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The acquisition of personal *a* among Chinese-speaking L2 learners of Spanish

A case for syntactic complexity

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The present study examines the acquisition of differential object marking (DOM) in Spanish among Mandarin-speaking L2 learners from China. Unlike Mandarin, which marks the direct object only in preverbal position (i.e., in SOV sentences) and is a topic-prominent language, Spanish allows DOM in both simple and clitic left-dislocated (CLLD) sentences. We predicted L2 learners to have more difficulty with CLLD structures than with simple sentences due to structural complexity issues. Results from an Elicited Production task showed target-like performance in simple sentences among the L2 learners but overextension of the *a*-marker to contexts where it is not required in CLLD structures. The results are discussed along the lines of previous work on the effects of crosslinguistic influence and structural complexity.

Keywords: second language acquisition, Spanish DOM, Mandarin, structural complexity, clitic left-dislocation

1. Introduction

The acquisition of Spanish morphosyntactic properties has often been found difficult for adult L2 learners and heritage speakers of Spanish, leading to systematic variability in various grammatical domains (Bruhn de Garavito & Valenzuela, 2008; Montrul, 2004; Montrul & Slabakova, 2003; Liceras, 1985; Pérez-Leroux & Liceras, 2002; Pérez-Leroux & Glass, 1997; Putnam & Sánchez, 2013; Rothman, 2010; Sagarra, Sánchez, & Bel, 2019). Some researchers have attributed the learners' difficulties to crosslinguistic influence, vulnerability of certain grammatical domains (e.g., syntax-pragmatic interface structures), typological proximity or the

complexity of the structure, among other factors (Hulk & Müller, 2000; Liceras & Alba de la Fuente, 2015; Rothman, 2010).

We expand previous research by examining the effects of structural complexity and crosslinguistic influence among Chinese/Spanish bilinguals, a population so far underexplored (Cuza, Pérez-Leroux & Sánchez, 2013; Cuza, Jiao, & López-Otero, 2018; Jiao, 2017). We follow Hulstijn & De Graaff (1994) in defining structural complexity as the difficulty often found in the acquisition of certain grammatical structures that are constrained by more than one syntactic operation, as opposed to structures with fewer syntactic operations (Argyri & Sorace, 2007; Cuza, 2013; Frank, 2013; Jakubowicz & Strik, 2008). Specifically, we examine the acquisition of Differential Object Marking in Spanish (DOM, also known as personal *a*), a syntax-semantic interface structure previously found to be difficult to acquire (Cuza, Miller, Pérez-Tattam, & Ortiz Vergara, 2018; Guijarro-Fuente & Marinis, 2007, 2009; Montrul, 2004; Montrul & Bowles, 2009; Montrul & Sánchez-Walker, 2013; Nediger, Pires, & Guijarro-Fuentes, 2016). DOM refers to the overt case marking of direct objects (Aissen, 2003; Bossong, 1991; Leonetti, 2004; Torrego, 1998, 1999). In contrast to Chinese, animate and specific objects in Spanish must be overtly marked by the preposition *a* (e.g., *Juan vio a su madre en la tienda* "John saw his mother at the store"). Particularly, we focus on the potential asymmetries existing between simple sentences and Clitic-Left-Dislocated (CLLD) structures as far as personal *a* production is concerned.

Section 2 provides an overview of DOM in Spanish, its uses and constraints, as well as object case marking in Mandarin. Section 3 reviews previous studies on the acquisition of this structure among L2 learners of Spanish and heritage speakers, and Section 4 presents the research questions and hypotheses of the study. The participants, tasks, and results are introduced in Section 5. Section 6 presents the discussion of the results followed by the conclusions in Section 7.

2.   Differential Object Marking in Spanish and Mandarin

2.1   Semantic properties of Spanish DOM

The term *Differential Object Marking* was proposed by Bossong (1991) to describe the overt morphological marking of direct objects (DOs) in order to contrast the DO with the subject (Fábregas, 2013). Aissen (2003) developed a hierarchical scale of direct objects associating the grammatical function of DOM with animacy and specificity features. Aissen's (2003) hierarchical scale associates DOM use with the lexico-semantic features of animacy and definiteness. According to Aissen (2003), a direct object is more likely to be overtly marked when its referent is animate

(i.e., referring to a person or an animal) and definite. Regarding the relative role of animacy and specificity features, many authors share the view that animacy is the driving force behind Spanish DOM usage (e.g., García, 2007; Leonetti, 2004; Rodríguez-Mondoñedo, 2007). As represented in example (1), the crucial factor for DOM to occur is the animacy feature of the object. DOM is only acceptable in Spanish when the direct object is [+animate], as in (1a) below:

(1) a. Vi   a   mi perro en la calle.   [+animate, +specific]
         I saw DOM my dog on the street
         'I saw my dog on the street.'

     b. Rosa vio *a la Torre Eiffel en París.   [−animate, +specific]
         Rosa saw the Eiffel Tower in Paris
         'Rosa saw the Eiffel Tower in Paris.'

