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L2 Spanish clitics among Brazilian Portuguese-speaking learners: the predictive role of lexical knowledge

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We examined the acquisition of third-person accusative clitics (e.g., *lo, la, los, las*) in L2 Spanish among Brazilian Portuguese (BP) speakers. In BP, the animacy of the referent is the main feature constraining accusative pronoun use while, in Spanish, animacy does not affect clitic realization. We tested Lardiere's (2008; 2009) Feature Reassembly Hypothesis (FRH), Schwartz & Sprouse's (1996) Full Transfer/Full Access hypothesis (FT/FA), and the suitability of productive vocabulary knowledge as a proxy for overall proficiency and its predictive power for the acquisition of clitics. 74 BP-speaking L2 Spanish learners and a comparison group of 23 native Spanish speakers completed a language background questionnaire, a vocabulary test (*Prueba Léxica de Español y Portugués/Prova Léxica de Espanhol e Português*, PLEP), an elicited production task, and an acceptability judgment task. Only the L2 Spanish participants completed the tasks in both languages. Our findings are consistent with the FRH, showing that the participants successfully disassemble animacy features from their L1 when acquiring the non-animacy-driven clitics in Spanish. However, animacy effects were found in the L2 production data but not in their receptive grammatical knowledge. Furthermore, animacy effects were not dependent on proficiency as no interactions between these factors were found, thus rejecting the existence of a full transfer stage.

1 Introduction

In this article, we investigate the acquisition of the syntactic and semantic properties of third-person accusative clitics (e.g., *lo, la, los, las*) in second language (L2) Spanish among Brazilian Portuguese (BP) adult speakers. Although BP and Spanish resemble each other significantly at the lexical and syntactic levels, the distribution of overt and null clitics is governed by different features in each language. That is, in Spanish, clitics are definiteness-driven since they are overt when the preceding determiner phrase (DP) is known or identifiable by the speaker or hearer, and null otherwise (Givón 1978; Campos 1986; Clements 1994; 2006; Sánchez 1999; Leonetti 2011).

In contrast, BP accusative pronouns are sensitive to animacy, since they are used most frequently when referring to human or animate objects and definiteness plays a secondary role in determining the distribution of null/overt accusative pronouns (Schwenter & Silva 2002; 2003; Kato & Raposo 2007; Kato et al. 2009; Sainzmaza-Lecanda & Schwenter 2017).

74 adult Spanish L2 learners took part in the study, along with 23 native Spanish speakers who served as a comparison group. We gathered production and acceptability data, as well as productive vocabulary knowledge data that we used as a proxy to determine overall L2 proficiency. The specific goals of the study were the following: First, we determined if the participants exhibited a variable knowledge of direct object forms in their L2 Spanish resulting from cross-linguistic influence. Second, using the Feature Reassembly Hypothesis (Lardiere 2008; 2009), we investigated whether the participants were able to disassemble the animacy feature present in the accusative pronoun system of their L1 and reassemble them into their Spanish L2 morphology, which is mainly driven by definiteness and not sensitive to animacy. Third, using a picture naming task, PLEP (*Prueba Léxica de Español y Portugués/Prova Léxica de Espanhol e Português*), we investigated whether the process of acquisition of the L2 Spanish clitic system could be predicted by the participants' productive lexical knowledge.

The article is organized as follows: The next section (2) presents an overview of the clitic/accusative pronoun system of Spanish and BP, and reviews some findings pertaining to the acquisition of L2 Spanish clitics. Next, the research questions and hypotheses are presented in (3), followed by the methods employed in the present study (4). The results and discussion of the findings are presented in (5) and (6), respectively. The last section of this paper contains the concluding remarks.

