*Article*

# Does Typological Proximity Really Matter? Evidence from Mandarin and Brazilian Portuguese-Speaking Learners of Spanish

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**Abstract:** The present study examines the role of typological proximity in the acquisition of Differential Object Marking (DOM) in Spanish among eighteen ($n = 18$) Mandarin-speaking second language (L2) learners and sixteen ($n = 16$) Spanish heritage speakers (HSs) with Brazilian Portuguese (BP) as their dominant language. Specifically, we investigate the extent to which language proximity (languages are members of the same family) plays a role in the complete specification of the relevant features constraining DOM marking in Spanish. Results from an elicited production task and an acceptability judgment task (AJT) showed no support for the typological proximity model (Rothman 2010). There were also no age of onset of acquisition effects, in contrast to what was expected. The post-puberty Mandarin L2 learners outperformed the BP HSs in most of the conditions examined, suggesting a role for language instruction. Results are discussed along the lines of Liceras and Alba de la Fuente's (2015) proposal whereby the locus of transfer is more related to the typological similarity between the languages at the microparametric level than to language proximity itself.

**Keywords:** Spanish Differential Object Marking; Chinese learners of Spanish; typological proximity model; Spanish heritage speakers

## 1. Introduction

The present study examines the role of typological proximity in the acquisition of Differential Object Marking (DOM) in Spanish among Mandarin-speaking second language (L2) learners and Spanish heritage speakers (HSs) with Brazilian Portuguese (BP) as their dominant language. Specifically, we investigate the extent to which language proximity/closeness (languages are members of the same family) plays a role in the complete specification of the relevant features constraining DOM marking in Spanish. We extend previous work by investigating (1) the role of typological proximity in language development, as postulated by Rothman's 2010 Typological Primacy Model (TPM), and (2) by analyzing the acquisition process among Mandarin/Spanish bilinguals, a language pair so far underexplored in the L2 acquisition literature (Cuza et al. 2013; Jiao 2017). Furthermore, we aim to inform current debate on the role of age and maturational constraints in the acquisition process by testing Spanish heritage speakers born and raised in Brazil and with BP as their L1 (Giancaspro et al. 2015; Montrul 2008; Montrul et al. 2011).

Animate and specific objects in Spanish are obligatorily marked (i.e., *Dora visitó **a** su padre* ('Dora visited her father')), while inanimate and non-specific objects are not (i.e., *Dora visitó el museo* 'Dora visited the museum')) (Aissen 2003; Bossong 1991; Leonetti 2004). However, BP does not typically mark direct objects, leading to potential cross-linguistic influence effects and patterns of

optionality in L2 learners and HSs of Spanish. Mandarin, in contrast, is argued to mark direct objects in a much more limited/restricted way than Spanish (only in preverbal contexts) (Thompson 1973; Yang and Bergen 2007).

Previous research among Spanish-English bilinguals learning BP as a third language (L3) shows illicit overextension of DOM to BP, leading to non-facilitative transfer (Giancaspro et al. 2015; Montrul et al. 2011). Rothman (2010, 2011) argued that typological proximity determines the source and directionality of transfer in the initial state of L3 acquisition. However, Liceras and Fuente (2015) argued quite convincingly that L2 grammar is not affected by typological proximity per se but rather, by typological similarity. The authors state that languages like Spanish and French are typologically-close but instantiate significant microparametric distinctions that result in cross-linguistic interference and optionality. This proposal is along the lines of Kayne (2005) definition of microparameters (microparametric syntax) that differentiate closely-related languages or dialects. Intralanguage differences or similarities can lead to either negative or facilitative transfer, respectively, regardless of the typological proximity of the languages in contact.

We contribute to previous work by investigating the Spanish grammars of Mandarin L1/Spanish L2 speakers and BP L1/Spanish HSs. These two groups diverge not only in belonging to two typological distant languages but also in regard to (1) the age of onset of acquisition (adulthood vs. birth respectively) and (2) the type of input received. By type of input, we mean formal vs. naturalistic input. The Mandarin speakers were exposed to classroom instruction in Spanish in China as part of their major; the HSs were exposed to Spanish at home from their parents. However, the two groups are similar in that both of them were exposed to reduced Spanish input in either China or Brazil. If language typology and age of onset of acquisition play major roles in bilingual development, we would predict BP speakers to outperform the Mandarin-speaking L2 learners, as BP is typologically closer to Spanish, and the HSs were exposed to Spanish from birth at home. However, it is also possible that there will be no role for typological proximity as Mandarin is typologically similar to Spanish, microparametrically speaking, allowing some sort of DOM.

In what follows (Section 2), we discuss previous work on the syntax and semantics of DOM in Spanish, Mandarin and BP. This is followed by a summary of previous research on the acquisition of DOM in L2 and heritage Spanish, the issue of typological proximity vs. similarity and the research questions and hypotheses (Section 3). Section 4 presents the study, including participant characteristis and tasks. The results are presented in Section 5, followed by the discussion and the conclusions in Section 6.

## 2. Direct Object Marking in Spanish, Mandarin and Brazilian Portuguese

### 2.1. Object Case Marking in Spanish

Differential Object Marking refers to the overt morphological marking of direct objects to contrast the direct object with the subject (Aissen 2003; Bossong 1991). This cross-linguistic phenomenon is argued to be regulated by the semantic features of animacy and specificity (Aissen 2003). However, there is no consensus on which of the two semantic features is the driving force of DOM in Spanish. Some authors argue for animacy (e.g., García 2007; Leonetti 2004; Rodríguez-Mondoñedo 2007), whereas others argue for specificity (e.g., Fábregas 2013; Laca 2006; Torrego 1998). In Spanish, animate and specific direct objects are overtly marked with the preposition *a* (functioning as the case marker), whereas other direct objects are not usually marked. Additionally, the telicity of the predicate, the agentivity of the subject and the ability to select different complements of the verb are also argued to constrain Spanish DOM (Fábregas 2013; García 2007; Von Heusinger 2008). Currently, there is no consensus on one specific factor nor on the exact constraints that regulate this grammatical phenomenon (Torrego 1998; Zagona 2002).

Syntactically, marked direct objects in Spanish are argued to be at a higher position than unmarked objects (Torrego 1998). Torrego (1998) suggested that in a VP configuration, there are two

specifiers that are occupied, respectively, by the subject and the marked object. The marker *a* has a D-feature, and the marked accusative is raised to the specifier position by the D-feature in v, as shown in (1). Torrego argued that only specific direct objects (DOs) can rise to the higher specifier position occupied by *a*-marked DOs. She also indicated that this prominent position licenses a secondary agentive role to the DOs and denotes the eventive reading of the verb. Thus, the DOs in this position are usually animate and the predicates are frequently eventive. This is represented in (1).

1.
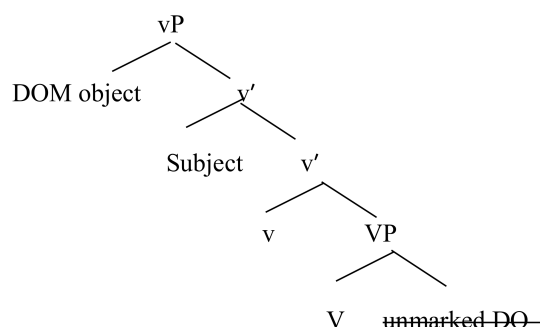


Spanish DOM is closely related with clitic left-dislocated (CLLD) structures.[1] In CLLD sentences, the dislocated object is doubled by a clitic that checks the accusative case and shares the *phi*-features with a dislocated noun phrase (NP), as shown in (2) (Sportiche 1996; Zapata et al. 2004).

2.

| A Juan, | Rosa | lo | vio |
|---------|------|-----|-----|
| to John, | Rosa | him | saw |

'Rosa saw John.'
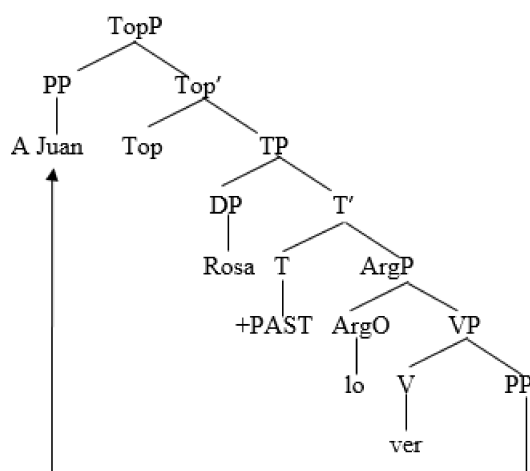


Diesing (1992) argued that a position above v is associated with a specific reading. Leonetti (2004) acknowledged that it is the topicality what forces the specific reading of the proposed NP and that the marker *a* in CLLD structures also serves as a topic marker. Evidence of this is that there are cases

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[1]    The accusative case marking in Spanish occurs in sentences with topicalized personal pronouns (Pensado 1995; Von Heusinger and Kaiser 2005). Von Heusinger and Kaiser (2005) noticed that Spanish DOM extends from personal pronouns in topicalized sentences to mark all definite DOs, followed by specific indefinite DOs. In a recent study, Iemmolo (2010) examined the relationship between DOM and topicality in Romance languages like Catalan, Italian dialects and two French varieties. The author found that for these languages, DOM is motivated by the markedness of a topicalized noun phrase.

where the marking of the NP in simple sentences is optional, but marking is obligatory in CLLD sentences, as shown in (3).

3. a. A muchos estudiantes,      ya      los      conocía
     to-DOM many students,    already    them    I knew
     'I already knew many students.'

    b. Ya           conocía    (a)       muchos estudiantes
     already      I knew    (to)-DOM   many students
     'I already knew many students.'            (Leonetti 2004, p. 86)

To summarize, in Spanish, among other constraints related to the verb and the predicate, a direct object is overtly marked if it is [+animate, +specific]. This phenomenon exists both in simple sentences and syntactically more complex CLLD sentences where the *a*-marking also functions as a topic marker.

### 2.2. Object Case Marking in Mandarin

Mandarin does not exhibit DOM of the Spanish type in simple sentences, as shown in (4a and 4b). In contrast to Spanish, Mandarin only overtly marks direct objects with the particle *ba* when it is moved to the preverbal position, as shown in (5a–5c) (Thompson 1973).