Another proposal for the distribution of personal *a* is that *a*-marking is more sensitive to the feature of specificity (e.g., Laca, 2006; Torrego, 1998). In some cases, the marker *a* is used to differentiate specific from non-specific direct objects (2).

(2) a. Estoy buscando a   un profesor que enseña   matemática.
         I am looking for DOM a   professor that teaches-IND. mathematics
         'I am looking for a professor that teaches math'   [+animate, +specific]

     b. Estoy buscando   una secretaria que hable   inglés.
         I am looking for a   secretary that speaks-SUBJ. English.
         'I am looking for a secretary that speaks English.' [+animate, −specific]

While the objects in (2a) and (2b) are both animate, they differ in their degree of specificity, leading to differences in the grammaticality of DOM. In (2b), the use of the subjunctive mood in the relative clause indicates the non-specific meaning of the direct object. Currently, there is no consensus on a generalized driving factor for Spanish DOM or on the exact constraining conditions which regulate this grammatical phenomenon (Torrego, 1998; Zagona, 2002). However, in a general sense, [+animate, +specific] direct objects require DOM in Spanish, while other direct objects do not.

2.2 Spanish DOM in CLLD structures

Topicalization refers to a syntactic operation driven by pragmatic factors (Roberts, 1996). This operation consists of fronting a selected element to the left periphery of the clause (C-Domain). Spanish DOM is frequently associated with clitic left-dislocated (CLLD) structures, as in (3a). In CLLD structures, the direct object is dislocated to the left periphery of the clause and doubled by a clitic (*lo* in (3a) and

la in (3b)) which checks the accusative case and shares the *phi*-features associated with the object (e.g., Sportiche, 1996; Zapata, Toribio, & Sánchez, 2004). When the left-dislocated object is [+animate, +specific], it must be marked with the preposition *a*, as in (3a):

(3) a. A   mi tío,   lo   vi   en la   calle.
         DOM my uncle,   CL-ACC. I saw in the street.
         'I saw my uncle in the street.'   [+animate, +specific] DOM

     b. La   Torre Eiffel, Rosa la   vio en Paris.
         The Tower Eiffel, Rosa CL-ACC saw in Paris
         'Rosa saw the Eiffel Tower in Paris'   [−animate, +specific] DOM*

Leonetti (2004) acknowledges that there are cases where the marked direct object in simple sentences (4a) is optional but required in CLLD structures (4b). He argues the topicality forces the specific reading of the dislocated NP and that *a* is a topic marker.

(4) a. Ya   conocía (a) muchos estudiantes.
         Already I knew DOM many   students
         'I ready knew many students.'

     b. A   muchos estudiantes, ya   los   conocía.
         DOM many   students,   already them I knew
         'Many students I already knew.'   (from Leonetti, 2004, p. 86)

Given the syntactic transformations in CLLD structures that involve a dislocated direct object and a co-referring clitic, CLLD structures are structurally more complex than simple sentences (Hulstijn & De Graaff, 1994; Spada & Tomita, 2010). A recent argument in the literature is that more complex structures are also more difficult to process (Sagarra, Sánchez, & Bel, 2019). Sagarra et al. (2019) measured the reaction time (RT) and processing accuracy of Spanish relative clauses (RCs) among Spanish monolinguals and heritage speakers of Spanish via a self-paced reading task. They found that the participants took more time to process subject RCs (*El león que mató al cazador caminaba lentamente* "The lion that killed the hunter walked slowly") than the object RCs (*El león que el cazador mató caminaba lentamente* "The lion that the hunter killed walked slowly"). The reaction time was also longer for object RCs with OSV order (*El león que el cazador mató* "The lion that the hunter killed") than for object RCs with OVS (*El león que mató el cazador* "The lion that the hunter killed") due to the scrambled word order.[1]

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1. The authors pointed out that the reason why the participants showed less RT in OVS sentences is that they reanalyzed OVS as SOV order.

