

Structure complexity effects in child heritage Spanish: The case of the Spanish personal *a*

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Abstract

Aims and objectives: This study examines the acquisition of Differential Object Marking (DOM) in heritage Spanish children born in the USA and the potential role of structure complexity and chronological age.

Design: Bilingual children were compared with monolingual children matched by age and long-term immigrants (children's parents) via an Elicited Production task. We elicited the distribution of personal *a* in simple and Clitic Left Dislocated (CLLD) structures.

Data and analysis: Results were entered into repeated analyses of variance measure with type of structure and group as dependent variables and chronological age as a covariate.

Conclusions: Results show decreased production of personal *a* among the bilingual children, especially in CLLD contexts. We also found strong correlations between target use and type of structure, but no correlations with developmental age among the bilingual children. Parents and monolingual children behaved at ceiling with matrix questions but showed variable behavior with CLLD structures. We argue for incomplete specification of the animacy and specificity features constraining DOM and structure complexity effects affecting child bilingual grammars.

Originality: This study highlights that heritage speakers do not necessarily become less native-like with age and increased exposure to English. The comparison of the bilingual children to both monolingual children and their parents was essential to mitigate the effects of dialect and cognitive development.

Implications: Given that age was not the determining factor in bilingual children's production of DOM in Spanish, it would seem that exposure to and use of the heritage language play a larger

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role. Additionally, for theories of language acquisition, these findings suggest that an early age of onset of acquisition is not a sufficient condition for native-like attainment, especially when input is lacking.

Keywords

Differential Object Marking, bilingual children, Spanish heritage speakers, structure complexity, clitic left dislocation

Introduction

This study examines the development of Differential Object Marking (DOM) among Spanish–English bilingual children born and raised in the United States of America (USA). DOM (also known as *personal a*) refers to the obligatory marking of animate accusative objects in Spanish with the preposition *a* (e.g. *Pilar saludó a Juan* ‘Pilar greeted John’) (Aissen, 2003; Bossong, 1985, 1991; Leonetti, 2004; Torrego, 1998, 1999). This morphosyntactic phenomenon is constrained by the semantic/referential features of the direct object (animacy, definiteness or specificity), as well as the aspectual lexical features of the verb and the agentivity features of the subject. In contrast with Spanish, English does not mark any of its objects regardless of their animacy or specificity features.

Previous work with Spanish heritage speakers (HS) in contact with English and second language (L2) learners documents non-target production and grammatical intuition with both omission of personal *a* in animate contexts and its overextension to contexts where it is not required (co-mission errors) (Guijarro Fuentes, 2011, 2012; Guijarro Fuentes & Marinis, 2007, 2009; Montrul, 2004; Montrul & Bowles, 2009). This is a different picture from what happens in monolingual development, where DOM is fully acquired by the age of 3;0 in normally developing children (Rodríguez-Mondoñedo, 2007, 2008). More recently, Montrul & Sánchez-Walker (2013) found patterns of incomplete acquisition among young bilingual children, evidenced by consistent omission of personal *a* in animate contexts in contrast with monolingual children of a similar age. Similarly, Ticio (2015) found protracted development in the acquisition of DOM among early bilingual children up to 3;6 years of age compared to their monolingual counterparts. Based on semi-spontaneous corpora, Ticio claims that early bilingual children do not acquire the [person] feature needed for DOM in Spanish due to reduced input conditions during early childhood.

We contribute to existing work by reporting new data on the elicited production of DOM among young Spanish–English bilingual children born and raised in the USA. We implement an elicited production task (Cuza & Frank, 2015), testing the use of DOM in simple sentences and in Clitic Left Dislocation (CLLD) constructions, a grammatical area in Spanish so far underexplored as far as the acquisition of DOM is concerned (Jiao, 2017; Montrul, 2013; Ortiz-Vergara, 2013).¹ We compare DOM use in these two syntactic contexts to investigate the role of structural complexity, and how this correlates with chronological age (Argyri & Sorace, 2007; Cuza, 2016; Gathercole, 2002; Ortiz-Vergara, 2013; Paradis, 2010; Yip & Matthews, 2007). We predict *a* marking in CLLD structures to be a more complex operation than in simple sentences. DOM in CLLD structures requires overt movement of the *a* marker to the left periphery of the phrase (C-domain) as well as obligatory doubling of the anaphoric element with a clitic pronoun. This additional derivational step and required agreement between the doubling clitic and its anaphoric element are not required in simple sentences because the *a* marker remains in its VP internal position. Thus, we expect the use of the personal *a* in CLLD contexts to be more costly to process for bilingual children (Gathercole, 2007; Jakubowicz & Strik, 2008).

Following previous work documenting vulnerable domains in child bilingual grammars (Cuza & Miller, 2015; De Houwer, 2007; Hulk & Müller, 2000; Meisel, 2007; Montrul & Sánchez-Walker, 2013; Paradis & Navarro, 2003; Silva-Corvalán, 2014), we predict underspecification of the animacy and specificity features constraining DOM among bilingual children, crucially in CLLD contexts. In what follows, we present a syntactic analysis of DOM in Spanish, as well as the main differences between Spanish and English with respect to DOM. We provide a review of previous research with L2 learners, HS and child bilinguals, and present the research questions and hypotheses of the study. We then present the study, including the participants, tasks and results. Finally, the discussion and conclusions are given.

Differential object marking in Spanish

Background

DOM refers to the use of the dative preposition *a* to differentially mark direct objects of transitive verbs. The use of the *a* marker is regulated by the semantic and pragmatic features of the object, including animacy, and definiteness or specificity (Aissen, 2003; Bossong, 1985, 1991; Leonetti, 2004; Torrego, 1998). Following functional and typological approaches to DOM, Aissen (2003) sustains that animacy and definiteness, or specificity features provide prominence to the direct object, and ‘...the higher in prominence a direct object is, the more likely it is to be overtly case-marked’ (pp. 436). In this regard, Aissen (2003) proposes an animacy and definiteness scale, which is represented in (1a–1b).

- (1) a. Animacy scale:
Human > Animate > Inanimate
- b. Definiteness scale:
Personal pronoun > Proper name > Definite NP > Indefinite specific NP > Non-specific NP (Aissen, 2003)

Direct objects in Spanish with high prominence on both the animacy and definiteness scale [+animate, +specific/definite] are always marked (2a), whereas animate, non-specific objects are not (2b). Neither are inanimate objects (2c–2d), regardless of their specificity features. English, on the other hand, is a language that is non-differential in that it does not mark any of its objects.

- (2) a. *Busco a la chica de Madrid.* [+animate, +specific] –a✓
‘I’m looking for the girl from Madrid.’
- b. *Busco una chica de Madrid.* [+animate, –specific] –a*
‘I’m looking for a girl from Madrid.’
- c. *Visité el museo ayer.* [–animate, +specific] –a*
‘I visited the museum yesterday.’
- d. *Visité un museo ayer.* [–animate, –specific] –a*
‘I visited a museum yesterday.’