4. a. Xiaoli     kanjian-le    Xiaozhang       (simple sentence) [+animate, +specific]     -DOM*
     Xiaoli      see-PERF     Xiaozhang
     'Xiao Li saw Xiao Zhang.'

    b. Xiaozhang,    Xiaoli   kanjian-le    (topicalized sentence) [+animate, +specific]     -DOM*
     Xiaozhang,    Xiaoli   see-PERF
     'Xiao Zhang, Xiao Li saw.'

5. a. Ta    ba    yi    zhi       laohu     chi-le       [+animate, −definite]     -DOM√
     he    ACC   a     CLASSIFIER   tiger     eat-PERF
     'He ate a tiger.'

    b. Ta    ba    yi    ge        li       chi-le       [-animate, −definite]     -DOM√
     he    ACC   a     CLASSIFIER   pear     eat-PERF
     'He ate a pear.'

    c. Ta    ba    wo    da-le                      [+animate, +definite]     -DOM√
     he    ACC   me    hit-PERF
     'He hit me.'

The status of the marker *ba* and the derivation of *ba* sentences have attracted a great deal of attention in Chinese linguistics. The *ba* constructions correspond to agentive or causative sentences where the subject has the thematic role of agent or cause (Shi 2010; Weng 2012). The accusative case marker *ba* (Huang 1982; Yang and Bergen 2007) has also been analyzed as a verb (Bender 2000; Hashimoto 1971), or as a preposition (Li 2001; Travis 1984). Yang and Bergen (2007) provided a detailed analysis on the marking of the direct object in *ba* sentences. The authors argued that the constraints diverge from Aissen (2003) proposal in that the marking is also constrained by syntactic position, and that animacy and definiteness features function differently: animate indefinite and definite objects (as in (5a) and (5c) above) and inanimate indefinite objects (as in (5b)) are usually marked. However, the marking of inanimate definite objects is optional. De Swart (2007) argued that the animacy constraint of the object marking serves to distinguish the object from the subject, and that the definiteness constraint tends to license the marking of indefinite DOs.

Furthermore, DOs are marked only in a preverbal position (i.e., in Subject-Object-Verb (SOV) sentences) and there is no marking when the NP is moved to the clause's initial position. Syntactically,

the dislocation of the DO marked by *ba* to the preverbal position is argued to be a focalization structure and the marker *ba* is the head of FocusP (Wang 2014). According to Wang (2014) analysis, the marked DO is moved to a higher position than the complement of the VP. Thus, the example (5c) is generated as illustrated in (6): the marked DO originates as the complement of the verb. The core functional category v is chosen and the VP merges to it form v′. The VP thus moves to v′, and v assigns the accusative case to the DO and the external argument thus becomes the specifier 1, which merges with v′, forming another v′ layer. Subsequently, the EPP (Extended Projection Principle) feature of v requires the marked DO to be specifier 2 of the higher v′, thus it merges into the higher v′ forming a vP. The functional category FocusP extracts the specifier 1 of v′ to the SpecFocus position, while the Focus head *ba*, checks the [Focus] feature with the nearest constituent specifier 2 of vP (i.e., *wo* 'me'). Finally, the EPP feature of TP extracts the SpecFocus to the SpecTP position as the subject of the sentence.

6.　Ta　　ba　　wo　　da-le
　　he　　ACC　me　　hit-PERF
　　'He hit me.'
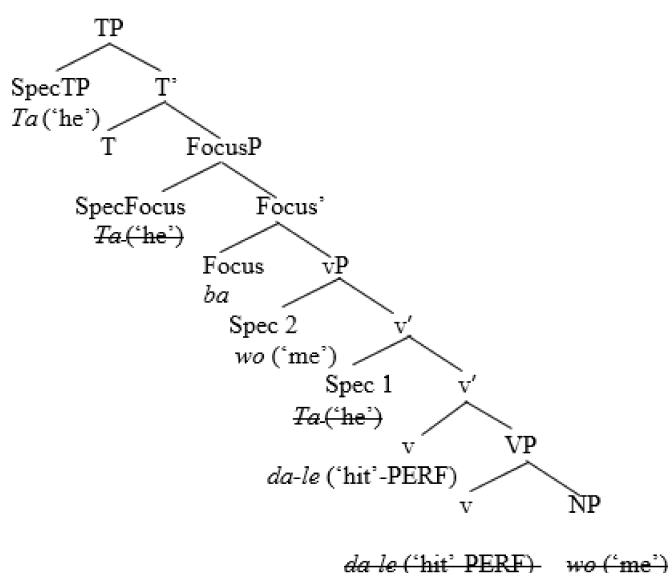


This analysis shows that in contrast with Spanish, in Mandarin, direct objects are only marked when focalized. Another peculiarity of Mandarin is that, unlike subject-prominent languages, such as English, Mandarin is a topic-prominent language (Li and Thompson 1976). It exhibits concurrence of multiple topics in one sentence, both clause external and clause internal (Huang 1982), as shown in (7).

7.　[Topic₁ Zhangsan　[Topic₂ neixie ren　　　　[Topic₃ lian yige　　　　[ta dou bu renshi]]]]
　　　　　　Zhangsan　　　　　　those people　　　　　　every one　　　　he does not know
　　'As for Zhangsan, of those people, he does not know a single one.'　　(Huang 1982, p. 88)

The different case-marking behavior between Mandarin and Spanish languages raises some learnability issues for Mandarin L2 learners of Spanish. On one hand, the null marking in SVO and OSV sentences in Mandarin and the different constraining conditions associated with the overt marking option suggests difficulty for Mandarin speakers in properly mapping Spanish markers to DOs in simple and CLLD sentences. On the other hand, however, the productivity of topicalization in Mandarin and the overt case marking in preponed DOs for the pragmatic-driven operation of focalization may facilitate the learning of Spanish DOM in CLLD sentences. The topic-prominent nature endows Mandarin speakers with more exposure to topicalized sentences; hence, they are more sensitive to the overt marker *a* as a topic marker (Leonetti 2004).

### 2.3. Object Case Marking in Brazilian Portuguese

Despite the typological proximity existing between BP and Spanish, BP does not typically instantiate DOM. However, it can differentially mark direct objects in some rare cases (Perini 2002; Ramos 1989; Thomas 1969). First, DOM can be found before *Deus* 'God' and other religious nouns (Perini 2002) and in verbs that express feelings (Ramos 1989), as shown in (8).

8. E então　　se　　　　ajoelhou　　　e　　　adorou　　a　　　Jesus
   and then　REFL　　knelt down　and　praised　DOM　Jesus
   'And then he knelt down and praised Jesus.'

Furthermore, DOM in BP can appear before pronouns. For example, as seen in (9) and (10), DOM can be found "in the written language, before object pronouns when modified or when emphasized" (Perini 2002, p. 444).

9. Ela　　ama　　a　　　mim, não　a　　　ele
   she　　loves　DOM　me,　not　DOM　him
   'She loves me, not him.'

10. Eles　me　　escolheram　a　　　mim
    they　me　　chose　　　　DOM　me
    'They chose me.'

Overall, the uses of Brazilian DOM are very restricted, which renders it very infrequent. Ramos (1989) showed that, in a corpus of Brazilian letters, the accusative *a* decreased across the centuries. While it was used 14.8% of the time in the 16th century, in the 20th century, it was only used 0.7% of the time.

### 3. Previous Research on the Acquisition of Differential Object Marking

The acquisition of DOM in Spanish has been found challenging among HSs and adult L2 learners with English as their L1 or dominant language (Guijarro-Fuentes and Marinis 2009; Montrul 2004, 2010a). Research has shown significant omission and commission errors, suggesting lack of attainment of the animacy and specificity features constraining DOM use and interpretation due to several factors, including cross-linguistic influence from English (Montrul and Bowles 2009; Montrul and Sánchez-Walker 2013), L2 proficiency effects (Guijarro-Fuentes 2012; Guijarro-Fuentes and Marinis 2007; Montrul et al. 2015; Nediger et al. 2016) and complexity issues (Cuza et al. forthcoming) among other factors.

In regard to L2 learners, Guijarro-Fuentes and Marinis (2007) investigated the grammar of 33 L2 learners of Spanish at different levels of proficiency and found that, despite advanced levels of proficiency, all speakers performed significantly differently to the native speaker controls. The participants showed low omission rates of personal *a* use in animate specific contexts. In a subsequent study, Guijarro-Fuentes (2012) found that advanced L2 learners converged with native speakers regarding the acquisition of animacy features as a constraining force in DOM use and intuition, but not in terms of specificity or verbal semantics. This suggests that some features are easier to acquire than others in interlanguage grammar, and that near native acquisition of DOM is possible at higher levels of proficiency. The author argued that the L2 learners start by learning the lexical features of [-animate] and gradually expand their knowledge to more complex clustering of features. Guijarro-Fuentes account for his findings on the basis of the Feature Reassembly Hypothesis (Lardiere 2008, 2009). According to this hypothesis, grammatical features are assembled differently across languages. If features in the L1 and the L2 are distributed differently at the morphosyntactic level, L2 learners have to reassemble the features of their L1 into their L2. The learnability issue for the L2 learners is to reorganize the distinctly distributed features and map them to the *a*-marking in the appropriate contexts.

Montrul (2010a) examined the acquisition of DOM among 72 L2 learners and 67 heritage speakers of Spanish via an oral narration task and an acceptability judgment task. Results from the narration task

found more omission errors among the L2 learners compared to the heritage speakers (about twice as many), and significant differences in terms of personal *a* expression compared to the controls. However, the advanced heritage speakers showed much fewer omission errors, and their speaking capability was not significantly different from the controls. These results suggest that native-like attainment among heritage speakers is plausible, confirming previous work (Montrul and Bowles 2009), and that there are clear age of onset of acquisition effects that provide an advantage for heritage speakers. However, the L2 learners outperformed the HSs in the acceptability judgment task (AJT), which is expected given their higher level of metalinguistic awareness.

In more recent work, Montrul and Sánchez-Walker (2013) investigated the acquisition of personal *a* among English/Spanish bilingual children and compared their results with adult heritage speakers, a group of long-term immigrants akin to the children's parents and monolingual speakers from Mexico. Results from an oral narration task and a picture description task showed significant omission errors among the child and adult heritage speakers compared to the controls. However, there were no significant differences between the adult heritage speakers and the long-term immigrants. The adult heritage speakers were able to learn the Spanish system despite some optionality. Similar results were found by Montrul et al. (2015), who attributed the difficulties with target DOM use to the complexity of the structure and the multi-functionality of the Spanish marker *a*.