2.3   Object case marking in Mandarin

Mandarin does not exhibit a Spanish-like DOM or clitic doubling in either simple sentences (5a and 5b) or topicalized sentences (5c and 5d):

(5)   a.   Xiaoli kanjian-le Xiaozhang.
   Xiaoli see-PERF Xiaozhang
   'Xiao Li saw Xiao Zhang' (simple, [+animate, +specific] no DOM)

  b.   Xiaoli kanjian-le nage fangzi.
   Xiaoli see-PERF that house
   'Xiao Li saw that house' (simple, [−animate, +specific] no DOM)

  c.   Xiaozhang, Xiaoli kanjian-le.
   Xiaozhang, Xiaoli see-PERF
   'Xiao Zhang, Xiao Li saw' (Topicalized, [+animate, +specific] no DOM)

  d.   Nage fangzi, Xiaoli kanjian-le.
   That house, Xiaoli see-PERF
   'The house, Xiao Li saw.' (Topicalized, [−animate, +specific] no DOM)

In contrast with Spanish, Mandarin only overtly marks direct objects with a preceding case marker *ba*[2] when the direct object is in preverbal position (i.e., SOV) in agentive or causative sentences (6a–c) (Shi, 2010; Weng, 2012). However, the marking is not allowed when the object is in the clause initial position (i.e., in a topicalized structure, as in 6d) (Yang & van Bergen, 2007). Yang & van Bergen (2007) implemented an analysis along the animacy and definiteness scales proposed by Aissen (2003). They argue that DOM in Mandarin is not obligatory in all cases and is subject to semantic as well as syntactic constraints. According to Yang & van Bergen (2007), "…the omission of the case-marker is only allowed when the object is different from the agent in terms of animacy: only inanimate object NPs occur in preverbal position without being obligatorily case-marked. At the same time, omitting *ba* is only possible if the object in preverbal position is high in prominence in terms of definiteness: it should be specific or definite in order to fulfil the syntactic requirements of the preverbal position" (p. 1633). Thus, the overt marking is not required in (6b), but required in (6c).

(6)   a.   Ta ba wo da-le.
   He ACC-me hit-PERF
   'He hit me.'

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2.   However, there is a debate on the status of the marker 'ba' as being a verb (Bender, 2000; Hashimoto, 1971), a preposition (Li, 2001) or an accusative case particle (Yang & van Bergen, 2007).

b.   Ta (ba)   pingguo chi-le.
     He (ACC)   apple   eat-PERF
     'He ate the apple(s).'

c.   Ta *(ba)   yige pingguo chi-le.
     He *(ACC) an   apple   eat-PERF.
     'He ate an apple.'

d.   Laohu, wo chi-le.
     Tiger, I   eat-PERF
     'I ate tiger'   (Yang & van Bergen, 2007, p. 1621–1626)

Hence, according to Yang and van Bergen (2007), the case marking system in Mandarin is constrained by syntactic position. The marked object only appears before the main verb. Although DOM in Mandarin does not strictly follow Aissen's hierarchy (i.e., it can occur with inanimate indefinite objects), it is consistent with Aissen's proposal in that it is mandatory in order to distinguish subject from object. Along this line, de Swart (2007) argues that in Mandarin, object case-marking distinguishes the object from the subject when both are animate, whereas the constraint of definiteness is to license the marking of indefinite objects. Research on Mandarin object case marking shows that it functions differently from Spanish in the following two aspects: (a) the marker can mark either animate or inanimate direct objects (it is obligatory with inanimate indefinite objects); (b) direct objects are marked only in preverbal position (i.e., SOV). Mandarin is a topic-prominent language (Chu, 1998; Li & Thompson, 1976), and, therefore, it can exhibit a concurrence of multiple topics in one sentence, both clause external and clause internal (Huang, 1998), as shown in (7):

(7)   [Topic$_1$ Zhangsan [Topic$_2$ neixie ren   [Topic$_3$ lian   yige [ta dou
              Zhangsan   those people   every one he all

      bu   renshi]]]]
      not know

      'As for Zhangsan, of those people, he does not know a single one.'
                                                          (from Huang, 1998, p. 62)

As a result of the topic-prominent nature of Mandarin, Mandarin L1 speakers have more exposure to topicalized sentences. A logical assumption then would be that Mandarin-speaking L2 learners of Spanish would have difficulty in acquiring the distribution of Spanish DOM in simple and CLLD structures because of the different object case marking behaviors of the two languages. Yet one would assume that the processing of topicalized structures should be less challenging for Mandarin speakers than for other Spanish learners whose L1 is not topic-prominent. Since Mandarin speakers are exposed to more topicalized structures in their L1, it is possible that a positive transfer from L1 would facilitate their acquisition of the function of Spanish DOM in CLLD structures as a topic marker.