2 Literature Review

2.1 Third-person clitics in Spanish and Brazilian Portuguese

Spanish third-person accusative clitics (e.g., *lo, la, los, las*) are unstressed accusative pronouns that change syntactically and phonologically depending on the verb to which they are attached

(Givón 1978; Campos 1986; Clements 1994; 2006; Sánchez 1999; Borgonovo et al. 2006; Leonetti 2011; Cuza et al. 2013b; Zdrojewski & Sánchez 2014). In this language, third-person accusative clitics are definiteness-driven, meaning the clitics are used depending on whether the preceding determiner phrase (DP) is known or identifiable by the speaker or hearer regardless of its specificity (Givón 1978; Campos 1986; Clements 1994, 2006; Sánchez 1999; Leonetti 2011). That is, accusative clitics referring to definite objects are overt (Example 1) while those referring to indefinite objects are null (Example 2) (Campos 1986; Clements 1994; 2006; Sánchez 1999; Borgonovo et al. 2006; Zyzik 2008; Leonetti 2008, 2011; Cuza et al. 2013b; Nardelli & Lobo 2017). Some varieties of Spanish, nevertheless, feature null objects as a result of language contact, including Spanish varieties from Ecuador, Paraguay, Peru, and the Basque Country in Spain (Landa 1995; Sainzmaza-Lecanda & Schwenter 2017; Schwenter 2006).

(1)   *Encontré **el** libro, pero no **lo** compré* [+definite]
        find-PST.1SG. the book, but not cl-3SG.M.ACC buy-PST.1SG
        'I found the book, but I did not buy it'

(2)   *Encontré azúcar, pero no Ø compré* [–definite]
        find-PST.1SG sugar, but not buy-PST.1SG
        'I found sugar, but I did not buy it'

Additionally, depending on the nature of the verbal host, clitics can be attached as inflexions of their verbal host (known as enclisis) or they can also be independent lexical units placed in front of their verb (known as proclisis) (Pineda & Meza 2005). Proclisis, which is notably more frequent, occurs with finite verbs and negative imperatives (Example 3a-b), while infinitives, gerunds and affirmative imperatives have enclisis (Example 4a-b).

(3)   Finite verb:
      a.   *Quería la manzana verde, pero no **la** compré* [finite verb]
          want-PST.1SG the green apple, but not cl-SG.F.ACC buy-PST.1SG
          'I wanted the green apple, but I did not buy it'

      b.   *La fruta fresca está muy cara. No **la** compres* [negative imperative]
          the fresh fruit be-PRS.3SG very expensive, not cl.SG.F.ACC buy-IMP.2SG
          'The fresh fruit is very expensive. Do not buy it'

(4)   Non-finite verb:
      a.   *Quiero un libro y tengo dinero para comprar**lo*** [infinitive]
          want-PRS.1SG a book and have-PRS.1SG money to buy-INF.1SG cl- SG.M.ACC
          'I want a book and I have money to buy it'

      b.   *La tienda tiene el cuaderno que necesitas, cómpra**lo*** [imperative]
          the store have-PRS.3SG the notebook that you need-PRS.2SG, buy-IMP.2SG cl-SG.F.ACC
          'The store has the notebook you need, buy it'

   c.   *Por favor, repite el número porque estoy anotándo**lo*** [gerund]
      please, repeat-IMP.2SG the number because be-1.PRS.1SG write-GER cl-SG.M.ACC
      'Please, repeat the number, I am writing it down'

In BP, third-person accusative pronouns are not governed solely by definiteness. They are sensitive to animacy, meaning they are used more frequently when the object in question is human or animate (Schwenter & Silva 2002; 2003; Kato & Raposo 2007; Kato et al. 2009; Sainzmaza-Lecanda & Schwenter 2017). Although BP and Spanish share a significant amount of lexicon and similar syntax, the use of overt and null clitics is determined by different lexical and semantic features in either language. Examples 5 and 6 illustrate the contrast between Spanish and BP clitic use with regard to animacy, which is the focus of the present study.

(5)   [+animate, +definite]
    a.   *João conheceu a Maria pela Internet em 2012 e **a viu/viu ela** em pessoa em 2014*
       João meet-PST.3SG maria on the internet in 2012 and cl-SG.F.ACC see-PST.3SG in person in 2014

    b.   *João conoció a María en Internet en 2012 y **la vio** en persona en 2014*
       João meet-PST.3SG maria on the internet in 2012 and cl-SG.F.ACC see-PST.3SG in person in 2014
       'João met Maria on the Internet in 2012 and saw her in person in 2014'

(6)   [–animate, +definite]
    a.   *João imprimiu sua foto da viagem e **Ø viu** várias vezes durante o dia*
       João print-PST.3SG his pictures from the trip and ø see-PST.3SG many times throughout the day

    b.   *João imprimió su foto del viaje y **la vio** varias veces durante el día*
       João print-PST.3SG his pictures from the trip and cl-PL.F.ACC see-PST.3SG many times throughout the day
       'João printed his pictures from the trip and saw them many times throughout the day'