In relation to child heritage speakers, Cuza et al. (forthcoming) examined the production of DOM in simple and CLLD contexts among Spanish/English child bilinguals and their parents via an elicited production task. The results showed significant omission errors in animate specific contexts among the bilingual children and long-term immigrants suggesting cross-linguistic influence effects and structural complexity issues. The authors argued that the animacy features constraining DOM among the bilingual children remain underspecified, crucially in CLLD contexts, due to syntactic complexity issues.

### 3.1. Typological Proximity vs. Similarity

The acquisition of DOM in BP as L3 among Spanish/English bilinguals was investigated recently by Giancaspro et al. (2015), following Rothman (2010) TPM. The TPM model proposes that the extent to which two or three languages in contact are typologically closer/more similar leads to either facilitative transfer or non-facilitative transfer due to general economy principles at the earlier stages of L3 acquisition. The more structurally similar the L3 is to the L1 or the L2, the more facilitative transfer there will be, as the language learners will draw upon their knowledge of known language(s) when learning a new one. Therefore, in the case of English L1/Spanish L2 bilinguals learning BP as L3, there will be facilitative transfer from Spanish given the structural similarity between Spanish and BP—both Romance languages—at the lexical and grammatical levels (Rothman 2011, 2013). Within this view, Giancaspro et al. (2015) examined the role of transfer from Spanish DOM into L3 BP among three groups of Spanish/English bilinguals (English L1/Spanish L2, Spanish L1/English L2, and English-speaking heritage speakers of Spanish) using a grammaticality judgment task. The participants rejected the use of DOM in the English tokens, showed consistent acceptance of unmarked inanimate objects and rejected unmarked animate objects. However, all three groups accepted BP tokens containing DOM, unlike the BP native speakers. The authors claimed that these findings support Rothman (2010) TPM, arguing that the similar results found across the three groups indicate transfer from Spanish, regardless of its status as L1 or L2, due to its similar typologically to BP. These findings are consistent with Montrul et al. (2011), who tested the acquisition of clitics in L3 BP among two groups of successive Spanish/English bilinguals using an oral production task and a written acceptability judgment task. The results showed transfer effects from Spanish (as L1 and L2), particularly with respect to DOM and clitics. The authors claimed that these results suggest that structural similarity matters in L3 acquisition.

In contrast with the TPM proposal, Liceras and Fuente (2015) proposed that the main contribution to bilingual speakers' optionality and transfer is not necessarily on typological proximity but rather typological similarity. The authors argue that the concept of typological proximity is elusive in the sense

that languages belonging to the same family (i.e., Spanish and French) can have striking differences micro-parametrically (i.e., different instantiations of the null-subject parameter or the presence of clitic doubling in Spanish but not in French), causing significant acquisition difficulties and consistent cross-linguistic influence effects due to divergent options in the L1 and the L2 (Liceras 1986; Han 2013; Selinker 1972). For the authors, there must be a difference, linguistically speaking, between typological proximity and typological similarity. Typological proximity is when the two languages share the same options of macro-parameters. Thus, in this sense, typological proximity can be applied to Spanish and French more so than to Spanish and English, but Spanish and French are not necessarily typologically similar, according to the authors. Typological similarity refers to cases when "a typological or formal universal is equally realized in these two typologically-close languages" (Liceras and Fuente 2015, p. 8). Thus, Spanish and French are typologically close, but not typologically similar in the way that they realize formal universals; typological proximity does not equal necessarily typological similarity. For this reason, it is imperative that when testing the TPM, we test a linguistic domain where both languages behave similarly, despite the existing typological proximity or distance between the two languages. For example, Korean-speaking L2 learners of Spanish might have an easier time learning the distribution of subject pronouns in Spanish than English-speaking learners, since both Korean and Spanish are pro-drop languages. In the case of Spanish and BP, this is evident by the fact that, for example, although both languages have a rich morphological system [+strong], the BP present tense selects only habitual aspectual meanings (as in English), whereas the Spanish present tense can select both habitual and ongoing meanings (Schmitt 1996), resulting in transfer and optionality. Similarly, although Spanish and BP are typologically close, they are not similar in the instantiation of DOM, leading to non-facilitative transfer as far as personal *a* is concerned.

More recent research within a Linguistic Proximity Model (LPM) (Westergaard et al. 2017) also provided evidence against a facilitative role from typologically closer languages in L3 acquisition. The LPM proposes that cross-linguistic influence in L3 acquisition comes from both previously-learned languages, rather than only from the typologically closer one, regardless of the order of acquisition. Thus, it is possible in a trilingual individual to have both facilitative and non-facilitative transfer from one or the two languages already learned (also see Slabakova 2017). Westergaard et al. (2017) examined the directionality of transfer in the acquisition of subject-auxiliary inversion in English L3 among Norwegian-Russian simultaneous bilingual children, and compared the results with age-matched Russian and Norwegian L2 learners of English. Particularly, they investigated whether the sole source of transfer always comes from the typologically more similar language. Results did not confirm a role of typological proximity in the directionality of transfer. The L1 Norwegian children over-accepted ungrammatical sentences in English with a word order that reflected verb movement (V2). In contrast, the bilingual children and the L1 Russian learners showed higher sensitivity to these types of errors. Moreover, the L1 Russian learners outperformed the bilingual children in the target acceptance of grammatical items, which suggests that Norwegian does not play a facilitative role in the acquisition of English despite the typological similarity between the two languages. They concluded, as in the case of Liceras and Fuente (2015), that it is not only an issue of typological proximity but also of structural similarity at the abstract level. The acquisition patterns will be different depending on the linguistic phenomena and not on the typological proximity between the L3 and the previously-acquired languages (Westergaard et al. 2017).

### 3.2. Research Questions and Hypotheses

If the tenets of the TPM are generalizable to other populations and stages of language acquisition, and are therefore open to further scrutiny, heritage speakers of Spanish with BP as L1 would be expected to outperform Mandarin-speaking learners as far as the acquisition of DOM is concerned, due to the typological proximity between the two Romance languages. However, as discussed by Liceras and Fuente (2015), this might not be necessarily the case, as BP and Spanish do not behave

similarly as far as this particular structure is concerned, leading to optionality and cross-language interference. We postulate the following research questions (RQs):

- RQ1: To what extent do heritage speakers of Spanish with BP as L1 and Mandarin-speaking L2 learners have knowledge of the semantic constraints regulating DOM in Spanish? If difficulties arise, will there be a difference between matrix and CLLD sentences?
- RQ2: Does typological proximity play a role in the acquisition of this domain for the advantage of BP learners, as predicted by the Typological Primacy Model?
- RQ3: In addition to typologically similarity effects, would the HSs benefit from being exposed to Spanish from an early age?

We predict that the HSs speakers will perform more target-like than the L2 learners given that (1) BP is typologically closer to Spanish than Mandarin; and (2) due to the fact that the HSs were exposed to Spanish from an early age at home. However, it is also possible that there will be no facilitative effects from BP, or that the Chinese learners will actually outperform the HSs given the fact that Mandarin is typologically similar to Spanish in allowing DOM in certain contexts. We also expect the Mandarin speakers to perform better with CLLD structures than with simple sentences as Mandarin is a topic-prominent language. Specifically, we hypothesize the following:

**Hypothesis 1.** *There will be significant differences between both experimental groups and the control participants regarding: (1) the target proportion of personal a use in animate specific contexts with simple and CLLD structures; (2) their acceptance of ungrammatical use of personal a in inanimate contexts in the AJT (errors of commission).*

**Hypothesis 2.** *The heritage speakers will outperform the L2 learners across both tasks given the typological proximity between Spanish and Brazilian Portuguese.*

**Hypothesis 3.** *The heritage speakers will outperform the L2 leaners due to age of onset of acquisition effects. The heritage speakers were exposed to Spanish from birth and will therefore outperform post-puberty L2 learners in both production and acceptability judgments.*

**Hypothesis 4.** *The Chinese learners will perform better with CLLD structures than with simple sentences as Mandarin is a topic-prominent language.*

## 4. The Experiment

### 4.1. Participants

Sixteen (*n* = 16) heritage speakers of Spanish with BP as their L1 (henceforward, HSs) (age range, 21–55; *M* = 33; *SD* = 8.6), and eighteen (*n* = 18) Mandarin-speaking L2 learners of the Spanish language (henceforward, L2 learners) (age range, 19–21; *M* = 20.1; *SD* = 0.75) participated in the study as experimental groups. A group of fifteen (*n* = 15) Spanish monolinguals from Spain served as the control group (age range = 19–48, *M* = 25.9; *SD* = 6.5). All of the participants completed a language background questionnaire (Cuza 2013) and an adapted version for Latin American Spanish of the DELE (Diploma de Español como Lengua Extranjera) proficiency test (Cuza et al. 2013) (HSs: *M* = 45/50; L2: *M* = 38/50). The DELE exam, the language background questionnaire, and the AJT were completed online via Qualtrics (Qualtrics, LLC, Provo, UT, USA). All of the participants signed a participant consent form and were compensated for their participation.

The HSs (*n* = 16), except for two participants, were born and raised in São Paulo, Brazil, and had been exposed to both Spanish and BP from birth. Their parents were born in Chile, Argentina, Spain, Paraguay, Bolivia or El Salvador. Their mean score in the DELE test ranged from 39 to 48 points out of 50 (*M* = 45.21; *SD* = 2.29). Regarding their pattern of language use, 73% (11/15) reported speaking

"mostly Portuguese" or "only Portuguese", while 20% (3/15) reported speaking "equal Portuguese and Spanish" or "slightly more Portuguese". Only 7% (1/15) of the participants reported speaking "Spanish" or "mostly Spanish" at home. Most of the participants reported using more Portuguese at school, work, and social situations, and 87% (13/15) indicated feeling more comfortable in Portuguese; the other 13% (2/15) indicated feeling comfortable in both Portuguese and Spanish.