As represented in the translations of the Spanish examples in (2a–2d), there is no differential marking in English whatsoever, which provides a good testing ground to examine the effects of cross-linguistic influence from English into Spanish among child bilinguals. Despite Aissen’s (2003) dominant view in relation to animacy constraints, there are cases where inanimate objects are also marked in Spanish, creating ‘fuzziness’ and variability in the input, which could potentially create

learnability issues for bilingual speakers. For example, in cases where both the subject and the object are inanimate, the object can be differentially marked in order to disambiguate it from the subject (i.e. *El adjetivo modifica al sustantivo* ‘The adjective modifies the noun’) (García, 2007; Torrego, 1999). Torrego (1999) argues that the marking of inanimate objects is independent of animacy features and is more related to the lexical meaning of certain verb classes that require the personal *a* to establish a specific linear relation or continuity between the subject and the object (but see García, 2007 for an alternative account beyond lexical level). Indefinite pronouns like *nadie* (‘no one’) or *alguien* (‘someone’) (i.e. *La policía no arrestó a nadie* ‘The police didn’t arrest anyone’) are also marked. This is an argument posed by Leonetti (2007) against the view that the preposition *a* is a specificity marker. In these cases, the preposition *a* functions as a morphological device of the verb with no interpretative force.

In addition to animacy, definiteness or specificity features, Torrego (1998) argues that the *phi* features of the subject, and crucially its agentive or causative features, also play a role in DOM. Verbs that take an agent or cause as a subject, differentially mark their objects in relation to non-agentive subjects (3a–3b), perhaps to disambiguate the subject from the object.

- (3) a. *El herido reclamaba a un médico*
‘The injured demanded a doctor.’
- b. *La situación reclamaba un médico*
‘The situation demanded a doctor.’ (Torrego, 1998)

Furthermore, Torrego (1998) argues that accusative object marking is influenced by the lexical aspectual class of the predicate (Comrie, 1976; Vendler, 1967), and that they are sensitive to the affectedness of the predicate (Jackendoff, 1990). Telic predicates are argued to obligatorily mark the object if it is animate (i.e. *El gobierno encarceló a los manifestantes* ‘The government jailed the protesters’) but not necessarily when the verb is atelic (i.e. *La señora escondió varios protestantes en su casa* ‘The old lady hid several protesters in her house’). The lack of DOM in the latter case, however, might be related to the use of the quantifier *varios*, and not necessarily to the type of verb. With regard to affectedness, Torrego argues that direct objects that are ‘affected’ by the action of the verb (telic or not) are much more likely to be marked (i.e. *El señor golpeó al niño sin querer* ‘The old man hit the child accidentally’). However, this would apply to animate objects only, which limits the extent to which both aspectual and affectedness constraints may be imposed directly by the verb type (i.e. *El camión golpeó *(a) el coche que iba delante* ‘The truck hit the car in front of it’).

Differential object marking in CLLD structures

In addition to the use of DOM in simple sentences with canonical subject-verb-object word order, the *a* marker also applies to cases where the object has been moved to the left periphery of the sentence (sentence initial position, C-domain), as is the case of CLLD structures (4a) (Cinque, 1990; Leonetti, 2004; López, 2009; Zubizarreta, 1998). The preposition *a* also appears in topicalisation constructions (4b), even though the marking is not obligatory in the non-topicalised sentence. This leads Leonetti (2007) to argue that the *a* marker functions as a topic marker.

CLLD

- (4) (a) Los periodistas no entrevistaron a Xavi *pero a Piqué sí lo entrevistaron*.
‘The journalists did not interview Xavi but they did interview Piqué.’

Topicalisation

- (b) ***(A) mucha gente**, ya conocía.
 ‘I had already met many people.’

As shown in (4a), a post verbal object has been moved to the leftmost periphery of the clause from its original position, crucially for contrastive purposes. In these cases, the object (a proper name or definite, specific NP) must be coreferential with a clitic in the main clause (Zagona, 2002; Zubizarreta, 1998). The *a* marker is also obligatory in topicalisation contexts (4b), where the non-specific object is based generated in clause initial position.

Learnability issues

The fact that Spanish differentially marks animate, specific objects in contrast with English poses a learnability problem for child bilinguals. Bilingual children have to acquire the semantic features constraining differential object marking in Spanish [+definite, +specific], despite having different options in English, leading to transfer effects even at higher levels of language proficiency (Montrul, 2004; Montrul & Sánchez-Walker, 2013). The learning task might also be further complicated by the fact that DOM is not categorical in Spanish, and the input is ‘fuzzy’ and variable (see Montrul, 2004). Furthermore, we would like to argue that differential object marking is more challenging to acquire in left dislocated constructions than in simple sentences due to the syntactic complexity associated with the additional derivational steps necessary before spell-out. In contrast with object marking in VP internal position, CLLD constructions involve overt movement of the object from its canonical post-verbal position to the left periphery or sentence initial position. Bilingual children have to have knowledge of the discourse properties motivating such transformation (specifically, contrast), and become acquainted with the syntactic properties of clitics in Spanish (including relevant *phi* features); they must then map the correct *phi* features between the dislocated element and the co-referential clitic. Only then will they be able to process the direct object in preverbal position as receiving the accusative case from the verb, and, therefore, the need for it to be overtly marked in cases where it is animate and specific.

In the specific case of Spanish–English bilingual children, previous research also shows complexity issues in the acquisition of target morphosyntactic patterns in Spanish (Arnaus Gil & Müller, 2015; Cuza, 2016; Gathercole, 2002, 2007). For example, Cuza (2016) tested obligatory subject-verb inversion among 27 Spanish–English bilingual children via an elicited production task. Results showed significantly less target subject–verb inversion in embedded *wh*- questions than in simple questions, compared to monolingual children of similar age. Even monolingual children showed less target behavior with embedded questions than simple questions, supporting a role for complexity in the acquisition of Spanish morphosyntax at an early age (Gathercole, 2007). If the complexity of the structure indeed plays a role in the extent of cross-linguistic interaction and bilingual development, we expect Spanish–English bilingual children to have much more difficulty with object marking in left dislocated contexts than in simple sentences, and to show qualitative differences in regard to monolingual children. In what follows, we provide a brief overview of previous work on the bilingual acquisition of DOM in Spanish.

The acquisition of DOM in Spanish

The acquisition of DOM in monolingual Spanish children occurs relatively early and without difficulty (Rodríguez-Mondoñedo, 2008). Using data from CHILDES database, Rodríguez-Mondoñedo

found that Spanish-speaking children acquire DOM in an errorless fashion by the age of three. The author analysed longitudinal spontaneous production data from six native-speaking Spanish children between the ages of 0;9 and 3;0 and found that children make only very few omission or commission errors. An important point to note, however, is that this study only analysed direct objects that either required or disallowed the use of the *a* marker. Those cases that the author deemed optional were not included in the analysis, because the presence or absence of an error cannot be conclusively determined.

In contrast to what happens in L1 acquisition, research on the acquisition of DOM in HS and L2 learners of Spanish shows a completely different picture (Guijarro Fuentes & Marinis, 2007; Jiao, 2017; Montrul, 2004; Montrul & Bowles, 2009; Montrul & Sánchez-Walker, 2013; Ticio, 2015). Regarding L2 learners, research shows significant omission and co-mission errors, suggesting difficulty in the specification of animacy and specificity features. For example, Guijarro Fuentes & Marinis (2007) studied 33 L2 learners of Spanish at all proficiency levels and found that, despite advanced levels of proficiency, all speakers performed significantly differently from native-speaker controls, failing to treat the conditions requiring DOM differently from those that did not. However, a later study that included an elicited production task found that advanced L2 learners converge with native speakers regarding the use of animacy as a constraint on marking, but not specificity or verbal semantics, suggesting that some features are easier to acquire than others (Guijarro Fuentes, 2012).