In Example 5, the accusative pronoun is overt in both languages; the DP, *Maria,* is animate, making the accusative pronoun overt in BP, and definite, making the clitic overt in Spanish as well. The DP in Example 6, *foto da viagem* 'picture from the trip,' is inanimate, so BP is more likely to present a null clitic, but because the phrase is definite, the clitic is overt in Spanish. In other words, in BP, null clitics commonly refer to inanimate referents in the discourse, yet overt accusative pronouns can refer to inanimate referents as well (Duarte 1989; Cyrino 1994; Creus & Menuzzi 2004).

    The marking of a direct object in BP can appear in two positions in relation to the verb: proclisis and enclisis, both of which are rare in spoken language and are more common in written

formal registers, which are acquired in educational settings (Duarte et al. 2005; Galves et al. 2005; Kato et al. 2009; Montrul et al. 2011; Washington 2015). Despite both forms being rare in BP, proclisis (7a) is more likely to occur in BP than enclisis (7b) (De Carvalho 1989; Nunes 2015). Examples 7a and b illustrate proclitics and enclitics, respectively:

(7) a. *Eu **o** vi, mas não disse nada*
         I cl-SG.M.ACC see-PST.1SG, but not say-PST.1SG nothing

     b. *Eu vi-**o**, mas não disse nada*
         I see-PST.1SG cl-SG.M.ACC, but not say-PST.1SG nothing
         'I saw him, but I said nothing'

BP also presents strong pronouns (*pronome tônico*) (e.g., *ele, ela, eles, elas*) as an alternative to clitics (Simões 2010). In fact, third-person clitics, including both proclitics and enclitics, have been claimed to not belong to the BP paradigm anymore (Corrêa 1991; Kato 1999; Galves 2002; Galves et al. 2005), and while they still appear in written texts, they do not occur as frequently as they do in European Portuguese, especially *o/a* (the third person accusative) and *lhe* (the third person dative) (Galves et al. 2005). Cyrino et al. (2000) explain that because of third person clitics diminishing in use, animate antecedents are typically referred to with strong pronouns (e.g., *ele, ela*), and this can be seen in examples 8 and 9 taken from Galves et al. (2005: 155):

(8) …*quando olho suas areias **contemplo** também a **ela**.*
     …when see-PRS.1SG her sand contemplate-PRS.1SG also acc.marker strong pronoun-SG.F
     'when I look at her sand I also contemplate her'

(9) …*quando olho as tuas areias **contemplo-a** também.*
     …when see-PRS.1SG your sand contemplate-PRS.1SG cl-SG.F.ACC also
     'when I look at your sand I also contemplate her.'

In sum, clitics in Spanish are overt when the DP is definite and may be null when the DP is indefinite. In BP, the distribution of accusative pronouns is sensitive to animacy, meaning that when the preceding DP is animate, the accusative pronoun is usually overt while when the phrase is inanimate, the accusative pronoun is more likely to take a null form. Also, overt clitics in BP can occur in two positions, proclisis and enclisis, which are rare in BP, particularly enclisis, and occur mostly in formal written contexts. Additionally, third-person clitics are leaving the BP paradigm and are being replaced by strong pronouns.

2.2 L2 acquisition of Spanish clitics

There have been extensive studies on the acquisition of clitics in Spanish (e.g, Duffield & White 1999; Borgonovo et al. 2006; Zyzik 2008; Montrul 2010; Cuza et al. 2013b; Iverson & Rothman 2015; Nardelli & Lobo 2017; Shin et al. 2017; 2019, amongst others), which include

those of Spanish clitic acquisition across various first language backgrounds such as Spanish heritage speaking natives of BP. L1 English-speaking learners of Spanish (Zyzik 2008), European Portuguese (EP) native speakers who learned Spanish as children (Nardelli & Lobo 2017), and Chinese-speaking learners of Spanish (Cuza et al. 2013b). Cuza et al. (2013b) found that Chinese-speaking learners of Spanish accept and produce null clitics in Spanish due to cross-linguistic influence. Similarly, Zyzik (2008) found that English-speaking learners of Spanish with low proficiency accept ungrammatical null clitics in Spanish. Collectively, these studies point to an effect of proficiency in the target-like use and acceptability of clitics in Spanish.