The L2 learners (*n* = 18) were all born and raised in China. They were second year university students (Spanish majors) at a major university in Northeastern China. At the time of the experiment, the L2 learners were finishing their fourth semester. Mandarin was their L1, except for two participants who reported having a local dialect as their L1. In regard to patterns of bilingual language use, Mandarin was reported to be the language used at home and in social situations. Only one participant (6%) reported using "more Spanish" or "mostly Spanish" in social situations. Four participants (22%) reported speaking "slightly more Spanish" or "only Spanish" at work. The rest of the participants reported speaking Mandarin mostly in most contexts. Their mean score in the DELE test ranged from 33 to 44 points out of 50 (*M* = 38; *SD* = 3.29). The participants also reported knowledge of English which they had learned at high school. The control participants (*n* = 15) were all native speakers of Spanish, recruited and tested in Seville, Spain. Six of the speakers had a university degree, while nine had completed technical/professional education.

*4.2. Tasks*

4.2.1. Elicited Production Task

The elicited production task (EPT) consisted of a Question and Answer task (which was intended to elicit DOM use in simple sentences), and a Sentence Completion task (which was intended to elicit DOM production in CLLD sentences). In the Question and Answer task, the participants were presented with a preamble together with an image followed by a question, as in (11). In the Sentence Completion task, the participant was also presented with preamble and then asked to complete a sentence using the verb provided between parenthesis (12).

11.    Question and Answer Task

| **Preamble:** | *Juan está muy feliz hoy.* <br> 'Juan is very happy today.' | |
|---|---|---|
| | (here appeared a photo of Santa Claus greeting a child) | |
| **Prompt:** | *¿Por qué está tan feliz?* <br> 'Why is he so happy? | (*conocer* 'meet') |
| **Expected response:** | *Porque conoció **a** Papá Noel* <br> 'Because he met Santa Claus.' | |

12.    Sentence Completion Task

| **Preamble:** | *Hoy los periodistas no hicieron entrevistas . . .* <br> 'Today the journalists didn't do any interviews . . . ' | |
|---|---|---|
| | (here appeared a photo of Pablo being interviewed by some reporters) | |
| **Prompt:** | *pero . . .* <br> 'but' | (Pablo) |
| **Expected response:** | *<u>**a** Pablo</u> sí lo* <br> *entrevistaron.* <br> 'they did interview Pablo.' | |

There were 20 experimental tokens and 22 distractors. The experimental tokens were distributed equally between two conditions: [+animate, +specific] and [−animate, +specific], in which the use of DOM was expected and unexpected, respectively. Answers were coded as 1 if they were considered expected (i.e., the use of DOM preceding animate DPs and DOM omission before inanimate DPs) or as 0 if they were unexpected (i.e., DOM omission before animate DPs and use of DOM before inanimate DPs). Responses containing other structures unrelated to DOM were coded as "other". Participants were interviewed and recorded individually.

### 4.2.2. Acceptability Judgment Task

The acceptability judgement task had 32 experimental tokens and 44 distractors. All the tokens were introduced by a preamble followed by a question and a response (test token). The participants had to judge the response using a Likert scale ranging from 1 to 5, as represented in (13) below.

13.
**Preamble:** *Juan está muy feliz hoy. ¿Por qué está Juan tan feliz?*
'Juan is very happy today. Why is Juan so happy?'

**Prompt:** *Porque Juan conoció a Papá Noel*
'Because Juan met Santa Claus'

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| completely odd | odd | neither good nor bad | good | completely good |

If the participants found the token to be odd or slightly odd, they had to say why. The experimental tokens were distributed between eight conditions (*4 tokens each*) in which three variables were considered: animacy (animate or inanimate), sentence type (matrix or CLLD), and grammaticality (grammatical, ungrammatical). Grammaticality was controlled by the use or omission of DOM in relation to the animacy of the object. Table 1 below lists the various conditions tested:

**Table 1.** Acceptability judgment task (AJT): list of conditions tested.

| Sentence Type | Animacy | Grammaticality | Token Sample |
|---|---|---|---|
| Matrix | Animate | Grammatical | *Juan conoció a Papá Noel.*<br>'Juan met Santa Claus.' |
| | | Ungrammatical | *\*Ayer Rosa saludó Manuel.*<br>'Yesterday Rosa greeted Manuel.' |
| | Inanimate | Grammatical | *Cujo está mordiendo el zapato.*<br>'Cujo is biting the shoe.' |
| | | Ungrammatical | *\*Ayer Laura visitó al Museo de Chicago.*<br>'Yesterday Laura visited the Chicago Museum.' |
| CLLD | Animate | Grammatical | *Hoy los periodistas no hicieron muchas entrevistas, pero a Pablo sí lo entrevistaron.*<br>'The reporters did not do many interviews today, but Pablo, they did interview him.' |
| | | Ungrammatical | *\*El perro no apareció, pero el niño lo encontraron en el parque.*<br>'They could not find the dog, but the child, they did find him in the park.' |
| | Inanimate | Grammatical | *Garfield no hizo nada con la cerca, pero la casa sí la pintó.*<br>'Garfield didn't do anything to the fence, but the house, he did paint it.' |
| | | Ungrammatical | *\*Pilar siempre lleva sus libros en la mano, pero al diccionario lo lleva en la maleta.*<br>'Pilar always carries her books in her hand, but the dictionary, she takes it in the suitcase.' |

Note: The asterisk symbol means ungrammatical utterance.

In the following section, we present the group and individual results for each task.

## 5. Results

### 5.1. Elicited Production Task: Simple Sentences

Results from the production task showed low levels of DOM use in simple sentences among the BP learners (63%), compared to the Mandarin-speaking learners (82%) and the control group (100%). The BP learners also showed higher instances of omission (28%) in animate contexts. With inanimate objects, both experimental groups behaved similarly (81% vs. 83%) (Figure 1).
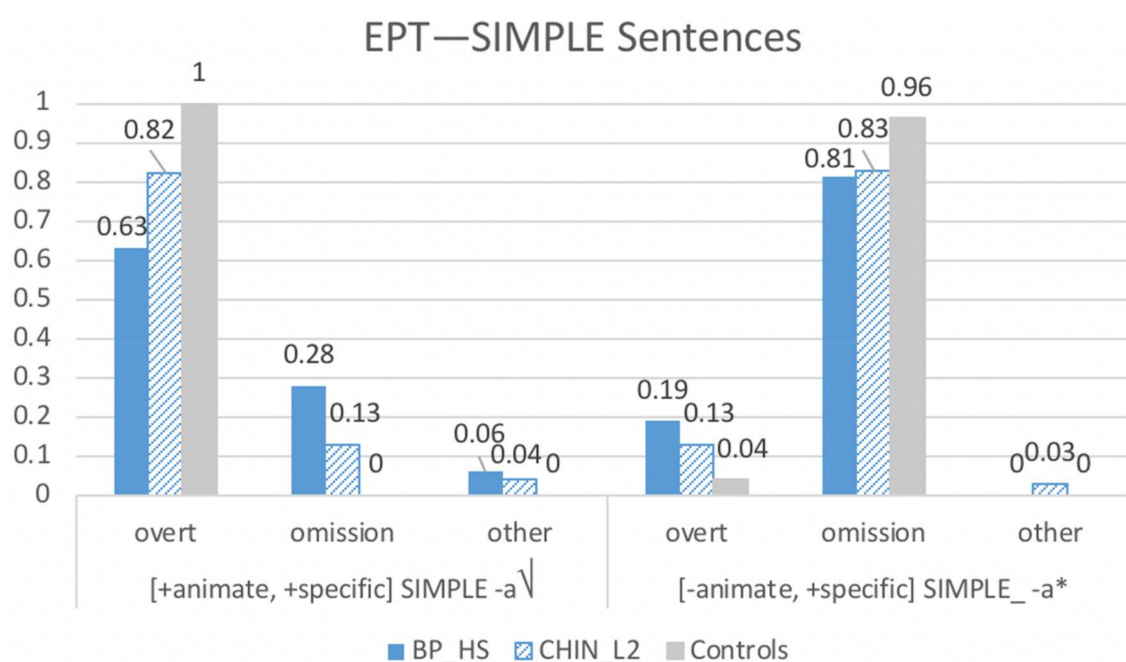


**Figure 1.** Elicited production task (EPT): proportion of Differential Object Marking (DOM) use, omission and other structures realized per group in simple sentences. BP_HS: Brazilian Portuguese Heritage Speakers; CHIN_L2: Chinese L2 learners.

A one-way ANOVA analysis comparing the means of personal *a* use in animate contexts was conducted to examine if there were any significant differences between groups (between-subject effects) in contexts where DOM was required ([+animate, +specific]). The results showed highly significant differences between groups ($F_{(2, 49)} = 7.87$, $p < 0.001$). To examine the locations of the differences, independent sample *t*-tests were conducted. The results showed significant differences between the HSs and the L2 learners ($t(32) = -2.18$, $p = 0.037$). Both experimental groups behaved significantly different from the controls, as predicted in H1 (HS-control, $t(29) = -4.25$, $p = 0.001$; L2-control, $t(31) = -4.13$, $p = 0.001$). Despite the typological differences existing between BP and Mandarin, and the fact that the HSs were exposed to Spanish from birth, the Chinese L2 learners significantly outperformed the HSs on this condition, disconfirming H2. In regard to [−animate, +specific] contexts (where personal *a* is not required), a one-way ANOVA analysis showed no significant differences between groups ($F_{(2, 46)} = 2.96$, $p = 0.062$).

To examine whether the differences between groups on each condition regarding simple sentences were also observable at the individual level, we conducted an individual analysis. For this analysis, we classified the participants according to their number of personal *a* uses as follows: upper range (4–5/5 instances); mid-range (3/5 instances); low range (1–2/5 instances) and zero production (0/5 instances). With animate objects, almost half of the HSs were in the mid-range (44%), while most of the L2 learners were in the upper range (83%). This confirms the group results, showing an advantage for the L2 learners. In regard to inanimate contexts, most of the HSs and the L2 learners had low range or

zero production. The control participants were all in the upper range for animate contexts and had low range or zero production for inanimate contexts. This is represented in Table 2.