Similar results have been found with HS, despite early exposure to Spanish as a heritage language during childhood. Montrul (2010) conducted a comparison among L2 learners of Spanish with HS in order to determine whether age of onset of acquisition and/or cross-linguistic influence from English was preventing L2 learners from attaining native-like acquisition of DOM. Montrul (2010) compared 72 L2 learners and 67 adult HS of Spanish who were divided into three groups based on their proficiency level. Data from an oral narration task suggest that L2 learners produce about twice as many omission errors than HS (46.9 vs. 26.5%), and that both groups underproduced the *a* marker in obligatory contexts in comparison to monolingual speakers (<1% errors of omission among monolinguals). Despite these overall group differences, advanced HS were found not to differ significantly from the native-speaker control group, replicating the results from a previous study (Montrul, 2004), which suggests that HS may reach native-like levels of proficiency of their heritage language. Interestingly, neither group produced very many co-mission errors (three errors out of 151 inanimate direct object NPs produced). Similar results were also reported in a study by Montrul & Bowles (2009), again including oral narration and acceptability judgment tasks. With regard to the acceptability judgment task, the L2 learners outperformed the HS, rejecting ungrammatical sentences lacking an obligatory *a* marker more often. These data suggest that a wide variety of task types and structures must be analysed in order to paint a complete picture of the differences between these two populations.

Having shown that HS of Spanish struggle with DOM, sometimes in a manner quite similar to L2 learners who were not exposed to Spanish until adolescence, it remains unclear how the grammars of HS have changed over time. That is, we do not know whether HS are trying to remember the constraints they had previously mastered or they are still in the process of acquiring these constraints for the first time, as L2 learners are (Montrul, 2008; Otheguy, 2016; Polinsky, 2011; Putnam & Sánchez, 2013; Rothman, 2007). To do so, bilingual children of varying ages must be studied in order to determine how the minority language develops or fails to develop during this time.

Although much remains to be done in this respect, two important studies have attempted to describe this process using the aforementioned cross-sectional methodology. First, Montrul & Sánchez-Walker (2013) compared Spanish–English bilingual children living in the USA to monolingual children from Mexico and adult HS. She also included a group of long-term immigrants

(akin to the bilingual children's parents) and a group of adult monolinguals. Data came from an oral narration task, and a picture-description task. Results showed that the bilingual children often omit the *a* marker in the oral narration task (about 30% of the time), whereas the adult HS omit the marker to a lesser extent (around 20% of the time). Interestingly, in both tasks the adult HS did not differ significantly from the long-term immigrants, indicating that they eventually converge on the Spanish system they are exposed to, even though it may differ from monolingual norms in Mexico.

In a more recent study, Ticio (2015) examined seven Spanish–English bilingual children between the ages of 1;1 and 3;6. Results show that, although the bilingual children produce the same number of direct objects requiring DOM as monolingual children, they are much less accurate with personal *a* marking. Specifically, the bilingual group overall marked only 25% of animate and specific objects, whereas the monolingual group marked around 70%. The results support the argument that first instances of DOM appear overall earlier and at a lower Mean Length of Utterance among monolingual children than bilingual children. These data again suggest that bilingual children in the USA are not acquiring DOM as monolinguals in childhood and then attriting the system as they age. On the contrary, results from both Ticio (2015) and Montrul & Sánchez-Walker (2013) suggest that HS do improve with age although this may occur slowly and may lead to an end-state that reflects the Spanish they are exposed to in the USA. In addition, it still remains to be seen exactly how children of different ages are performing, because Montrul and Sánchez-Walker do not separate children into different groups based on age, but rather analyse them as a single population.

We add to this work by examining the role of external factors such as language exposure *vis à vis* internal conditions such as structural complexity and cross-linguistic influence (Cuza, 2016; Gathercole, 2007; Sharp, 2012). We test the role of complexity by examining the acquisition of DOM in simple and in CLLD clauses. No study to our knowledge has addressed the use of DOM with CLLD structures among either monolingual or bilingual children. We predict the target use of personal *a* in CLLD structures to be more syntactically complex than in simple sentences. As discussed earlier, DOM in CLLD structures requires overt movement of the *a* marker to the left periphery of the phrase (C-Domain) as well as obligatory doubling of the anaphoric element with a clitic pronoun. These additional derivational steps and the required agreement between the doubling clitic and its anaphoric element are not required in simple sentences because the *a* marker remains in its VP internal position. Thus, we predict DOM in CLLD contexts to be more costly to bilingual children due to increased processing requirements (Gathercole, 2007; Jakubowicz, 2011). Furthermore, CLLD structures are moved to the C-domain, the highest structural level where the syntax connects with the pragmatic domain, an area of the grammar considered to be more vulnerable to syntactic optionality in bilingual grammars (Hulk & Müller, 2000; Platzack, 2001; Sorace, 2005, 2011; Sorace & Serratrice, 2009). Platzack (2001) proposes that early L1 learners, children with specific language impairment and L2 speakers all present non-target production of the CP syntax (C-domain) but no difficulties with lower structural levels. This analysis will provide new evidence on the role of structural complexity in DOM, as well as in relation to interrelated factors in child bilingual development, including age and cross-linguistic influence. However, we do not expect older bilingual children to behave better than younger children as processing limitations disappear with age. On the contrary, we would expect complexity to interact with cross-linguistic influence from English and reduced exposure to Spanish as the children grow older. Therefore, it is possible that despite better cognitive experience and processing abilities, the older children would be outperformed by the younger children.

In addition, we contribute to previous research by presenting new data on the acquisition of DOM among bilingual children of an age range not previously examined. Whereas Ticio (2015) examined very young bilinguals during the first stages of oral production, and Montrul & Sánchez

Walker (2013) examined children with an average age of 11;0 years old, our study focuses on children during the first two years of elementary education (average age, 8;2). This represents their first exposure to English-only schooling on a daily basis. Moreover, we provide data from both the bilingual children and their parents. This represents a relevant addition to previous research, ensuring that the structures under examination are still part of the day-to-day input that the children have been exposed to at home.

Research questions and hypotheses

Based on the existing differences between DOM in Spanish and English, as well as previous work in this area, we postulate the following research questions.

1. To what extent do Spanish–English bilingual children have knowledge of the semantic properties constraining DOM in Spanish in regard to monolingual children and their parents?
2. Will older children have more difficulties than younger children due to more extended exposure to English in their lifetime and consequent less exposure to and use of Spanish?
3. What is the role of structural complexity in this process? Specifically, is DOM more challenging in CLLD contexts than in simple structures due to increased complexity associated with additional derivational steps?

Taking into consideration previous research documenting significant morphosyntactic variability and developmental delays among bilingual children (Cuza, 2016; Cuza & Pérez-Tattam, 2015; Hulk & Müller, 2000; Montrul & Sánchez-Walker, 2013; Serratrice, Sorace, & Paoli, 2004; Silva-Corvalán, 2014), we predict bilingual children to have difficulties with the target use of personal *a* in animate, specific contexts due to bilingual effects and cross-linguistic influence from English. However, we do not expect co-mission errors (overextension of the *a* marker to contexts where it is not required). According to Snyder's *Grammatical Conservatism Hypothesis* (Snyder, 2008), children do not typically produce new structures that are not instantiated in the adult's input. Although this hypothesis has been postulated for spontaneous production and for L1 acquisition, we expect bilingual children to show only few instances of co-mission errors in elicited production, if any. Snyder's proposal is supported by Rodríguez-Mondoñedo's (2008) seminal work on the acquisition of DOM among Spanish monolingual children. The author found no overextension of the *a* marker to contexts where they are not allowed.