3. Previous studies on the acquisition of Spanish Differential Object Marking

The acquisition of DOM in Spanish monolingual speakers occurs without major difficulties or delays by the age of 3;0 (Rodríguez-Mondoñedo, 2008). However, this is not the case with L2 learners or heritage speakers of Spanish. The literature shows lack of attainment of the semantic properties constraining DOM use stemming from different factors including crosslinguistic influence (Guijarro-Fuentes & Marinis, 2009; Montrul, 2004; Montrul & Bowles, 2009), structural complexity (Cuza, Miller, Peréz-Tattam, & Ortiz-Vergara, 2018; Guijarro-Fuentes, 2012; Guijarro-Fuentes & Marinis, 2007; Montrul, Bhatt, & Girju, 2015; Nediger, Pires, & Guijarro-Fuentes, 2016), or the overall proficiency (Guijarro-Fuentes, 2012; Guijarro-Fuentes & Marinis, 2007; Nediger, Pires, & Guijarro-Fuentes, 2016).

Guijarro-Fuentes (2012) examined the acquisition of DOM among L2 learners of Spanish and argued that the level of target development is affected by crosslinguistic influence from English, L2 proficiency, and the complexity of DOM constraints (e.g., animacy, specificity, agency of the subject, type of verb). The results showed that the advanced L2 learners performed significantly better than the other proficiency groups with [−animate] objects. Guijarro-Fuentes (2012) proposed that L2 learners start acquiring Spanish DOM by learning that [−animate] objects do not allow overt marking and gradually expand their knowledge to the other more complex constraints.

Nediger, Pires, and Guijarro-Fuentes (2016) recently studied English-speaking long-term residents of a Spanish-speaking country who learned Spanish as an L2 (L1 = English, L2 = Spanish). Results were obtained from a Grammaticality Judgment task (GJT) and a Context-Driven GJT[3] administered to a group of advanced L2 speakers of Spanish. Participants had been living in Spain for an average of 25.6 years, with age of onset of exposure to Spanish ranging from 8 to 28 years old. The results showed that, despite an "overall lower rate of *a*-marking than the controls" (p. 8), the L2 learners' performance paralleled the controls in the conditions [+animate, −specific] and [−animate, +specific, −definite], which do not require DOM, and in the [+animate, −specific] condition with an agentive subject which does require DOM (unlike the case with a non-agentive subject), partially confirming Guijarro-Fuentes' (2012) findings. An unexpected finding was that both the monolingual speakers and the L2 learners showed low acceptance of

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3. In Context-Driven GJT, similar to GJT, the participants were given sentences to rate, but these sentences were provided with a preamble that tended to lead to certain contextual readings.

grammatical DOM in CLLD structures. The authors argue that this finding shows that CLLD "disfavors *a*-marking", contrary to the literature (p. 9).

The unexpected performance of DOM in CLLD structures by both monolinguals and L2 learners is consistent with Cuza et al.'s study (2018). The authors examined the production of Spanish DOM in simple and CLLD structures among 20 Spanish-English bilingual children and their parents, a group of 13 long-term immigrants. They implemented an Elicited Production task, which included a Question After Story task for simple sentences and a Sentence Completion task for CLLD structures. The results indicated significant omission of DOM in animate specific contexts among the bilingual children compared to the monolingual children and long-term immigrants, suggesting crosslinguistic influence effects. Regarding the effects of structural complexity, all groups showed more difficulty with CLLD structures. Even monolingual children and adult native speakers of Spanish showed variability in its use. The authors argue for the underspecification of the semantic constraints (especially animacy) and structural complexity effects.

4.   Research questions and hypotheses

The present study examines the acquisition of Spanish DOM in simple and CLLD structures by Mandarin-speaking learners. By examining this underexplored language pair, we hope to gain important insights into the effects of crosslinguistic influence and structural complexity in the acquisition of this grammatical domain. We posit the following research questions:

RQ1:   Will Mandarin-speaking L2 learners of Spanish exhibit crosslinguistic influence effects in acquiring the DOM in Spanish?

RQ2:   What is the role of structural complexity in the acquisition process?

Given the structural differences between Mandarin and Spanish, we predict crosslinguistic influence effects in the L2 learners' representations. Furthermore, we expect to find asymmetrical results depending on the complexity of the structure where the DOM appears. Specifically, we predict the following:

Hypothesis 1:   Chinese-speaking L2 learners of Spanish will show significant omission of DOM in [+animate, +specific] contexts due to crosslinguistic influence effects. However, there will be no difficulties in [−animate] contexts where DOM is not required.

Hypothesis 2:   L2 learners' performance will differ in simple and CLLD structures due to structural complexity effects. Specifically, the L2 learners will show more personal *a* omission in CLLD structures than in simple sentences.