**Table 2.** EPT: proportion of overt DOM use in simple sentences.

| | | | [+animate] | [−animate] |
|---|---|---|---|---|
| Group | | #Items | #Participants | #Participants |
| Heritage speakers (HSs) | *Upper range* | 4–5 | 25% (4/16) | 6% (1/16) |
| (*n* = 16) | *Mid-range* | 3 | 44% (7/16) | 0% (0/16) |
| | *Low range* | 1–2 | 13% (2/16) | 50% (8/16) |
| | *Zero production* | 0 | 19% (3/16) | 44% (7/16) |
| L2 learners | *Upper range* | 4–5 | 83% (15/18) | 0% (0/18) |
| (*n* = 18) | *Mid-range* | 3 | 11% (2/18) | 5% (1/18) |
| | *Low range* | 1–2 | 5% (1/18) | 44% (8/18) |
| | *Zero production* | 0 | 0% (0/18) | 50% (9/18) |
| Controls | *Upper range* | 4–5 | 100% (15/15) | 0% (0/15) |
| (*n* = 15) | *Mid-range* | 3 | 0% (0/15) | 0% (0/15) |
| | *Low range* | 1–2 | 0% (0/15) | 20% (3/15) |
| | *Zero production* | 0 | 0% (0/15) | 80% (12/15) |

EPT: Elicited production task; DOM: Differential Object Marking.

*5.2. Elicited Production Task: Clitic Left-Dislocated Sentences*

Regarding CLLD structures, the results showed low use of personal *a* marking among the Mandarin-speaking learners (66%), compared to the BP learners (83%) and the controls (80%), with animate specific contexts. With inanimate contexts, where omission was required, again, the Mandarin-speaking learners showed lower levels of omission (49%) compared to the BP learners (68%) and the controls (92%). These results are shown in Figure 2.
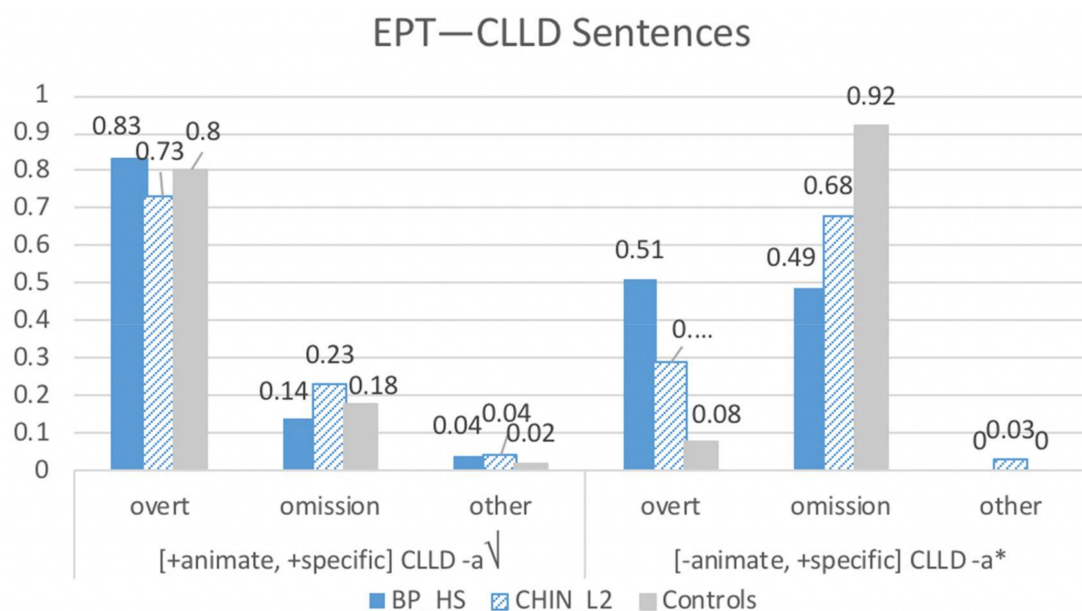


**Figure 2.** Elicited production task: proportion of DOM use, omission and other structures realized per group in clitic left-dislocated (CLLD) sentences.

A one-way ANOVA analysis comparing the means of personal *a* use in animate CLLD contexts per group showed no significant differences (F(2, 46) = 0.664, *p* = 0.52). All of the participants behaved

statistically similarly on this condition. In regard to inanimate CLLD contexts (where personal *a* is not required), a one-way ANOVA analysis revealed significant differences between groups ($F_{(2, 46)}$ = 8.24, *p* = 0.001). An independent sample *t*-test showed no significant differences between the HSs and the L2 learners (t(32) = 1.79, *p* = 0.082). However, there were significant differences between HSs compared to controls (t(29) = 4.45, *p* = 0.001) and L2 learners compared to controls (t(31) = 2.39, *p* = 0.023).

As in the case of the simple sentences, we conducted an individual analysis to examine if the group results were also observable at the individual level. With animate objects, more than half of the HSs and the L2 learners were in the upper range (63% and 67%, respectively). In this specific condition, the control participants did not behave target-like either, with only 47% of them in the upper range. In regard to inanimate contexts, both experimental groups were had low range or zero production. This was particularly so with the L2 learners. The control participants were target-like with this condition. These results are represented in Table 3.

**Table 3.** EPT: proportion of overt DOM use in CLLD sentences.

| Group | | #Items | [+animate] #Participants | [−animate] #Participants |
|---|---|---|---|---|
| HS | *Upper range* | 4–5 | 63% (10/16) | 38% (6/16) |
| (*n* = 16) | *Mid-range* | 3 | 25% (4/16) | 6% (1/16) |
| | *Low range* | 1–2 | 13% (2/16) | 38% (6/16) |
| | *Zero production* | 0 | 0% (0/16) | 19% (3/16) |
| L2 learners | *Upper range* | 4–5 | 67% (12/18) | 22% (4/18) |
| (*n* = 18) | *Mid-range* | 3 | 11% (2/18) | 25% (2/18) |
| | *Low range* | 1–2 | 17% (3/18) | 22% (4/18) |
| | *Zero production* | 0 | 5% (1/18) | 44% (8/18) |
| Controls | *Upper range* | 4–5 | 47% (7/15) | 0% (0/15) |
| (*n* = 15) | *Mid-range* | 3 | 27% (4/15) | 0% (0/15) |
| | *Low range* | 1–2 | 27% (4/15) | 6% (1/15) |
| | *Zero production* | 0 | 0% (0/15) | 94% (14/15) |

CLLD: clitic left-dislocated.

In contrast with simple sentences, there was more variability in regard to CLLD structures at the individual level. There was also an item effect with the item *pero al cajero lo robaron y le quitaron su dinero* 'but they stole money from the cashier'. Seven L2 learners and eight controls omitted the personal *a* in this item. Another item that caused difficulty for most of the participants was *pero el tren lo detuvo superman* 'but the train was stopped by superman', with eight HSs and five L2 learners overextending the personal *a* in this context, together with five control participants.

*5.3. Acceptability Judgment Task: Simple Sentences*

Results from the AJT with simple sentences showed no difficulties with grammatical sentences. The two experimental groups accepted grammatical items in animate contexts (DOM required) and in inanimate contexts (DOM not allowed). The control participants behaved almost at a ceiling level. In regard to ungrammatical sentences, both experimental groups were undecided in regard to animate and inanimate contexts (commission errors). With inanimate contexts, the HSs tended to accept DOM omission more than the L2 learners. The control participants behaved target-like in all conditions (Figure 3).
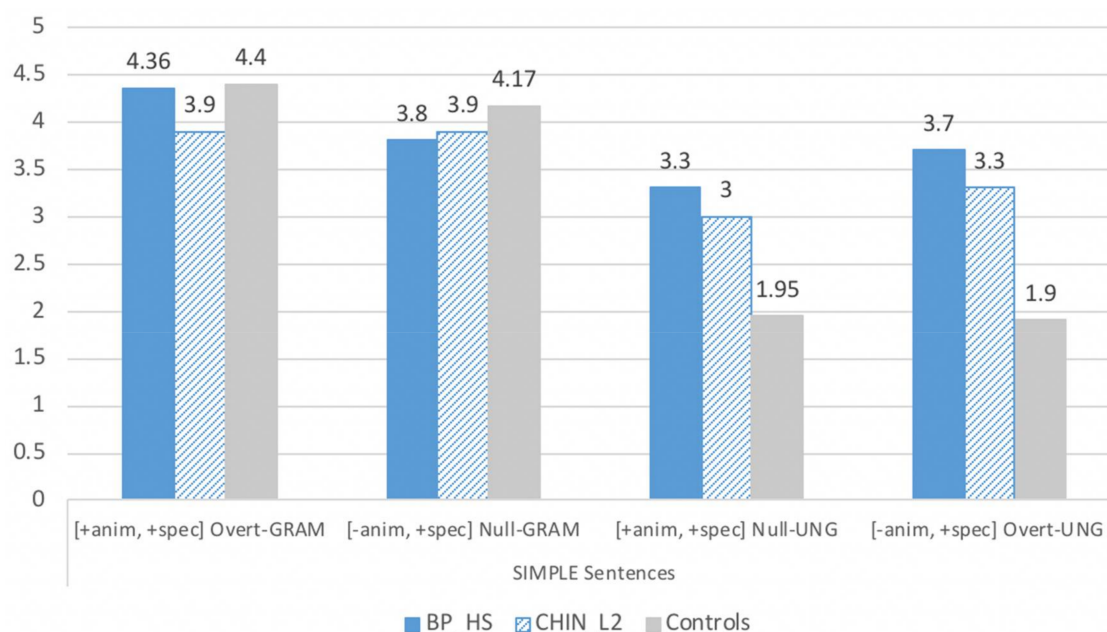
**Figure 3.** Acceptability judgment task (AJT): proportion of acceptance of grammatical and ungrammatical items in simple sentences per group. Overt: overt NP; Null: null object; GRAM: grammatical sentences; UNG: ungrammatical sentences.