Previous research on clitic acquisition focuses mostly on EP (Costa & Lobo 2009; Costa et al. 2008; 2009; 2015; Madeira & Xavier 2009; Nardelli & Lobo 2017, among others). However, there have been few studies on BP accusative pronoun acquisition such as Kato et al. (2009) who investigated the acquisition of BP accusative pronouns among native speakers and found that strong pronouns were typically used in place of third-person clitics, but when the DP was inanimate, they were null. Also, Montrul et al. (2011) examined the acquisition of BP accusative pronouns by L1 English L2 Spanish L3 BP speakers, and found there to be transfer effects from Spanish, which is likely because of the similarity between the languages' structures and the cross-linguistic tendencies in L3 acquisition. In another study, Parma (2017), which investigated BP accusative pronoun acquisition among L3 BP learners who spoke English and Spanish before, found there to be no significant transfer, but a tendency for speakers to use more null clitics in inanimate and indefinite contexts, which the author traces back to Spanish.

There have, however, been several studies from Brazil, Spain, and Chile that research clitic acquisition by native BP speakers learning Spanish as adults (e.g., González & Barros 1994; González 1998; 1999; Sebold 2002; Simões 2010; 2015; Dos Santos 2011; Iverson & Rothman 2015; Yokota 2016; Cerda-Oñate et al. 2017; Dutra 2019; Lozado & Unternbäumen 2019). For instance, Simões (2010) looked at the effects of age and education level on the acquisition of third-person accusative clitics and found that participants ages 12–18 had a more permeable BP grammar, and participants over the age of 50 had a less permeable grammar, with their non-native intuitions leading them to accept more overt clitics. In a more recent study, Simões (2015) found a generational effect and noted that there was a coexistence of the BP grammar in the Spanish of L2 learners, but that this grammar was more permeable in younger learners than in older learners. Typically, prepubescent learners are less prone to fossilization than older learners, which means that grammatical errors are easier to correct in younger learners (Moskovsky & Ratcheva 2014).

Rothman & Iverson (2013) investigated restrictions on object drop in L2 Spanish among native speakers of BP in simple clauses and island environments. In this study, learners showed knowledge of the semantic restriction of definiteness in simple clauses but had variability in

their knowledge of syntactically complex structures. For instance, they respected the syntactic constraints in only one condition (DP islands), which shows that these learners know that some phonetically absent objects in Spanish are possible. However, unlike the control group of native speakers, the L2 learners were not able to distinguish between grammatical and ungrammatical dropped objects in the other conditions (subject-CP islands and adjunct islands) because they relied only on definiteness (the L1 ruling feature) to determine grammaticality. Furthermore, Yokota (2016) found that in the early stages of Spanish acquisition, BP speakers displayed a strong tendency to use the strong pronoun in their L2. This is likely the case because in BP, the strong pronoun is what is typically used, so they are experiencing a negative transfer from their L1, which can be corrected through formal education (Yokota 2016).

Other studies have found evidence of transfer between the participants' BP and Spanish, which affects the production of personal pronouns, such as the use of *ello* or *elle* instead of the masculine third-person pronoun *él* (González 1999; Cerda-Oñate et al. 2017; Lozado & Unternbäumen 2019). This transfer can be positive in constructions that are the same in BP and Spanish, but negative in cases with similar but not identical use of pronouns such as unstressed accusative pronouns, clitic position, and null objects (Cerda-Oñate et al. 2017). This finding was corroborated by González (1999) who found a high degree of fossilization in the interlanguage of Brazilians learning Spanish. The fossilization of interlanguage, as suggested by Dutra (2019), can be combated by conducting an instructional intervention in learning third-person clitics in Spanish. Results from Dutra (2019) showed that this intervention produced durable effects and progress in college students.

In addition to the aforementioned factors, the proficiency level of Spanish learners has a significant influence. One study by Sebold (2002) focused on the acquisition of overt clitics and their placement among beginner Spanish learners who have studied the language for six months, intermediate learners studying for a year, and advanced learners who have studied for at least three years. Results showed that participants had trouble with overt clitics as they used non-target null clitics, yet they did not struggle with the position of overt clitics, particularly as the language level increased. Similarly, Dos Santos (2011) concluded that null clitics show influence from BP into Spanish, but as the Spanish level increases, these errors are corrected. The author noted the need to further study how this process works.