5.   The study

5.1   Participants

Eighteen (*n* = 18) Mandarin-speaking L2 learners of Spanish (age range, 19–21, mean = 20.1, SD = 0.75) and fifteen (*n* = 15) native speakers of Spanish[4] (age range = 19–48, mean = 25.9, SD = 6.5) participated in the study. The L2 learners were college students majoring in Spanish and they were completing their forth semester at the time of testing. Mandarin was spoken in their communities, and was the language used in their social circles. All the L2 learners had been exposed to Spanish since their first year of university. The participants took the DELE test (*Diploma del Español como Lengua Extranjera*) (Bruhn de Garavito, 2002; Duffield & White, 1999; Montrul & Slabakova, 2003) as an independent measure of L2 proficiency. The scores ranged from 33/50 to 44/50 (*M* = 38, *SD* = 3.29). The L2 learners also reported to have knowledge of English. The native speakers of Spanish served as the baseline group. Six of the monolingual speakers (6/15, 40%) had a university-level education, while nine of them (9/15, 60%) had completed technical/professional education.

5.2   Tasks and procedures

We implemented an Elicited Production task (EPT) (Cuza et al., 2018; Jiao, 2017). It consisted of 20 test tokens and 22 distractors. Of the 20 test items, 10 items were question-and-answer items, which were intended to elicit the use of DOM in simple sentences, and 10 items were sentence-completion items, intended to elicit DOM production in CLLD structures. The tokens were divided equally in [+animate] or [−animate] conditions.

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4.   Given that the L2 learners were exposed to Peninsular Spanish during formal instruction in China (Rovira, 2010), we recruited monolingual speakers of Spanish from Spain to control for potential dialectal differences (e.g., Von Heusinger & Kaiser, 2005).

In the question-and-answer items, the investigator showed the participants a series of PowerPoint slides displaying a preamble, an image related to the preamble, and a prompt (a question), as illustrated in (8). The investigator read the preamble and the prompt, and the participant was asked to answer the question with a verb given on each slide:

(8)   *Question and Answer items (10 tokens)*
                              (here appears an image of Superman stopping a train)
      Preamble: Superman hizo algo impresionante esta tarde.
                             'Superman did something amazing this afternoon.'
      Prompt: ¿Qué hizo Superman?
                             'What did Superman do?'
                                                          (*detener*, "to stop")

      Expected response: Superman detuvo el tren.
                             'Superman stopped the train.'

In the sentence-completion items, the investigator read the preamble and the prompt to the participant. In this case, the prompt was the Spanish conjunction *pero* "but", used to introduce a CLLD sentence lacking a direct object. The participant had to complete the sentence with a given noun phrase, as illustrated in (9).

(9)   *Sentence Completion items (10 tokens)*
                (here appears an image of Victor talking with his mother on the phone)
      Preamble: Víctor nunca habla con su papá,
                             'Victor never speaks to his father.'
      Prompt: pero…'but…'
                                                          (*su mamá*, 'his mother')

      Expected response: a su mamá siempre la llama y la saluda.
                             'To his mother, he always calls and greets her'

We considered target-like performance the target uses of personal *a* in [+animate] contexts as well its omission in [−animate] contexts. Non-target-like performance consisted of the omission of DOM in [+animate] contexts and its production in [−animate] contexts. Responses unrelated to DOM (other prepositions or changing the sentence structure) were coded as "other".

6.   Results

Data from the Elicited Production task were analyzed using a generalized linear mixed-effects model with a binomial linking function. The model included response (use of DOM, non-use of DOM) as the dependent variable, and animacy ([+animate], [−animate]) and complexity (simple sentence or CLLD sentence) as

fixed factors. A "non-use of DOM" response was coded as "0" and a "use of DOM" response was coded as "1". Significance of main effects and all possible interactions were assessed using hierarchical partitioning of the variance via nested model comparisons. Orthogonal contrast coding directly compared the participants' responses in each animacy condition. We report p-values with alpha set at 0.05 and include confidence intervals of parameter estimates in order to provide an assessment of effect sizes.

The analysis revealed a main effect of animacy ($\beta = -.47$, SE $= .089$, $t(14.87) = -5.31$, $p < .001$). Furthermore, there were significant interactions between group and animacy ($\beta = -.31$, SE $= .13$, $t(14.71) = -2.45$, $p = .027$), as well as between animacy and complexity ($\beta = -.25$, SE $= .11$, $t(18.82) = -2.21$, $p = .039$). This suggests that both groups performed differently regarding the animate/inanimate objects in simple or CLLD structures and that the different treatment of animate/inanimate objects may be mitigated in CLLD structures. In sum, results revealed that the participants' responses were significantly determined by the animacy of the object. Furthermore, the results suggest a role for structure complexity evidenced in the relationship observed between the participants' responses and the animacy of the object.