Result from a one-way ANOVA comparing the means of personal *a* use in animate grammatical contexts showed significant differences per group ($F_{(2, 43)} = 4.96$, $p = 0.012$). Independent samples *t*-tests showed significant differences between the HSs and the L2 learners ($t(29) = 2.30$, $p = 0.029$) and between the L2 learners and the controls ($t(30) = -3.197$, $p = 0.003$). In this condition, the L2 learners were outperformed by the HSs and the control group. There was no interaction between the HSs and the controls ($p = 0.777$). The results also showed no significant differences between groups with inanimate grammatical contexts, where the personal *a* was not required ($p = 0.392$). In regard to ungrammatical sentences, an ANOVA analysis showed significant differences between groups with both animate ($F_{(2, 43)} = 8.12$, $p = 0.001$) and inanimate contexts ($F_{(2, 43)} = 8.12$, $p = 0.001$). Although the experimental groups behaved statistically similarly to each other, the HSs and the L2 learners behaved significantly differently from the controls in the two ungrammatical conditions ($p = 0.001$). It is interesting to note that both experimental groups behaved similarly to each other despite their typological differences, and the fact that the HSs were exposed to Spanish from birth.

A closer look at the individual results with ungrammatical sentences disconfirmed the group results with the L2 learners outperforming the HSs. In regard to animate contexts, 4/17 L2 learners accepted the ungrammatical items, and another 3/17 were undecided. However, the majority of the participants (8/17) rejected the sentences in contrast with HSs. The L2 learners also outperformed the HSs in terms of inanimate contexts (71% of the HSs accepted the ungrammatical items). This is represented in Table 4.

**Table 4.** AJT: proportion of acceptance of ungrammatical items in SIMPLE sentences.

|  |  |  | [+animate] | [−animate] |
|---|---|---|---|---|
| **Group** |  | **#Items** | **#Participants** | **#Participants** |
| HS | *High Acceptance* | 3–4 | 21% (3/14) | 71% (10/14) |
| (*n* = 14) | *Undecided* | 2 | 36% (5/14) | 14% (2/14) |
|  | *Low Acceptance* | 1 | 36% (5/14) | 0% (0/14) |
|  | *Zero Acceptance* | 0 | 7% (1/14) | 14% (2/14) |
| L2 Learners | *High Acceptance* | 3–4 | 24% (4/17) | 29% (5/17) |
| (*n* = 17) | *Medium Acceptance* | 2 | 18% (3/17) | 29% (5/17) |
|  | *Low Acceptance* | 1 | 12% (2/17) | 29% (5/17) |
|  | *Zero Acceptance* | 0 | 47% (8/17) | 12% (2/17) |
| Controls | *High Acceptance* | 3–4 | 0% (0/15) | 0% (0/15) |
| (*n* = 15) | *Medium Acceptance* | 2 | 20% (3/15) | 0% (0/15) |
|  | *Low Acceptance* | 1 | 20% (3/15) | 13% (2/15) |
|  | *Zero Acceptance* | 0 | 60% (9/15) | 87% (13/15) |

*5.4. Acceptability Judgment Task: Clitic Left-Dislocated Sentences*

Regarding CLLD sentences, both the experimental groups and the controls behaved target-like in their acceptance of grammatical items. The Chinese learners were not as target-like as the controls or the BP learners, but they did not differ much from each other. In regard to ungrammatical sentences, both experimental groups were undecided, with a mean acceptance rate of around 3/5. This level of indeterminacy with ungrammatical sentences was more salient with inanimate contexts (*a* overextension/commission errors). The control group behaved as expected (Figure 4).
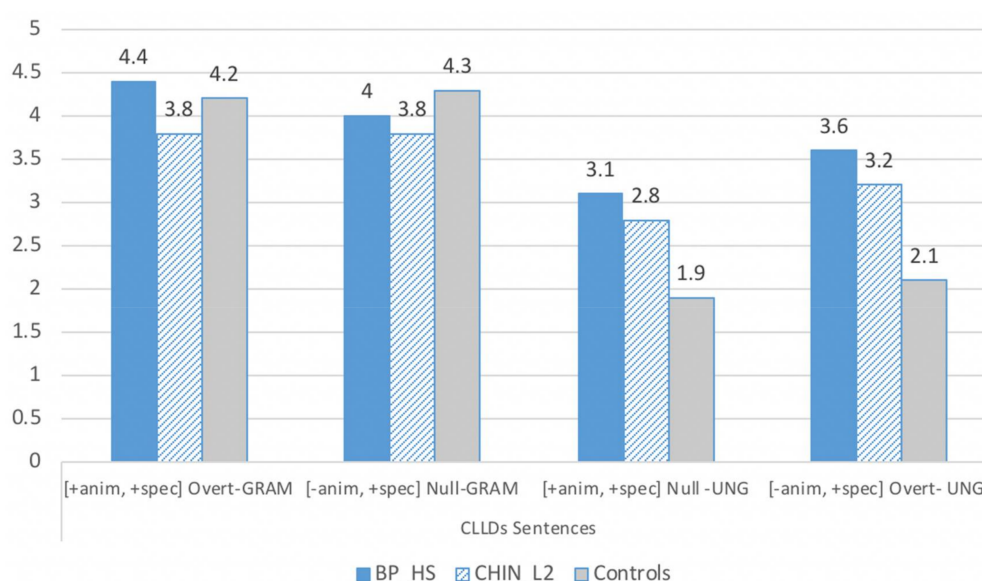


**Figure 4.** AJT task: proportion of acceptance of grammatical and ungrammatical items in CLLD contexts per group.

A one-way ANOVA comparing the means of personal *a* use in an animate grammatical CLLD context showed significant differences per group (F(2, 43) = 4.39, *p* = 0.018). However, significant differences occurred only between the L2 learners and the HSs (t(29) = 2.88, *p* = 0.007). The HSs outperformed the L2 learners There were no significant differences between the L2 learners and the controls (*p* = 0.099) or between the HSs and the controls (*p* = 0.244). In regard to the inanimate grammatical context, results also showed significant differences between groups (F(2, 43) = 4.02,

*p* = 0.025); however, significant differences occurred only between the L2 learners and the controls (t(30) = −3.42, *p* = 0.002). There were no significant differences between HS-L2 (*p* = 0.259) or between the HSs compared to the controls (*p* = 0.173). In regard to ungrammatical CLLD sentences, the results showed significant differences between groups with animate (F(2, 42) = 5.61, *p* = 0.007) and inanimate contexts (F(2, 43) = 12.25, *p* = 0.001). In both cases, the L2 learners and the HSs behaved significantly differently from the controls, but there were no significant differences between the two experimental groups. This is represented in Table 5.

**Table 5.** AJT: independent samples *t*-tests of ungrammatical (UNG) sentences (CLLDs).

| Group | Animate_UNG | Inanimate_UNG |
|---|---|---|
| HS–L2 | *p* = 0.617 | *p* = 0.272 |
| L2–control | *p* = 0.008 | *p* = 0.001 |
| HS–control | *p* =0.003 | *p* = 0.001 |

An individual analysis on the ungrammatical sentences confirmed the group results. Both experimental groups accepted a high number of ungrammatical items, crucially in the inanimate condition, compared to the controls. These results are shown in Table 6.

**Table 6.** AJT: proportion of acceptance of ungrammatical items in CLLD sentences.

| Group | | #Items | [+animate] #Participants | [−animate] #Participants |
|---|---|---|---|---|
| HS | *High Acceptance* | 3–4 | 29% (4/14) | 50% (7/14) |
| (*n* = 14) | *Undecided* | 2 | 21% (3/14) | 29% (4/14) |
| | *Low Acceptance* | 1 | 21% (3/14) | 14% (2/14) |
| | *Zero Acceptance* | 0 | 29% (4/14) | 7% (1/14) |
| L2 learners | *High Acceptance* | 3–4 | 41% (7/17) | 18% (3/17) |
| (*n* = 17) | *Medium Acceptance* | 2 | 6% (1/17) | 35% (6/17) |
| | *Low Acceptance* | 1 | 24% (4/17) | 24% (4/17) |
| | *Zero Acceptance* | 0 | 29% (5/17) | 24% (4/17) |
| Controls | *High Acceptance* | 3–4 | 0% (0/15) | 0% (0/15) |
| (*n* = 15) | *Medium Acceptance* | 2 | 0% (0/15) | 13% (2/15) |
| | *Low Acceptance* | 1 | 40% (6/15) | 33% (5/15) |
| | *Zero Acceptance* | 0 | 60% (9/15) | 53% (8/15) |

## 6. Discussion and Conclusions

The goal of the present study was to examine two main issues relevant to current research in second language acquisition and heritage language bilingualism. First, we wanted to investigate the extent to which typological proximity plays a significant role in the specification of the relevant features constraining DOM marking in Spanish, a syntax-semantics interface structure so far unexplored among Mandarin-speaking L2 learners of Spanish. Rothman (2010, 2011) has argued that typological proximity determines the directionality of transfer in earlier stages of L3 acquisition. Thus, we wanted to examine whether this is also the case in intermediate stages of L2 acquisition and heritage language development; and if not, whether it is in fact typological similarity rather than proximity that makes a relevant contribution in the degree of optionality vs. final attainment (Liceras and Fuente 2015). To achieve this goal, we tested a group of Mandarin-speaking L2 learners of Spanish and compared them with heritage speakers of Spanish with BP as their dominant language. Mandarin and Spanish are typologically distant languages, compared to BP and Spanish. However, Mandarin is similar to Spanish in that it allows DOM in certain contexts, in contrast with BP where DOM is generally not allowed. If Rothman's hypothesis on typological similarity is applicable to other instances of language development, we would expect HSs of Spanish with BP as their L1 to outperform Chinese-speaking L2

learners. Second, we discussed the issue of age effects as an advantage of the heritage speakers, as they were exposed to Spanish from an early age, in contrast with the Chinese learners. As pointed out by a reviewer, Mandarin-speaking L2 learners and BP-speaking heritage speakers of Spanish are probably not the most ideal group to examine issues relative to age effects as the dominant language of these two groups of participants is a confounding factor. However, the fact that the BP speakers were exposed to Spanish from birth at home and that the Mandarin speakers were exposed to Spanish via formal input is interesting to investigate in light of formal approaches to heritage language theorizing that place a significant weight on age effects as one of the main differences between second and heritage language development in relation to both maturational constraints but also to the quality and quantity of input (Cuza and Frank 2015; Cuza and López-Otero 2016; Montrul 2002, 2010b, 2011; Montrul et al. 2008). If the acquisition of Spanish morphosyntax in heritage language development is constrained by the age of onset of bilingualism, as has been argued quite profusely, we would expect the HSs to do better than the L2 learners, regardless of their L1. However, it is possible that the L2 learners might outperform the HSs in tasks that maximize explicit metalinguistic knowledge, like the acceptability judgment task, rather than in tasks that maximize implicit knowledge, like the elicited production task (Bowles 2011). It is also possible that since Brazilian Portuguese and Spanish are so similar, this might make it harder for the heritage speakers to tease the two languages apart in cases where they do not overlap. So, language proximity might turn out to be more of a curse than a blessing depending on the type of structure under consideration.