Furthermore, we expect older children to show more difficulties than younger children due to their more extended exposure to English and consequent less exposure to Spanish at home. Cuza, Pérez-Tattam, Barajas, Miller, & Sadowski (2013) found an overextension of the preterite and present tense forms among older Spanish–English bilingual children in spontaneous production. The older the children were, the more difficulties they had with their spontaneous production of preterite versus imperfect distinctions, and the more they diverged from younger children, their parents and monolingual children. However, a strong correlation between performance and age at testing is not always the case. For example, Cuza & Miller (2015) found that older children actually outperformed younger children in their elicited production of aspectual distinctions despite more prolonged contact with English. In a similar fashion, Cuza & Pérez-Tattam (2015) show no correlations with age in the target production of gender assignment and agreement among child HS born and raised in the USA.

Finally, we predict more difficulties with left dislocated structures than with simple clauses due to syntactic complexity issues, as discussed before (Frank, 2013; Gathercole, 2007; Jakubowicz &

Strik, 2008; Newmeyer & Preston, 2014; Sharp, 2012). DOM in CLLD structures is a more complex or marked operation than in simple sentences because it implies additional derivational steps or number of components before spell-out. As discussed earlier, DOM in CLLD contexts involves movement of the object DP to the left periphery, and clitic doubling with the corresponding phi-features (gender and number agreement with the anaphoric element). DOM in simple sentences, however, involves fewer derivational steps, namely the insertion of *a* marker in VP internal position. Thus, *a* marking in CLLD contexts requires more internal components in the syntax before spell-out and is therefore more complex. The number of components necessary to make up a construction has been discussed in the literature as one of the factors that contribute to structural complexity (Fenk-Ozclon & Fenk, 2008; Sharp, 2012).² Furthermore, Jakubowicz and colleagues have argued that language development is constrained by the complexity of a given derivation and related processing cost. Consequently, structures involving fewer and less complex merge operations before spell-out will be acquired earlier than those involving more complex derivational steps (Jakubowicz & Strik, 2008; Prévost, Tuller, Scheidnes, Ferré, & Haiden, 2010; Strik, 2009). Keeping with this approach, it is reasonable to expect DOM in CLLD to be more difficult to acquire than DOM in simple clauses. Thus, we predict bilingual children to show fewer instances of target *a* marking in CLLD contexts. Concretely, we put forward the following hypotheses.

Hypothesis 1: Bilingual children will show significant omission errors with animate, specific objects compared to their parents and to monolingual children of similar age stemming from cross-linguistic influence. However, keeping with Snyder's *Grammatical Conservatism Hypothesis*, we do not predict co-mission errors.

Hypothesis 2: Older children will show more omission errors than younger children due to increased exposure to English at school and with friends leading to consequent less overall exposure to Spanish input.

Hypothesis 3. All participants will show less target behavior in CLLD structures than in simple sentences due to complexity issues associated with dislocation of the DP to the left periphery.

In order to answer these research questions and test our hypotheses, we examine and compare the production of DOM among bilingual children born and raised in the USA and compare their level of target production with that of monolingual speakers of Spanish of similar age, as well as some of the children's parents. Finally, we investigate the participants' performance in simple and CLLD structures to tease apart the role of structural complexity in the acquisition of personal *a*.

The study

Participants

Participants were recruited through word of mouth and local contacts in the community. A total of 55 participants took part in the study: 20 Spanish–English bilingual children (Bilingual Children Group, age range, 5;4–11;2, $M = 7.99$, $SD = 1.36$), 22 Spanish monolingual children (Monolingual Children Group age range, 7;5–10;9, $M = 9.7$, $SD = 0.58$), and 13 native speakers of Spanish (Bilingual Parents Group, age range, 28–40, $M = 34.2$, $SD = 4.54$). Given that the bilingual children were on average younger than the monolingual children, we decided to match both groups by age and were left with 15 bilingual children (6;7–11;2, $M = 8.65$, $SD = 1.37$) for a total of 50 participants.³

Table 1. Summary of participants' information.

	Bilingual Children (<i>n</i> = 15)	Monolingual Children (<i>n</i> = 22)	Parents (<i>n</i> = 13)
Mean age at testing	8;65 (6;7–11;2)	9;7 (7;5–10;9)	34 (28–40)
Mean length of residence in the USA	US-born	n/a	13.8
Patterns of language use:			
with mother:	SPAN: 67%; ENG: 7%; BOTH: 27%	SPAN only	at home: SPAN: 92%; ENG: 0%; BOTH: 8%
with father:	SPAN: 47%; ENG: 7%; BOTH: 33%	SPAN only	at school: SPAN: 15%; ENG: 8%; BOTH: 0%
with siblings:	SPAN: 20%; ENG: 33%; BOTH: 33%	SPAN only	at work: SPAN: 8%; ENG: 38%; BOTH: 23%
with friends:	SPAN: 0%; ENG: 93%; BOTH: 7%	SPAN only	in social situations: SPAN: 100%; ENG: 0%; BOTH: 0%
Proficiency in:			
Spanish	TVIP: 47.92 Parental Report: 2.3/4	native	Self-report: 3.3/4 ⁶
English	PPVT: 95.25 Parental Report: 3/4	n/a	Self-report: 1.2/4

ENG: English; SPAN: Spanish; PPVT: Peabody Picture Vocabulary Task; TVIP: *Test de Vocabulario en Imágenes Peabody*.

The bilingual children were all born and raised in the USA, and the majority had never spent any time in a Spanish-speaking country.⁴ All children had at least one parent of Mexican origin, and all but one participant had two parents of Mexican origin. Most of the bilingual children (*n* = 12) completed the Peabody Picture Vocabulary Task (PPVT) (Dunn & Dunn, 2007) and the *Test de Vocabulario en Imágenes Peabody* (TVIP) (Dunn, Lugo, Padilla, & Dunn, 1986), and two standard receptive vocabulary measures in English and Spanish, respectively.⁵ To find out the bilingual children's patterns of language use and bilingual dominance, their parents were asked to complete a linguistic background questionnaire. The bilingual children's average score on the PPVT was 95.25, and in the TVIP 47.92, which suggests that they were more dominant in English. This echoes parental reports, with an average English rating of 3/4 and an average Spanish rating of 2.3/4 (see Bedore, Peña, Joyner, & Macken, 2011 for the attested validity of parental reports). Out of 15 bilingual children, eight were English dominant, five were balanced and only two were Spanish dominant. With regard to patterns of language use and current exposure to Spanish and English, they tended to speak Spanish to their mother, Spanish or both languages with their father, both languages or English with their siblings, and English with their friends. When watching movies and/or television, they tended to watch in English. The details on patterns of language use for the bilingual children are presented in Table 1.

The monolingual children were born and raised in Spain, and were tested in Guadarrama (Autonomous Region of Madrid).⁷ The children were tested individually in a school setting. Although the children came from a different geographical area in relation to the bilingual children, there are no attested differences to our knowledge between Mexican Spanish and Peninsular Spanish in regard to DOM in the contexts under examination.⁸ In any case, we also tested adult native speakers of Spanish who were the parents of 13 of the bilingual children who participated in the study, which should compensate for any potential dialectal variation between the two groups of

children. Inclusion of a parental baseline group allows us to assess the performance of the bilingual children fairly. That is, they are compared both against children their own age and against Mexican–American adults who speak the mature version of the dialect the bilingual children are exposed to. It is possible that similarities will be found with both groups and, for that reason, both serve as important but different comparison groups.