6.1   Simple sentences

In simple sentences, the L2 learners showed lower levels of DOM use (82%) compared to the controls, as well as higher levels of omission (13%). A small portion of "other" responses (5%) were found in both contexts for L2 learners. This is shown in Figure 1. "Other" responses included using other prepositions (e.g., *con* and *en*), subordinate clauses (e.g., *Vi que el hombre lleva un vestido extraño* "I saw the man wears a strange suit"), or using clitics (e.g., *Shrek está viéndolo* "Shrek is looking at him" instead of the expected *Vio a Shrek* "It (the cat) saw Shrek".). For the current analysis, only binomial data (use or non-use of DOM) were taken into consideration. The plot in Figure 1 shows the responses (use of DOM, non-use of DOM) as a function of animacy (animate, inanimate) in simple sentences across groups (L2 learners, controls).

In order to have a closer view of the data, the two groups' responses were compared across conditions. In the [+animate] condition with simple sentences, the results did not reveal group differences ($\beta = .14$, SE $= .07$, $t(6.95) = 2.17$, $p = .067$). We did not find group differences in the [−animate] condition either ($\beta = -.10$, SE $= .06$, $t(18.31) = -1.84$, $p = .082$). The analysis reveals that L2 learners and controls behaved similarly in the target production of personal *a*, and that the L2 learners' errors of commission were not significant. Hypothesis 1 is only partially confirmed.
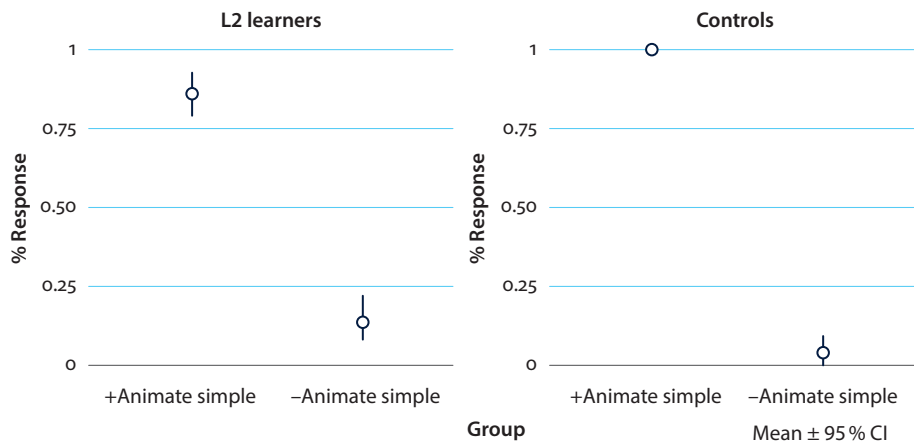
Figure 1. Proportion of DOM use realized in simple sentences per group

6.2   Clitic left-dislocated sentences

In CLLD structures, the L2 learners showed less target production than the control group in [+animate] contexts (73% vs. 80%) and showed more non-target production in [−animate] contexts (29% vs. 8%). Interestingly, although the control group performed as expected in [−animate] contexts (92% of target-omission), they showed an omission rate of 18% in [+animate] contexts, where personal *a* was required. Like the simple sentences, only binomial data (use or non-use of DOM) were taken into consideration. This is shown in Figure 2.
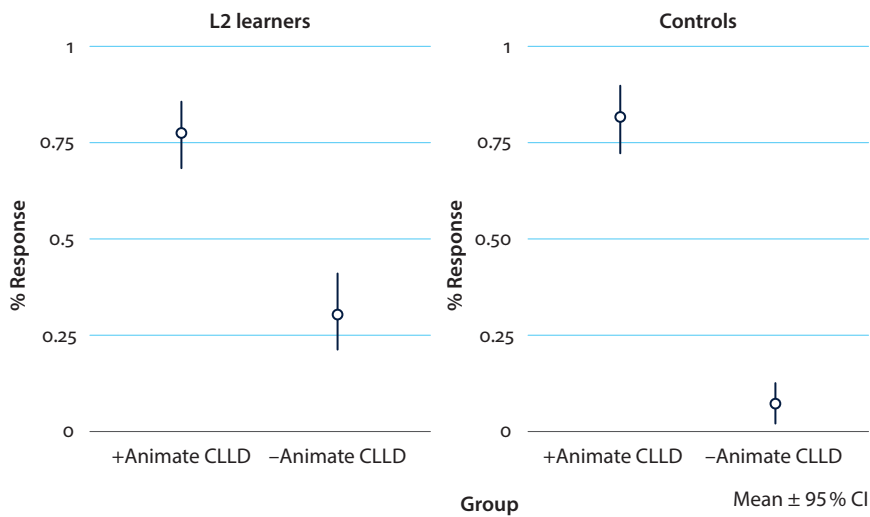

