mirror natives when interpreting NPs and OPs, although some residual optionality is attested in some conditions, which is consistent with the predictions derived from the IH.

8. References

Arnold, J., Eisenband, J., Brown-Schmidt, S., & Trueswell, J. (2000). The rapid use of gender information: Evidence of the time course of pronoun resolution from eyetracking. *Cognition, 76*(1), B13-B26.

Bel, A. & García-Alcaraz, E. (in press). Subjects in the L2 Spanish of Moroccan Arabic speakers: evidence from bilingual and second language learners. In T. Judy & S. Perpiñán (Eds.), *The Acquisition of Spanish as a Second Language: Data from Understudied Languages Pairings*. Amsterdam: John Benjamins.

Belletti, A., Bennati, E., & Sorace, A. (2007). Theoretical and developmental issues in the syntax of subjects: Evidence from near-native Italian. *Natural Language and Linguistic Theory, 25*, 657-689.

Bever, T., & Townsend, D. (1979). Perceptual Mechanisms and Formal Properties of Main and Subordinate Clauses. In W. Cooper & E. C. T. Walker (Eds.), *Sentence processing: Psycholinguistic Studies Presented to Merrill Garrett* (pp. 159-226). Hillsdale, NJ: Lawrence Erlbaum Associates.

Bialystok, E. (2001). *Bilingualism in development: Language, literacy and cognition*. New York: Cambridge University Press.

Carminati, M. N. (2002). *The Processing of Italian Subject Pronouns*. Unpublished doctoral dissertation. University of Massachusetts at Amherst.

Clahsen, H., & Felser, C. (2006). Grammatical Processing in Language Learners. *Applied Psycholinguistics, 27*, 3-42.

Domínguez, L. (2013). *Understanding Interfaces: Second Language Acquisition and Native Language Attrition of Spanish Subject Realization and Word Order Variation*. Amsterdam: John Benjamins.

Filiaci, F. (2011). *Anaphoric Preferences of Null and Overt Subjects in Italian and Spanish: a Cross-linguistic Comparison*. Unpublished doctoral dissertation. University of Edinburgh.

Garnham, A., Oakhill J., & Cain K., (1998). Selective Retention of Information about the Superficial Form of Text: Ellipses with Antecedents in Main and Subordinate Clauses. *The Quarterly Journal of Experimental Psychology*, *51*(1), 19-39.

Garvey, C., Caramazza, A., & Yates, J. (1975). Factors influencing assignment of pronouns and antecedents. *Cognition*, *3*, 227-243.

Goikoetxea, E., Pascual, G., & Acha, J. (2008). Normative study of the implicit causality of 100 interpersonal verbs in Spanish. *Behavior Research Methods*, *40*(3), 760-772.

Iraola, M. (2014). *Anaphora Resolution in Basque: an Experimental Study on the Interpretation of Null and Overt Pronouns by Children and Adults*. Unpublished doctoral dissertation. Universidad del País Vasco/ Universität Konstanz.

Jegerski, J., VanPatten, B., & Keating, G. (2011). Cross-linguistic variation and the acquisition of pronominal reference in L2 Spanish. *Second Language Research*, *27*(4), 481-507.

Keating, G., VanPatten, B., & Jegerski, J. (2011). Who was walking on the beach? Anaphora Resolution in Spanish Heritage Speakers and Adult Second Language Learners. *Studies in Second Language Acquisition*, *33*, 193-221.

Kras, T. (2008). Anaphora resolution in near-native Italian grammars: Evidence from native speakers of Croatian. In L. Roberts, F. Myles, & A. David (Eds.), *EUROSLA Yearbook 8* (pp. 107-134). Amsterdam: John Benjamins.

Lozano, C. (2006). Focus and split intransitivity: the acquisition of word order alternations in non-native Spanish. *Second Language Research, 22*, 1–43.

Margaza, P., & Bel, A. (2006). Null Subjects at the Syntax-Pragmatics Interface: Evidence from Spanish Interlanguage of Greek Speakers. In M. Graham O'Brien, C. Shea, & J. Archibald (Eds.), *Proceedings of the 8th Generative Approaches to Second Language Acquisition Conference (GASLA 2006)* (pp. 88-97). Somerville, MA: Cascadilla Proceedings Project.

Montrul, S. (2008). *Incomplete acquisition in bilingualism: Re-examining the age factor.* Amsterdam: John Benjamins.

Pires, A., & Rothman, J. (2009). Acquisition of Brazilian Portuguese in Late Childhood: Implications for Syntactic Theory and Language Change. In A. Pires & J. Rothman (Eds.), *Minimalist Inquiries into Child and Adult Language Acquisition: Case Studies Across Portuguese* (pp. 129-154). Berlin/New York: Mouton DeGruyter.

Serratrice, L. (2007). Cross-linguistic influence in the interpretation of anaphoric and cataphoric pronouns in English-Italian bilingual children. *Bilingualism: Language and Cognition*, *10*, 225–238.

Shin, N. L., & Cairns, H. S. (2012). The development of NP selection in school-age children: reference and Spanish subject pronouns. *Language Acquisition: A Journal of Developmental Linguistics*, *19*(1), 3-38.

Sorace, A. (2004). Native language attrition and developmental instability at the syntax-discourse interface: data, interpretations and methods. *Bilingualism: Language and Cognition*, *7*, 143-145.

Sorace, A. (2011). Pinning down the concept of "interface" in bilingualism. *Linguistic Approaches to Bilingualism*, *1*, 1-33.

Sorace, A., & Filiaci, F. (2006). Anaphora resolution in near-native speakers of Italian. *Second Language Research*, *22*, 339–368.

Sorace, A., Serratrice, L., Filiaci, F., & Baldo, M. (2009). Discourse conditions on subject pronoun realization: Testing the linguistic intuitions of older bilingual children. *Lingua*, *119*, 460–477.

Trueswell, J., Papafragou, A., & Choi, Y. (2011). Syntactic and referential processes: What develops? In E. Gibson & N. Pearlmutter (Eds.), *The processing and acquisition of reference* (pp. 65-108). Cambridge, MA: MIT Press.

Unsworth, S. (2013). Assessing the role of current and cumulative exposure in simultaneous bilingual acquisition: The case of Dutch gender.' *Bilingualism: Language and Cognition, 16*, 86-110.