The children's parents who were tested were all born and raised outside the USA (mean length of residence in the USA, 13.8 years). All the parents were from Mexico except for one parent who was from Peru. The production data from this group provide us with an approximation of the input that the bilingual children have received at home, and confirm that the structures under consideration are not missing in the input (Otheguy, 2013; Otheguy & Zentella, 2012; Pires & Rothman, 2009; Rothman, 2007).⁹ Eight out of 13 parents had a high school education, while three had completed some college or technical study, and two had completed their primary education. They rated their abilities in Spanish as a 3.3/4 on average and a 1.02/4 in English.¹⁰ With regard to current exposure to Spanish and English, they reported speaking mostly Spanish or only Spanish at home and in social situations. At work, they reported speaking mostly English or slightly more English. Finally, most of the bilingual parents were not attending school, specifically those who reported speaking slightly more Spanish or mostly Spanish. The details on patterns of language use for the bilingual parents are presented in Table 1.

Structures under analysis

The production of personal *a* was tested in animate and inanimate contexts within simple (5a–5b) and CLLD structures (6a–6b).

Simple structures

- (5) a. *Juan saludó a Papá Noel* . [+animate, +specific] –a√
 ‘John greeted Santa Claus.’
 b. *María visitó el museo.* [–animate, +specific] –a*
 ‘Mary visited the museum.’

CLLD structures

- (6) a. *No llamé a mi padre pero a mi abuela sí la llamé.* [+animate, +specific] –CLLD –a√
 ‘I did not call my father but I did call my grandmother.’
 b. *He viajado por toda Europa pero Berlín no lo conozco.* [–animate, +specific] –CLLD –a*
 ‘I’ve travelled all over Europe but never to Berlin.’

Both simple and CLLD structures were included in order to examine the effects of structural complexity. Previous research with bilingual children and adults has documented structural complexity effects in the extent of syntactic transfer in the production and interpretation of certain morphosyntactic properties (Argyri & Sorace, 2007; Gathercole, 2002, 2007). There was a total of 20 test tokens (five per condition) plus four training items. To keep the task short, we did not include any distractors.

Tasks and protocol

We implemented an elicited production task, which included a) a question-after-story task and b) a sentence completion task. The question-after-story task was meant to elicit personal *a* in simple

structures, and the sentence completion task was meant to elicit DOM in CLLD structures. The participants were presented with a preamble followed by a prompt. They were asked to respond to a question or to complete a sentence according to the information in the preamble. A photo was then presented with a related noun phrase (NP) in parentheses. This is represented in (7) and (8), respectively:

(7) **Question-after-story Task (10 tokens)**

(an image of Dora with her father at the hospital appears)

Preamble: *Hoy me encontré con Dora en el hospital.*
'I ran into Dora at the hospital today.'

Prompt: *¿Qué estaba haciendo Dora en el hospital?*
'What was Dora doing at the hospital?'

Target: *Dora estaba visitando a su papá*
'Dora was visiting her father.'

(8) **Sentence Completion Task (10 tokens)**

(an image of a boy talking to a lady appears)

Preamble: *Víctor nunca habla con su papá,*

Prompt: *pero... (mamá 'mother')*

Target: *___a su mamá___ siempre la llama y la saluda*
'Victor never calls his father but he always calls his mother.'

In (8), the participants were presented with a preamble and an image (e.g. *a boy calling her mother over the phone, a dog hiding his toys, a girl playing with her friend, Garfield painting a house*). They were then asked to complete the idea in the subordinate clause by inserting the object NP in the blank space. A similar protocol was used for inanimate objects where the *a* marker had to be omitted. Similar tasks have been used in previous work with good results (Crain & Thornton, 1998; Cuza & Frank, 2015; Cuza & Miller, 2015). It could be conceivably argued that the sentence completion task is harder than the question after story task. However, we do not think that the difference between the two subtasks would affect the overall rate of target *a* marking or omission once the verb and the object NP are produced. An advantage of integrating the two tasks into one is that it allows us to test DOM knowledge in both simple and CLLD structures under a very similar protocol. The task was administered to the participants with the aid of PowerPoint, and the preambles and prompts were read out loud to the participant by the researcher. The testing was conducted at the participants' private home or school. In the case of the monolingual children, all the testing took place in the school setting, and it was conducted in one sitting by two testers. In addition to this task, the participants completed other tasks exploring the acquisition of other morphosyntactic structures as part of a larger study.

Coding

For animate contexts, target use of personal *a* was coded as 1, and its omission was coded as 0 for each trial. For inanimate contexts, omission was coded as 1, and use was coded as 0 (co-mission error). The use of other structures unrelated to the DOM was not coded but was indicated with a descriptive label (e.g. object drop) on the spreadsheet. In cases where the child could not produce anything in one of the trials, that trial was discounted from the total number of trials in that

condition. The proportion of omission, use, and the use of ‘other’ structures was calculated for each participant (out of five trials per condition; minimum score = 0, maximum score = 1). These proportions were then averaged for each group (bilingual children, monolingual children, bilingual parents) and for each condition (+animate, simple structure; –animate, simple structure; +animate, CLLD structure; –animate, CLLD structure).

Results

Question-after-story task. The results from the question-after-story task testing personal *a* use and omission in simple sentences are shown in Figure 1. The bars represent mean target responses for the bilingual children, monolingual children and bilingual parents. Target responses involve the production of personal *a* in animate contexts (+animate); in inanimate contexts (–animate), they involve the omission of personal *a*. The error bars represent standard deviations.

Table 2 shows the proportion of omission, use of personal *a* and ‘other’ responses in simple structures. In animate contexts, bilingual children showed much lower production of personal *a* compared to the monolingual children and bilingual parents, who performed at ceiling. With regard to types of errors, bilingual children showed omission of personal *a* and a small proportion of ‘other’ responses.¹¹ In inanimate contexts, all three groups were close to ceiling, with a small proportion of use of personal *a* by all three groups, and a small proportion of ‘other’ responses by the children.

Sentence completion task. The results from the Sentence Completion Task testing personal *a* use and omission in CLLD clauses are shown in Figure 2. As in Figure 1, the bars represent mean target responses for the bilingual children, monolingual children and bilingual parents. Target responses involve the production of personal *a* in animate contexts [+animate], and its omission in inanimate contexts [–animate]. The error bars represent SDs.

Table 3 shows the proportion of omission, use of personal *a* and ‘other’ responses in CLLD structures. In animate contexts, the bilingual children rarely produced personal *a*, in contrast with both the monolingual children and the parents. With regard to types of errors, all three groups omitted personal *a*, particularly the bilingual children, and some produced ‘other’ responses. In inanimate contexts (where omission of personal *a* was required), bilingual children showed much lower rates of omission than the monolingual children and bilingual parents, who were close to ceiling. With regard to types of errors, monolingual children and bilingual adults rarely produced personal *a* and did not produce ‘other’ responses. In contrast, whereas bilingual children did not produce personal *a*, they produced more ‘other’ responses.