Figure 2. Proportion of DOM use realized in CLLD structures per group

In the case of the simple sentences as well as in CLLD contexts, the two groups' responses were compared across conditions. In the [+animate] CLLD condition, the results did not reveal group differences (β = .07, SE = .10, $t(13.32)$ = .64, p = .534); however, significant differences were found in the [−animate] CLLD condition (β = −.24, SE = .11, $t(16.22)$ = −2.19, p = .043). In CLLD structures, the L2 learners did not show significant differences in the target production of personal *a*. However, they performed significantly different in terms of overextension. Hypothesis 1 is not confirmed. The L2 learners behaved similarly to the controls with CLLD structures, but they overextended the *a*-marking in [−animate] contexts. Hypothesis 2 is confirmed.

Interestingly, the results by the control group (18% of omission) are consistent with Nediger et al.'s (2016) findings, in that in CLLD contexts, the native speakers produced the *a*-marking less frequently than in simple sentences. If Nediger et al.'s (2016) claim that CLLD disfavors *a*-marking is true, topic-marking function is not associated with Spanish DOM as closely as suggested in the literature. However, given the topic-prominence of Mandarin, the L2 learners in the present study produced Spanish DOM at a very high rate.

6.3   Individual analysis

The group analysis did not show significant structure complexity effects in relation to DOM use. However, the fact that there was a significant interaction between animacy and complexity suggests that complexity may play a role in affecting the participants' performance in [+animate] or [−animate] contexts. Hence, an individual analysis was implemented in order to observe the possible effects of complexity in [+animate] and [−animate] contexts at the individual level. The participants within each group were divided into four groups according to the number of personal *a* produced: *upper* range (4–5/5 instances), *middle* range (3/5 instances), *low* range (1–2/5 instances), and *zero-production* (0/5 instance).

In [+animate] sentences, the production of personal *a* is required. In simple sentences, more L2 learners fell in the *upper* range (15/18) compared to CLLD structures (12/18). There were also fewer L2 learners in the *low* range in simple sentences (1/18) than in CLLD structures (3/18). This is consistent with Hypothesis 2. Surprisingly, the differences between sentence types were more pronounced in the control group. The monolinguals also showed more variation in CLLD structures. The control group fell in the *upper* range in simple sentences; however, only about half of the controls were in the *upper* range (7/15) in CLLD structures, while the other half were distributed evenly in the *middle* and *low* ranges (4/15, respectively). This is shown in Table 1.

Table 1. Number of personal a production in [+animate] contexts

Group		# items	Simple sentences # participants	CLLD structures # participants
L2 learners (*n* = 18)	Upper	4–5	**83% (15/18)**	**67% (12/18)**
	Middle	3	11% (2/18)	11% (2/18)
	Low	1–2	5% (1/18)	17% (3/18)
	Zero	0	0% (0/18)	5% (0/18)
Controls (*n* = 15)	Upper	4–5	**100% (15/15)**	**47% (7/15)**
	Middle	3	0% (0/15)	27% (4/15)
	Low	1–2	0% (0/15)	27% (4/15)
	Zero	0	0% (0/15)	0% (0/15)

In [−animate] contexts, the production of personal *a* is not allowed. In both simple and CLLD structures, there were fewer L2 learners than controls in the *zero-production* range. In simple sentences, the vast majority of the L2 learners were distributed in the *low* range and the range of *zero-production* (8/18 and 9/18, respectively). However, they showed more variation in CLLD structures, with more participants in the *upper* and *middle* ranges (4/18 and 2/18, respectively). This is consistent with Hypothesis 2. The controls showed more convergence in both sentence types, with slightly more participants in the *zero-production* range in CLLD structures. Table 2 illustrates the results found in [−animate] sentences.

Table 2. Number of personal a production in [−animate] contexts

Group		# items	Simple sentences # participants	CLLD structures # participants
L2 learners (*n* = 18)	Upper	4–5	0% (0/18)	**22% (4/18)**
	Middle	3	5% (1/18)	**25% (2/18)**
	Low	1–2	**44% (8/18)**	22% (4/18)
	Zero	0	**50% (9/18)**	**44% (8/18)**
Controls (*n* = 15)	Upper	4–5	0% (0/15)	0% (0/15)
	Middle	3	0% (0/15)	0% (0/15)
	Low	1–2	20% (3/15)	6% (1/15)
	Zero	0	**80% (12/15)**	**94% (14/15)**

7.   Discussion and conclusions

The aim of the present study was to examine the acquisition of Spanish differential object marking by Mandarin-speaking L2 learners. Unlike Spanish, Mandarin does not allow DOM in simple sentences or CLLD structures. It only marks the direct object in a preverbal position after the subject (i.e., SOV). Specifically, we examined the role of crosslinguistic influence from Mandarin L1 in the acquisition of DOM in Spanish L2. By examining the L2 learners' performance in both simple and CLLD structures, we also examined the effects of structural complexity in the acquisition process.