The results from the elicited production task showed significant differences between the experimental groups and the control participants in the proportion of personal *a* use in animate contexts with simple sentences, confirming Hypothesis 1. However, the L2 learners significantly outperformed the HSs (82% vs. 63%), disconfirming Hypothesis 2 and Hypothesis 3. Despite Mandarin being typologically distant from Spanish compared to BP, the Chinese learners behaved significantly better than the HSs. The results were also confirmed at the individual level, where 83% of the Mandarin-speaking L2 learners were in the upper range of DOM use compared to only 25% of the HSs. These results suggest that (1) language proximity is not a determinant factor in L2 or heritage language acquisition, as it has been argued to be for initial stages of L3 acquisition (Rothman 2011); and that (2) exposure to Spanish as a heritage language during early childhood is not a categorical contributor to native-like development, at least not as far as DOM is concerned (Montrul and Sánchez-Walker 2013). Although the HSs were exposed to Spanish at home during childhood, the input might not have been sufficient enough to activate this morphosyntactic knowledge. Furthermore, the HSs had not received formal instruction in the classroom, in contrast with the Mandarin speakers.

In regard to CLLD structures, the results showed no differences between groups in relation to their proportion of target DOM use in animate contexts, disconfirming Hypothesis 1. However, the individual results showed a small advantage for the L2 learners compared to the HSs in terms of target use (67% vs. 63%). In addition, as in the case of simple sentences, the L2 learners outperformed the HSs as a group with their target rate of personal *a* omission in inanimate contexts (68% vs. 49%), disconfirming Hypothesis 2 and Hypothesis 3. In this condition—where personal *a* was not required—51% of the HSs overextended the marker (errors of commission) compared to only 29% of the L2 learners. At the individual level, however, both experimental groups behaved similarly in regard to inanimate objects in CLLD contexts (Table 3). In contrast with Rothman (2013) proposal, these results suggest no effect for typological proximity, confirming more recent research (Liceras and Fuente 2015; Westergaard et al. 2017). The results also disconfirm Hypothesis 3, which expected age of onset of acquisition effects to be an advantage for the HSs. Furthermore, the results show more difficulty with CLLD structures in inanimate contexts than in simple sentences among the L2 learners, disconfirming Hypothesis 4. This might be related to the fact that CLLD structures are syntactically more complex than simple sentences (larger number of syntactic derivations) (Cuza et al. forthcoming).

In sum, the results of the EPT go against the typological proximity model. The advantage of the Mandarin-speaking learners over the HSs can be accounted for along the lines of

Liceras and Fuente (2015) proposal, whereby crosslinguistic interference and optionality are more affected by typological similarity than by proximity. This is also along the lines of the *Linguistic Proximity Model* (Westergaard et al. 2017). The fact that Mandarin is structurally similar to Spanish in that it instantiates some sort of DOM might have played a role in the participants' performance, compared to the BP speakers. Furthermore, we found no role for the age of onset of acquisition, in contrast with previous work (Johnson and Newport 1989; Montrul 2008). Although the HSs were exposed to Spanish from birth in Brazil, they seem to have undergone underspecification of the animacy features regulating DOM in Spanish, crucially in CLLDs contexts.

It is possible that the level of Spanish input these HSs received at home was not sufficient to activate certain morphosyntactic features, including DOM. This is not unusual among HSs of Spanish born and raised in contact with other dominant languages and with little access to the heritage language outside the home environment. As discussed earlier, 73% of them indicated speaking "mostly" Portuguese or "only" Portuguese, while only 20% (3/15) reported speaking "equal Spanish and Portuguese". Just one participant reported speaking mostly Spanish at home. These patterns of language use, in addition to the fact that 87% of them indicated feeling more comfortable in Portuguese, account for their low levels of performance. It is interesting though that the mean score in the DELE test was 45 points out 50 (advanced proficiency).

Results from the AJT showed significant differences between the experimental groups and the controls in regard to ungrammatical simple sentences, confirming Hypothesis 1. Both experimental groups behaved similarly at the group level, disconfirming Hypothesis 2. As in the case of the EPT, there were no advantages for the HSs over the L2 learners despite being exposed to Spanish from birth and despite BP being typologically closer to Spanish than Mandarin. This goes against Hypothesis 3 as well, which predicted age of onset of acquisition effects to be an advantage for the HSs.

A closer look at the individual data revealed that the L2 learners, in fact, outperformed the HSs in regard to animate and inanimate ungrammatical contexts (Table 4). In regard to CLLD ungrammatical sentences, the results show significant differences between groups for animate and inanimate sentences, confirming Hypothesis 1. However, the two experimental groups behaved similarly, disconfirming Hypothesis 2 and Hypothesis 3 (Table 5). The individual results, however, showed an advantage for the L2 learners with their rejection of ungrammatical sentences in inanimate contexts. Overall though, both experimental groups behaved relatively similarly for these two conditions. In contrast to what was predicted in Hypothesis 4, the L2 learners treated ungrammatical simple and CLLD sentences in the same way. The fact that Mandarin is a topic-prominent language did not play any role in their judgments of CLLDs sentences.

To conclude, in contrast to what was expected, we found no role for typological proximity in the acquisition of DOM by heritage speakers with BP as their L1, compared to Mandarin-speaking L2 learners. Overall, our results show either an advantage for the Chinese L2 learners or no differences between the two groups. This behavior is more along the lines of Liceras and Fuente (2015) account in that the crucial factor is not necessarily typological proximity in terms of language families, but rather, typological similarity in terms of the types of features that the languages in contact instantiate. The results also confirm the postulates of the LPM which argue that cross-linguistic influence might occur regardless of typological proximity. This prediction is more advantageous in that it is not limited to one specific population of learners or to one specific stage of language development. Although the predictions of the TPM model were made specifically for initial stages of L3 acquisition, one would expect that if in fact there is an advantage in language development due to typological proximity, this would be evident across different stages of acquisition and bilingual populations (L1, L2 or heritage). A theory that is limited to one particular population of language learners or to one particular stage in the acquisition process is difficult to falsify. Future research would benefit from comparing Mandarin-speaking L2 learners of Spanish with BP as L3, and examine other properties related to DOM in CLLD structures, such as clitic doubling, a property available in Spanish but not in Mandarin or BP.

## References

Aissen, Judith. 2003. Differential object marking: Iconicity vs. economy. *Natural Language & Linguistic Theory* 21: 435–83.

Bender, Emily. 2000. The syntax of mandarin. *Journal of East Asian Linguistics* 9: 105–45. [CrossRef]

Bossong, Georg. 1991. Differential object marking in Romance and beyond. In *New Analyses in Romance Linguistics*. Edited by Dieter Wanner and Douglas A. Kibbee. Philadelphia: John Benjamins, pp. 143–70.

Bowles, Melissa. 2011. Exploring the role of modality: L2-heritage learner interactions in the Spanish language classroom. *The Heritage Language Journal* 8: 30–65.

Cuza, Alejandro. 2013. Cross-linguistic influence at the syntax proper: Interrogative subject-verb inversion in heritage Spanish. *The International Journal of Bilingualism* 17: 71–96. [CrossRef]

Cuza, Alejandro, and Joshua Frank. 2015. On the role of experience and age-related effects: Evidence from the Spanish CP. *Second Language Research* 31: 3–28. [CrossRef]

Cuza, Alejandro, and Julio César López-Otero. 2016. The acquisition of the semantic values of the Spanish present and progressive forms in heritage speakers and L2 learners. *Spanish Journal of Applied Linguistics* 29: 462–86.

Cuza, Alejandro, Lauren Miller, Rocío Pérez-Tattam, and Mariluz Ortiz-Vergara. Forthcoming. Structure complexity effects and vulnerable domains in child heritage Spanish: The case of Spanish personal *a*.

Cuza, Alejandro, Ana Teresa Pérez-Leroux, and Liliana Sánchez. 2013. The role of semantic transfer in clitic-drop among simultaneous and sequential Chinese-Spanish bilinguals. *Studies in Second Language Acquisition* 35: 93–125. [CrossRef]

De Swart, Petrus Jacobus Franciscus. 2007. *Cross-Linguistic Variation in Object Marking*. Utrecht: LOT.

Diesing, Molly. 1992. Bare plural subjects and the derivation of logical representations. *Linguistic Inquiry* 23: 353–80.

Fábregas, Antonio. 2013. Differential object marking in Spanish: State of the art. *Borealis: An International Journal of Hispanic Linguistics* 2: 1–80. [CrossRef]

García, Marco. 2007. Differential Object Marking with inanimate objects. In *Proceedings of the Workshop "Definiteness, Specificity and Animacy in Ibero-Romance Languages"*. Edited by Georg A. Kaiser and Manuel Leonetti. Fachbereich Sprachwissenschaft (Arbeitspapier 122); Konstanz: Universitat Konstanz, pp. 63–84.

Giancaspro, David, Becky Halloran, and Michael Iverson. 2015. Transfer at the initial stages of L3 Brazilian Portuguese: A look at three groups of English/Spanish bilinguals. *Bilingualism: Language and Cognition* 18: 191–207. [CrossRef]

Guijarro-Fuentes, Pedro. 2012. The acquisition of interpretable features in L2 Spanish: Personal *a*. *Bilingualism: Language & Cognition* 15: 701.

Guijarro-Fuentes, Pedro, and Theodoros Marinis. 2007. Acquiring phenomena at the syntax/semantics interface in L2 Spanish: The personal preposition *a*. *Eurosla Yearbook* 7: 67–87. [CrossRef]

Guijarro-Fuentes, Pedro, and Theodoros Marinis. 2009. The Acquisition of the Personal Preposition *a* by Catalan-Spanish and English-Spanish Bilinguals. In *Selected Proceedings of the 11th Hispanic Linguistics Symposium*. Edited by Joseph Collentine, Maryellen Garcia, Barbara Lafford and Francisco Marcos Marin. Somerville: Cascadilla Proceedings Project, pp. 81–92.