To summarise, with regard to animate contexts, the bilingual children showed lower rates of personal *a* use, compared to the monolingual children and the bilingual parents. This was particularly so with CLLD structures (e.g. *Victor nunca habla con su papá, pero a su mamá siempre la llama y la saluda* ‘Victor never calls his father, but he always calls his mother and says hello’). The monolingual children and bilingual parents showed lower rates of personal *a* use in CLLD structures in comparison to simple structures (only 0.60 and 0.65, respectively). Rather than interpreting the sentence as a left dislocated topic, they actually interpreted the indirect object as the subject of the embedded clause. For example, they produced sentences like *Victor nunca habla con su papá pero su mamá siempre lo llama y lo saluda* ‘Victor never calls his father, but his mother always calls him and says hello’. With regard to inanimate contexts, all three groups showed low rates of personal *a* use in simple structures. However, the bilingual children showed a lower rate of omission (0.67) and higher rates of ‘other’ responses (0.33) in CLLD structures, compared to the other two groups.¹²

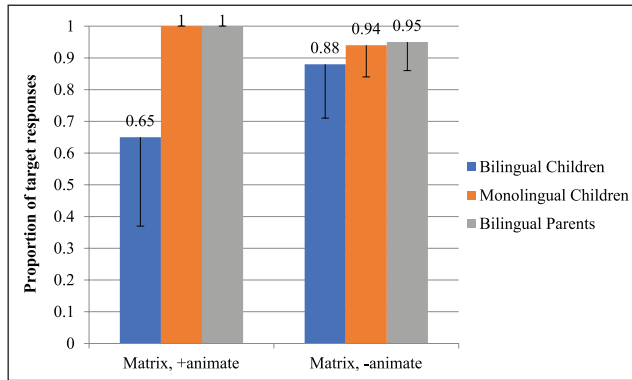


Figure 1. Question-after-story task: Proportion of target responses in matrix structures by group.

Table 2. Proportion of omission, use of personal *a* and ‘other’ responses in simple structures.

	[+animate]			[-animate]		
	Omission	Use of <i>a</i>	Other	Omission	Use of <i>a</i>	Other
Bilingual children	M = 0.29 SD = 0.21	M = 0.65 SD = 0.28	M = 0.05 SD = 0.09	M = 0.88 SD = 0.17	M = 0.08 SD = 0.15	M = 0.04 SD = 0.09
Monolingual children	M = 0.00 SD = 0	M = 1.00 SD = 0	M = 0.00 SD = 0	M = 0.94 SD = 0.10	M = 0.05 SD = 0.09	M = 0.01 SD = 0.04
Bilingual parents	M = 0.00 SD = 0	M = 1.00 SD = 0	M = 0.00 SD = 0	M = 0.95 SD = 0.09	M = 0.05 SD = 0.09	M = 0.00 SD = 0

M: mean; SD: standard deviation.

Prima facie, these results suggest a lack of knowledge of the semantic properties constraining DOM in bilingual children compared to monolingual children and bilingual parents (research question 1). They also suggest an effect of the greater structural complexity of CLLD structures versus simple structures across all three groups (research question 3). In order to confirm possible effects of structure, and explore possible effects of age in the children (research question 2), we carried out a repeated measures analysis of variance comparing the mean use of personal *a* by the bilingual children and the monolingual children. Type of structure (simple and CLLD structures in +animate and –animate contexts) was entered as a dependent variable; language group (bilingual children, monolingual children) was entered as an independent variable, and age was entered as a covariate.

There were significant main effects of structure type for simple structures ($F(1, 34) = 5.86, p = 0.021$) but not for CLLD structures ($F(1, 34) = 0.007, p = 0.993$). We also found significant main effects for language group ($F(1, 34) = 54.92, p < 0.001$). There was an interaction between simple structures and CLLD structures ($F(1, 34) = 7.3, p = 0.011$), and between language group and type of structure for simple structures ($F(1, 34) = 4.12, p = 0.050$) and CLLD structures ($F(1, 34) = 64.69, p < 0.001$). With regard to age, we found significant main effects ($F(1, 34) = 9.12, p = 0.005$). There was also an interaction between age and type of structure for CLLD structures ($F(1, 34) = 9.18, p = 0.005$) but not for simple structures ($F(1, 34) = 1.09, p = 0.340$). As shown in Table 4, there were no significant correlations between age and use of personal *a* in the four structures (simple and

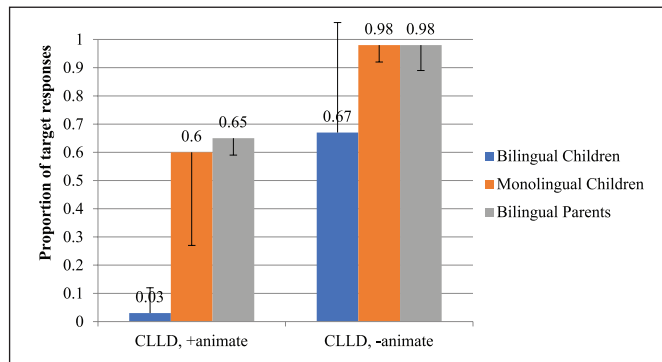


Figure 2. Sentence Completion Task. Proportion of target responses in CLLD structures by group. CLLD: Clitic Left Dislocated structures.

Table 3. Proportion of omission, use of personal *a* and ‘other’ responses in CLLD structures.

	[+animate]			[-animate]		
	Omission	Use of <i>a</i>	Other	Omission	Use of <i>a</i>	Other
Bilingual children	M = 0.58 SD = 0.41	M = 0.03 SD = 0.09	M = 0.38 SD = 0.43	M = 0.67 SD = 0.39	M = 0.00 SD = 0	M = 0.33 SD = 0.39
Monolingual children	M = 0.38 SD = 0.33	M = 0.60 SD = 0.33	M = 0.02 SD = 0.06	M = 0.98 SD = 0.06	M = 0.02 SD = 0.06	M = 0.00 SD = 0
Bilingual parents	M = 0.15 SD = 0.19	M = 0.65 SD = 0.19	M = 0.19 SD = 0.15	M = 0.98 SD = 0.06	M = 0.02 SD = 0.06	M = 0.00 SD = 0

M: mean; SD: standard deviation.

CLLD structures in +animate and –animate contexts) for the bilingual children. For the monolingual children, there was a strong correlation between age and use of personal *a* in animate, CLLD structures, but there were no significant correlations in the other structures.

Because there were no significant correlations with age for the bilingual children, we wondered whether other factors such as language ability had an effect on the use of personal *a*. We used the TVIP scores as a proxy for language ability in Spanish, as previous studies have found a relationship between vocabulary and grammar (e.g. Jackson-Maldonado, 2004; Marchman & Bates, 1994; Nicoladis & Marchak, 2011). As shown in Table 5, there were no significant correlations between language ability in Spanish and use of personal *a* in the four structures for the bilingual children.¹³ There was a significant correlation between age and language ability, indicating that receptive vocabulary size in Spanish increases with age in our sample of bilingual children, although they were largely English dominant as indicated by the parental reports.

To summarise, all of the participants showed less target performance with personal *a* production in CLLD structures compared to simple structures, confirming that there is an effect of structural complexity on DOM (research question 3). The bilingual children showed less target use of personal *a* in both types of structures, in contrast with the monolingual children and the bilingual parents, who performed at ceiling or close to ceiling in simple structures. This confirms lack of knowledge of the semantic properties constraining DOM in bilingual children compared to monolingual children and bilingual parents (research question 1). The effect of age is limited to the

Table 4. Correlations between age and use of personal *a*.

	[+animate]		[-animate]	
	Simple	CLLD	Simple	CLLD
Bilingual children	$r(15) = 0.395$ $p = 0.145$	$r(15) = 0.325$ $p = 0.238$	$r(15) = 0.162$ $p = 0.564$	No variation
Monolingual children	No variation	$r(22) = 0.542^{**}$ $p = 0.009$	$r(22) = -0.067$ $p = 0.766$	$r(22) = -0.062$ $p = 0.785$

CLLD: Clitic Left Dislocated structures.

** p -value = 0.01.

Table 5. Correlations between language ability and use of personal *a*.