A group of L2 learners of Spanish from China were tested and compared with a group of monolingual speakers from Spain. The results from an Elicited Production task showed that the L2 learners had similar target production in [+animate] contexts. Thus, Hypothesis 1 was not confirmed. In [−animate] contexts, where DOM is not allowed, the L2 learners patterned with the monolingual controls in simple sentences. However, in contrast to what was predicted, they did show more errors of commission in CLLD structures compared to the control group.

The fact that the L2 learners tended to overextend personal *a* in [−animate] contexts may be related to two reasons: on the one hand, Mandarin also exhibits direct object marking of some sort, and that marking is obligatory when the object is located in the lower extreme of the definiteness scale, i.e., being non-specific or indefinite. Our results are consistent with Guijarro-Fuentes & Marinis' (2009) study, which found that Catalan-Spanish bilinguals had the tendency to overproduce the personal *a* in a completion task, in contrast to their English-speaking counterparts who tended to omit the DOM. On the other hand, regarding the crucial difference in CLLD structures, the significant overextension may be related to the topic-marking function of *a*-marking in CLLD structures (Leonetti, 2004) and to Mandarin being a topic-prominent language. It is possible that the Mandarin-speaking L2 learners overextend this topic-marking function to the [−animate] contexts where the marking is not allowed.

The results also showed that structural complexity does not exert its effects as a single factor. However, there was an interaction effect between animacy and complexity in the production of Spanish DOM throughout the two groups, which suggests that the participants' treatment of [+animate] and [−animate] contexts in simple sentences was different but not as much as in CLLD contexts. In other words, the target-like production or omission of DOM appears to be affected by structural complexity. This appears to be supported by the results of the individual analysis: the L2 learners showed more inter-subject variability in CLLD structures than in simple sentences in both [+animate] and [−animate] contexts.

However, in the group analysis the L2 learners performed similarly to the controls in all contexts except in [−animate] CLLD structures. Interestingly, we also found that in CLLD structures the controls showed omission of target *a*-marking. This is consistent with previous studies (Nediger et al., 2016). However, while comparing the results from the native speakers and the L2 learners in CLLD structures at the individual level, we found the two groups showed different patterns of inter-subject variability. In [+animate] contexts, the native speakers showed more inter-subject variability in the target production of DOM compared to the L2 learners. In [−animate] contexts, conversely, the L2 learners showed more inter-subject variability in the non-target production of the *a*-marker. The controls were in the *zero-production* range. These findings, again, can be attributed to the topic-prominent nature of Mandarin. In [+animate] contexts, the L2 learners were aided by their L1 in the production of personal *a* in CLLD structures as a topic-marker, as they did not present significant differences compared to the controls. In [−animate] contexts, they overextended the marker when it was not allowed.

In conclusion, the results of the present study suggest that, for this particular population, the effects of L1 influence on Mandarin-speaking learners of Spanish are complex. The topic-prominent nature of Mandarin plays a facilitative role in the L2 learners' acquisition of Spanish DOM in CLLD structures. On the other hand, the effects of structural complexity are confounded by the topic-prominent nature of Mandarin. Mandarin speakers showed a tendency to overextend the *a*-marker in CLLDs where it is disallowed. In this sentence type, they might have easily acquired the topic marking function of Spanish DOM and overextended this function, regardless of the semantic constraints of the direct object. It is important to note that the L2 learners have achieved a high level of DOM knowledge at the time of testing. However, the fact that [−animate] CLLD structures were the only contexts in which the L2 learners differed from the controls suggests that Mandarin might be the source of this overextension. Influence from Mandarin facilitated the L2 learners' recognition and overgeneralization of the topic-marking function of Spanish DOM. This suggests that as far as the effects of structural complexity are concerned, the topic-prominent nature of Mandarin plays an underlying role in the L2 acquisition of Spanish DOM. Future studies would benefit from examining Mandarin-speaking L2 learners of different levels of proficiency to examine potential interaction between proficiency and structural complexity. Furthermore, comparing the performance of L2 learners of Spanish with typologically different L1s in simple and complex sentence structures would contribute to a more comprehensive picture of the effects of structural complexity as a function of typological similarity.

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