Han, Zhao Hong. 2013. Forty years later: Updating the Fossilization Hypothesis. *Language Teaching* 46: 133–71. [CrossRef]

Hashimoto, Anne Y. 1971. Mandarin syntactic structures. *Unicorn* 8: 1–149.

Huang, C. T. James. 1982. *Logical Relations in Chinese and the Theory of Grammar*. Cambridge: Cambridge University.

Iemmolo, Giorgio. 2010. Topicality and differential object marking: Evidence from Romance and beyond. *Studies in Language. International Journal Sponsored by the Foundation "Foundations of Language"* 34: 239–72. [CrossRef]

Jiao, Jian. 2017. The Acquisition of Spanish Differential Marking in Chinese-Speaking L2 Learners. Unpublished Master's thesis, Purdue University, West Lafayette, Indiana.

Johnson, Jacqueline S., and Elissa L. Newport. 1989. Critical period effects in second language learning: The influence of maturational state on the acquisition of English as a second language. *Cognitive Psychology* 21: 60–99. [CrossRef]

Kayne, Richard. 2005. Some notes on comparative syntax, with special reference to English and French. In *The Oxford Handbook of Comparative Syntax*. Edited by Giglielmo Cinque and Richard Kayne. New York: Oxford University Press, pp. 3–69.

Laca, Brenda. 2006. El objeto directo. In *Sintaxis histórica del español, Parte 1. La frase verbal*. Edited by Concepción Company. México D. F.: Universidad Autónoma de México, pp. 423–79.

Lardiere, Donna. 2008. Feature-assembly in second language acquisition. In *The Role of Formal Features in Second Language Acquisition*. Edited by Juana Liceras, Helmut Zobl and Helen Goodluck. Mahwah: Lawrence Erlbaum, pp. 106–40.

Lardiere, Donna. 2009. Some thoughts on the contrastive analysis of features in second language acquisition. *Second Language Research* 25: 173–227. [CrossRef]

Leonetti, Manuel. 2004. Specificity and differential object marking in Spanish. *Catalan Journal of Linguistics* 3: 75–114. [CrossRef]

Li, Yen-Hui Audrey. 2001. *The ba-Construction*. Los Angeles: University of Southern California.

Li, Charles N., and Sandra A. Thompson. 1976. Subject and Topic: A New Typology of Language. In *Subject and Topic*. Edited by Charles Li. New York: Academic Press, pp. 459–89.

Liceras, Juana. 1986. *Linguistic Theory and Second Language Acquisition: The Spanish Non-Native Grammar of English Speakers*. Tübingen: Gunter Narr.

Liceras, Juana, and Anahí Alba de la Fuente. 2015. Typological proximity in L2 acquisition. The Spanish non-native grammar of French speakers. In *The Acquisition of Spanish in Understudied Language Pairings*. Edited by Tiffany Tiffany and Silvia Perpiñán. Amsterdam and Philadelphia: John Benjamins, pp. 329–58.

Montrul, Silvina. 2002. Incomplete acquisition and attrition of Spanish tense/aspect distinctions in adult bilinguals. *Bilingualism: Language and Cognition* 5: 39–68. [CrossRef]

Montrul, Silvina. 2004. Subject and object expression in Spanish heritage speakers: A case of morphosyntactic convergence. *Bilingualism: Language and Cognition* 7: 125–42. [CrossRef]

Montrul, Silvina. 2008. *Incomplete Acquisition in Bilingualism: Re-Examining the Age Factor*. Amsterdam: John Benjamins.

Montrul, Silvina. 2010a. Dominant language transfer in adult second language learners and heritage speakers. *Second Language Research* 26: 293–327. [CrossRef]

Montrul, Silvina. 2010b. How similar are L2 learners and heritage speakers? Spanish clitics and word order. *Applied Psycholinguistics* 31: 167–207. [CrossRef]

Montrul, Silvina. 2011. Morphological errors in Spanish second language learners and heritage speakers. *Studies in Second Language Acquisition* 33: 155–61. [CrossRef]

Montrul, Silvina, and Melissa Bowles. 2009. Back to basics: Incomplete knowledge of Differential Object Marking in Spanish heritage speakers. *Bilingualism: Language and Cognition* 12: 363–83. [CrossRef]

Montrul, Silvina, and Noelia Sánchez-Walker. 2013. Differential object marking in child and adult Spanish heritage speakers. *Language Acquisition* 20: 109–32. [CrossRef]

Montrul, Silvina, Rebecca Foote, and Silvia Perpiñán. 2008. Gender agreement in adult second language learners and Spanish heritage speakers: The effects of age and context of acquisition. *Language Learning* 58: 503–53. [CrossRef]

Montrul, Silvina, Rejanes Dias, and Hélade Santos. 2011. Clitics and object expression in the L3 Acquisition of Brazilian Portuguese: Structural similarity matters for transfer. *Second Language Research* 27: 21–58. [CrossRef]

Montrul, Silvina, Rakesh Bhatt, and Roxana Girju. 2015. Differential object marking in Spanish, Hindi, and Romanian as heritage languages. *Language* 91: 564–610. [CrossRef]

Nediger, Will, Acrisio Pires, and Pedro Guijarro-Fuentes. 2016. An Experimental Study of the L2 Acquisition of Spanish Differential Object Marking. In *Proceedings of the 13th Generative Approaches to Second Language Acquisition*. Cascadilla Proceedings Project; Somerville: Cascadilla Press, pp. 151–60.

Pensado, Carmen. 1995. El complemento directo preposicional: estado de la cuestión y bibliografía comentada. In *El Complemento Directo Preposicional*. Edited by Carmen Pensado. Madrid: Visor, pp. 11–59.

Perini, Mário. 2002. *Modern Portuguese: A Reference Grammar*. New Haven: Yale University Press.

Ramos, Jânia Martins. 1989. O emprego de preposições no português do Brasil. In *Fotografias Sociolingüísticas*. Edited by Fernando Tarallo. Campinas: Pontes Editores, pp. 83–93.

Rodríguez-Mondoñedo, Miguel. 2007. The Syntax of Objects: Agree and Differential Object Marking. Unpublished Ph.D. dissertation, University of Connecticut, Storrs, CT, USA.

Rothman, Jason. 2010. On the typological economy of syntactic transfer: Word order and relative clause attachment preference in L3 Brazilian Portuguese. *International Review of Applied Linguistics* 48: 245–73. [CrossRef]

Rothman, Jason. 2011. L3 syntactic transfer selectivity and typological determinacy: The Typological Primacy Model. *Second Language Research* 27: 107–28. [CrossRef]

Rothman, Jason. 2013. Cognitive economy, non-redundancy and typological primacy in L3 acquisition: Evidence from initial stages of L3 Romance. In *Romance Languages and Linguistic Theory*. Edited by Sergio Baauw, Frank Dirjkoningen, Luisa Meroni and Manuela Pinto. Amsterdam: John Benjamins, pp. 217–48.

Schmitt, Cristina. 1996. Aspect and the Syntax of Noun Phrases. Unpublished Ph.D. dissertation, University of Maryland, College Park, MD, USA.

Selinker, Larry. 1972. Interlanguage. *IRAL* 10: 209–31. [CrossRef]

Shi, Chun Hong. 2010. Cong ju shi qin zhong kan "bǎ" zi ju ji xiang guan ju shi de yu fa yi yi [A study of the grammatical meanings of the bǎ -construction and other relevant constructions from the perspective of construction group]. *Chinese Teaching in the World* 3: 291–309.

Slabakova, Roumyana. 2017. The scalpel model of third language acquisition. *International Journal of Bilingualism* 21: 651–65. [CrossRef]

Sportiche, Dominique. 1996. Clitic constructions. In *Phrase Structure and the Lexicon*. Edited by Johan Rooryck and Laurie Zaring. Dordrecht: Kluwer, pp. 213–76.

Thomas, Earl W. 1969. *The Syntax of Spoken Brazilian Portuguese*. Nashville: Vanderbilt University Press.

Thompson, Sandra A. 1973. Transitivity and the ba construction in mandarin Chinese. *Journal of Chinese Linguistics* 1: 208–21.

Torrego, Esther. 1998. *The Dependencies of Objects*. Cambridge: MIT Press.

Travis, Lisa DeMena. 1984. *Parameters and Effects of Word Order Variation*. Cambridge: Cambridge University.

Von Heusinger, Klaus. 2008. Verbal semantics and the diachronic development of DOM in Spanish. *Probus* 20: 1–31. [CrossRef]

Von Heusinger, Klaus, and Georg. A. Kaiser. 2005. The evolution of differential object marking in Spanish. Paper presented at the Workshop: Specificity and the Evolution/Emergence of Nominal Determination Systems in Romance, Berlin, Germany, October; pp. 33–69.

Wang, Shi Long. 2014. Yu duan li lun xia "bǎ" zi ju sheng cheng yan jiu [A study of *bǎ–construction under Phase theory*]. *Modern Chinese: Language Research* 5: 60–4.

Weng, Shan Shan. 2012. Xian dai han yu fei dian xing "bǎ" zi ju yan jiu [A Study of Non-Typical *bǎ*–Construction in Modern Mandarin]. Unpublished Ph.D. dissertation, Peking University, Beijing, China.

Westergaard, Marit, Natalia Mitrofanova, Roksolana Mykhaylyk, and Yulia Rodina. 2017. Crosslinguistic influence in the acquisition of a third language: The Linguistic Proximity Model. *International Journal of Bilingualism* 21: 666–82. [CrossRef]

Yang, Ning, and Geertje van Bergen. 2007. Scrambled objects and case marking in Mandarin Chinese. *Lingua* 117: 1617–35. [CrossRef]

Zagona, Karen. 2002. *The Syntax of Spanish*. Cambridge: Cambridge University Press.

Zapata, Gabriela C., Almeida Jacqueline Toribio, and Liliana Sánchez. 2004. The (In) Stability of Linguistic Systems: Evidence from the Performance of Spanish Monolinguals, Heritage Speakers, and Second Language Learners. Working Paper, University of Alberta Edmonton, Edmonton, AB T6G 2R3, Canada. Available online: http://www.rci.rutgers.edu/~lsanchez/publications/LL.pdf (accessed on 30 December 2017).