	Age	[+animate]		[-animate]	
		Simple	CLLD	Simple	CLLD
Bilingual children	$r(12) = 0.636^*$ $p = 0.026$	$r(12) = 0.521$ $p = 0.082$	$r(12) = 0.062$ $p = 0.847$	$r(12) = 0.378$ $p = 0.226$	No variation

CLLD: Clitic Left Dislocated structures.

* p -value = 0.05.

monolingual children and to animate, CLLD structures: as the monolingual children get older, they show more target-like use of personal *a* in animate, CLLD structures, in contrast with bilingual children (research question 2).

Individual analysis

We conducted additional analyses in order to examine whether these differences between groups and structure types were observable at the individual level. For the individual analysis, we classified the participants according to whether they were high achievers (4–5 correct answers), mid achievers (three correct answers), low achievers (1–2 correct answers) or no correct answers.

Table 6 presents the results for simple structures. Monolingual children and bilingual parents are at ceiling or almost at ceiling for these structures. Because they are all in the upper range (see Figure 1), the focus of the individual analysis is on the bilingual children. As shown below, most of the bilingual children are in the mid to upper range for both animate and inanimate contexts. There is a higher percentage of bilingual children in the upper range for inanimate contexts than animate contexts.

As explained earlier, for animate contexts, omission of personal *a* was by far the most frequent error as there were only four instances of ‘other’ structures. Omission of personal *a* was present in all conditions and in all but two individuals. For inanimate contexts, there were six co-mission errors and three instances of ‘other’ structures. These were present across different linguistic items and in different individuals.

Table 7 presents the results for CLLD structures. Again, monolingual children and bilingual parents are at ceiling or almost at ceiling for inanimate CLLD structures. Because they are all in the upper range (see also Figure 2), the focus of the individual analysis is on the bilingual children for inanimate contexts. As shown below, for animate contexts, all the bilingual children are in the low to no correct answers range, whereas half the monolingual children and over half the bilingual

Table 6. Percentage of target responses for simple structures.

Group		Number of items	[+animate]	[-animate]
			%participants	%participants
Bilingual children (<i>n</i> = 15)	<i>Upper range</i>	4–5	46.7% (7/15)	80% (12/15)
	<i>Mid-range</i>	3	33.3% (5/15)	20% (3/15)
	<i>Low range</i>	1–2	13.3% (2/15)	0% (0/15)
	<i>No correct answers</i>	0	6.7% (1/15)	0% (0/15)

Table 7. Proportion of target responses to CLLD structures.

Group		Number of items	[+animate]	[-animate]
			%participants	%participants
Bilingual children (<i>n</i> = 15)	<i>Upper range</i>	4–5	0% (0/15)	60% (9/15)
	<i>Mid-range</i>	3	0% (0/15)	0% (0/15)
	<i>Low range</i>	1–2	13.3% (2/15)	26.7% (4/15)
	<i>No correct answers</i>	0	86.7% (13/15)	13.3% (2/15)
Monolingual children (<i>n</i> = 22)	<i>Upper range</i>	4–5	50% (11/22)	100% (22/22)
	<i>Mid-range</i>	3	18.2% (4/22)	0% (0/22)
	<i>Low range</i>	1–2	22.7% (5/22)	0% (0/22)
	<i>No correct answers</i>	0	9.1% (2/22)	0% (0/22)
Bilingual parents (<i>n</i> = 13)	<i>Upper range</i>	4–5	61.5% (8/13)	100% (13/13)
	<i>Mid-range</i>	3	30.8% (4/13)	0% (0/22)
	<i>Low range</i>	1–2	7.7% (1/13)	0% (0/22)
	<i>No correct answers</i>	0	0% (0/13)	0% (0/22)

parents are in the upper range. In contrast to animate contexts, over half the bilingual children are in the upper range for inanimate contexts.

As explained earlier, for animate contexts, over 60% of errors involved the omission of personal *a* as compared to instances of ‘other’ structures in all three groups. Omission of personal *a* was present in all conditions and all individuals. For inanimate contexts, the bilingual children did not produce co-mission errors.

Looking at levels of achievement across structures and contexts (simple structures [+animate] and [-animate]; CLLD structures [+animate] and [-animate]), under one-third of bilingual children (4/15) are high achievers across three categories. One-third (5/15) are high achievers across two categories. All bilingual children are high achievers for at least one category and none are high achievers for all four categories. In contrast, the monolingual children and bilingual parents groups include high achievers for all categories (over two-thirds of the participants in the case of the bilingual parents). In monolingual children, high levels of achievement are linked with age: 10 out of 13 participants over the age of 9.0 are high achievers for all categories, compared to just 1 out of 9 below the age of 9.0. This relationship between age and level of achievement is not apparent in the bilingual children – the number of high achievers across two and three categories is more or less the same below and above the age of 9.0.

In sum, the results of the individual data confirm the group results regarding the effects of structural complexity and differential performance in animate and inanimate contexts. Based on

these results, we can then answer the hypotheses put forward earlier and proceed to the discussion of the data.

Discussion

Group and individual results confirm our expectations regarding bilingual children's knowledge of DOM in Spanish. As predicted in Hypothesis 1, the bilingual children showed significant levels of personal *a* omission in animate, specific contexts, compared to the monolingual children and the bilingual parents (Figure 1 and Table 1). Their errors consisted largely of omission errors and the production of 'other' structures, as there were very few co-mission errors in inanimate contexts, which confirms Hypothesis 1. As shown in Table 6, just under half of the bilingual children showed target production of personal *a* in animate contexts, compared to the monolingual children and the bilingual parents.

As discussed earlier, the fact that all the parents used personal *a* in these contexts confirms that this structure is present in the input that the children are receiving at home. Moreover, this shows that there is no adult L1 attrition of personal *a* in the variety spoken by the bilingual parents, against previous proposals claiming attrition of the contact variety (Rothman, 2007). Furthermore, the fact that the parents and monolingual children behaved similarly in their production of DOM shows that there are no quantitative dialectal differences involved between Mexican and Peninsular Spanish in the contexts we have examined. The ceiling behavior shown by the monolingual children matched by age also shows that DOM in simple structures is fully in place by this age range (mean age, 9.7). This, however, does not seem to be the case for bilingual children, suggesting underspecification of the animacy and specificity features constraining DOM in bilingual children.

With regard to structural complexity, our data also support our expectations and confirm Hypothesis 3. All of the participants showed less target use of personal *a* with CLLD structures than with simple structures (see Figure 2 and Table 3). As shown in Table 7, the majority of the bilingual children did not produce any instances of personal *a*, compared to a very small percentage of the monolingual children. Only two of the bilingual children produced one or two instances of personal *a*.¹⁴ Interestingly, even one of the parents did not consistently produce the *a* in these contexts, as can be seen in Table 7. While it is possible that bilingual children have simply not acquired CLLD structures yet, and that, when they do, use of DOM would mirror use in matrix contexts, given the variability among adults and monolingual children as well in these contexts, it seems that structural complexity is, to some extent, influencing access to features constraining DOM. Similar results have been found with child and adult bilinguals who seem to have more difficulty with more complex and less frequent structures in the input.

In regard to age, our data do not support our expectations. The effect of age was limited to the monolingual children and to [+animate] contexts in CLLD structures. The bilingual children did not improve or become worse with age with either simple or CLLD structures. Therefore, Hypothesis 2 is not confirmed. The bilingual children behaved similarly as a group in both contexts despite their differences in terms of age. It appears as if DOM remains underspecified during early age, and therefore no development is observed with increasing age. However, it is clear from the individual results that the access to features associated with DOM is significantly more challenging with CLLD structures, as discussed earlier. We would like to argue that the lack of age effects is most likely related to the complexity of left dislocated structures, which appears to override the target specification of DOM use in these contexts. Although enough input eventually provides the necessary triggers for complex structures to be completely acquired in monolingual development, this appears to take longer in a language contact situation. Both complexity and input are conflated when it comes

to DOM production in CLLD contexts. Frequency is confounded with complexity in the sense that more complex structures are typically less frequent in the input. What is unclear, at least with the data at hand, is whether bilingual children would be able to overcome this difficulty without explicit instruction at a later age. Data from adult HS of Spanish would be necessary to confirm this.

Conclusions

The goal of this study was to examine the extent to which Spanish–English bilingual children born and raised in the USA have knowledge of the semantic properties constraining DOM in Spanish. Looking at the development of child heritage grammars in a language contact scenario is relevant for current discussions on the nature and dynamics of heritage language acquisition. Specifically, this research explores the extent to which the difficulties adult HS have stem from grammatical underspecification during early stages of bilingual development or child L1 attrition over their lifespan (Cuza & Pérez-Tattam, 2015; Miller & Cuza, 2013; Montrul, 2011, 2016; Montrul & Sánchez-Walker, 2013; Polinsky, 2011; Putnam & Sánchez, 2013). Furthermore, we aimed to examine whether any difficulties in this regard were correlated with age and structural complexity. To this end, we investigated the use of personal *a* in simple and CLLD structures among younger and older cohorts of bilingual children. We then compared their results with those of monolingual children matched by age, and with long-term immigrants (parents).

Taken together, our data provide support to previous work in heritage language bilingualism, documenting underspecification in the Spanish grammar of Spanish–English bilingual children born and raised in the USA (Cuza, 2016; Montrul, 2004, 2008; Montrul & Sánchez-Walker, 2013; Silva-Corvalán, 2014). Our results showed decreased levels of target use of personal *a* with animate contexts, crucially with left dislocated structures. We argue that the observed underspecification stems from cross-linguistic influence from English (where personal *a* is not required), together with structural complexity. The features regulating DOM remain underspecified in the HS grammar reflected in high levels of DOM omission and overextension. This is more salient in CLLD contexts where the processing of the corresponding features is heightened due to the complexity of the structure.

Our data also show no differences between younger and older children in their rates of personal *a* use, which provides support for theories of incomplete acquisition and morphosyntactic reanalysis in the grammar of simultaneous Spanish–English bilingual children born and raised in the USA (Montrul, 2016; Montrul & Sánchez-Walker, 2013; Silva-Corvalán, 2014). Initially, a goal of the research was to examine the role of language dominance as well as age. Unfortunately, our data did not include children with different levels of language dominance, as most of them were English dominant. Therefore, no conclusions regarding dominance effects in DOM marking can be made at this point. Future research would benefit from comparing Spanish–English bilingual children with different language dominance profiles, so that the role of language dominance and how it interacts with structure complexity in child bilingual grammars can be examined.

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Notes

1. 'CLLD' refers to the dislocation of an element to the leftmost periphery of the clause from its original post verbal position, crucially for contrastive purposes. The definite and specific object must be co-referential with a clitic in the main clause (Zagona, 2002; Zubizarreta, 1998).
2. For the purpose of this study we subscribe to local syntactic complexity in first and bilingual language development (Gathercole, 2007; Sharp, 2012; Slobin, 1973). Please see Sharp (2012) for a summary of different approaches to complexity across different linguistic modules (phonology, morphosyntax, processing, etc.).
3. An independent sample *t*-test comparing the age of the Bilingual Children Group and the Monolingual Children Group revealed a non-significant difference after the five youngest bilingual children (under the age of 6.5) were taken out of the sample ($t(35) = -1.34, p = 0.188$).
4. Three participants (20%) had spent between 3 and 10 months in a Spanish-speaking country. We looked at the performance of the participant who spent the longest time and concluded that it is consistent with the overall performance of the bilingual children rather than the monolingual children. For example, their production of personal *a* for matrix structures (DOM required) is 0.6, compared to 0.65 for the bilingual children and 1 for the monolingual children.
5. Both the PPVT and TVIP are standardised receptive vocabulary measures designed for ages 2.5–18, whose 125 items increase in difficulty as the test progresses. For each item, upon hearing a word, the child selects the corresponding picture from among four illustrations. The test ends when the child reaches his or her ceiling, or fails to correctly identify eight consecutive words. Raw scores include the number of correct test items between the ceiling and the basal (eight consecutive correct answers), and all test items below the highest basal.
6. The self-report scores represent the average self-rating (from 1 to 4) across the four skills (reading, writing, listening and speaking). 1 was described as basic/limited, 2 as adequate/not bad, 3 as good/fluent, and 4 as excellent/native-like.
7. Guadarrama represents one of the most working-class areas within Madrid, bringing it closer to national averages with regard to socioeconomic status (Intituto de Estadística: Comunidad de Madrid, 2006). This is similar to the background of the bilingual children who attend schools in the USA where the percentage of children receiving free and reduced-price lunches is similar to that of the US national average (Southern Education Foundation, 2015).
8. We recruited children from Spain for two main reasons: first, it was logistically easier for us due to existing contacts in the Community of Madrid by one of the authors, and second, due to the similarity between Spanish and US educational systems. Recruiting monolingual children from Mexico would have been more optimal but this was logistically complicated. Furthermore, depending on where the data is collected in Mexico (which is limited due to obvious reasons), we ran the risk of conflating other external factors including socioeconomic status. Although we did not explicitly control for socioeconomic status among the bilingual and monolingual families, we believe both groups came from similar statuses due to the characteristics of the community where they lived. Furthermore, some of the monolingual children came from immigrant parents (Latin America, Eastern Europe), which is similar to the background of the bilingual children in the USA. The main difference between both groups came from the quantity and quality of input in Spanish they were exposed to.
9. Most of the parents tested were mothers, who were the primary childcare providers.
10. Although the bilingual children's parents had been living in the USA for an average of 13 years, we do not predict them to have undergone L1 attrition of this particular property. They all have limited knowledge of English, and resided in a linguistic enclave in the American Midwest with consistent exposure to and use of Spanish as a minority language, as attested in their linguistic background questionnaire (see Table 1).
11. The proportion of 'other' responses in animate specific contexts is related to the use of the preposition *para* ('for') instead of the preposition *a* in the item *Karen está esperando *por Francisco* 'Karen is waiting for Francisco'.
12. The bilingual children – crucially the younger ones – had difficulty producing CLLDs structures in general, whether animate or inanimate. They would produce only the second part of the sentence

(...pero el diccionario no ‘but not the dictionary’) or interpret the indirect object as the subject of the dislocated clause. In other cases, they restructured the test token following a subject-verb-object word order (e.g. *Mi perro siempre juega con el frisbee pero esconde sus juguetes* ‘My dog always plays with the frisbee but he hides his toys’). These cases were coded as ‘other’ responses. This shows that they are aware of the canonical word order in Spanish but still lack knowledge of more complex structures like CLLD. It could also be that some of the tokens were not sufficiently controlled for, which is a limitation common of these types of tasks.

13. We did not calculate the correlations between language dominance and use of personal *a* because our sample of bilingual children had a much higher proportion of English-dominant children compared to the other two language dominance profiles, as indicated by the parental reports.
14. An anonymous reviewer questions whether the bilingual children were tested on their overall knowledge of CLLD structures before conducting the task. Unfortunately, they were not. This is a limitation of the study.

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