In sum, previous studies on the acquisition of Spanish clitics by BP native speakers learning Spanish as an L2 have found that while there tends to be a coexistence of BP grammar in the Spanish of L2 learners (i.e., the tendency for speakers in early stages of acquisition to use strong pronouns in Spanish where clitics are typically used), younger speakers between 12 and 18 years of age have a more permeable BP grammar than speakers over the age of 50, likely due to less effects of fossilization (Simões, 2010; 2015; Yakota, 2016). An effective way to correct

this interlanguage is through formal education in the form of an instructional intervention explicitly teaching third-person clitics in Spanish (González 1999; Yakota 2016; Dutra 2019). Although there is a high level of transfer from the BP accusative pronoun system, it is typical for participants to correct their Spanish clitic errors as their language level increases (Sebold 2002; Dos Santos 2011).

3 Research questions

There are two proposals for L2 acquisition that inform our research questions. First, Lardiere's (2008; 2009) Feature Reassembly Hypothesis (FRH), which is a feature-based hypothesis that attributes L2 morphological variability to differences existing between the L1 and the L2. According to FHR, acquiring a language requires feature selection (available across languages) and assembly (matching features with morphology). L2 learners, therefore, need to identify, select, and assemble features in the L2 that may or may not be available in their L1. Having morphological competence in the L2 enables learners to successfully identify and select the appropriate features and match them with a target-like morphology.

An important consideration, as noted by Iverson and Rothman (2015), is that not all features are equally difficult to acquire. For instance, the target-like attainment of L2 syntactic knowledge requires learners to either learn, unlearn, or reconfigure the feature values to match particular requirements of the L2 (Lee & Lardiere, 2019). However, learners also need to acquire the semantic and pragmatic subtleties and all the different conditions under which a given feature is expressed (Iverson & Rothman 2015). In order to fully converge on the L2 system, L1 preemption is needed. L1 preemption (a concept adapted from L1 acquisition theory) requires the unlearning of L1 features that are irrelevant in the L2, while having to restrict parts of the L1 grammar to match the L2 syntax (Trahey 1992; Trahey & White 1993; Iverson & Rothman 2015). This proposal for L2 syntax can also be extended to semantics (Cuza et al. 2013a). During this process, learners might face increased difficulty when parsing failures are not easily recognizable due to a lack of positive evidence in the target-language input to force restructuring. This happens when there is a need to unlearn any conflicting features as opposed to only acquiring a new one (Smeets 2023) because, according to Montrul and Yoon (2009), inferring the impossibility or unavailability of a particular feature by simply noticing its absence in the input is a challenging task. Thus, more input in the target language or negative evidence might be needed to initiate the resetting.

Second, the Full Transfer/Full Access hypothesis (FT/FA; Schwartz & Sprouse 1996) can help predict patterns in early and subsequent L2 acquisition. Specifically, the FT/FA hypothesis predicts all initial stages begin by transferring the abstract properties of the L1 grammar (e.g., features and functional categories) into the L2 first (Full Transfer), and this is believed to constitute the foundational state of adult L2 acquisition. Subsequently, syntactic development occurs when

learners encounter challenges in assigning a representation to target input data, thereby having to restructure what was initially transferred so that it aligns with the L2. This subsequent step is assumed to be licensed by drawing options from Universal Grammar (UG) (Full Access).

While the starting point of L2 acquisition is Full Transfer for all, the endpoint of L2 acquisition cannot be systematically predicted, as noted by Schwartz & Sprouse (1996). In fact, adult L2 acquisition is known to exhibit a great degree of (non-target) variability based on the similarities and differences between the language pair (Rothman 2008) and other learnability considerations which depend on the structure in question (Schwartz & Sprouse 1996; Rothman 2008; Iverson & Rothman 2015). One learnability consideration that is accounted for by FT/FA is the subset-superset relationship. The prediction states that restructuring a parameter from a subset to a superset is more challenging than having to unlearn an L1 property that does not exist in the L2 (Rothman 2008) because, in such a case, there is no evidence in the input that will show the learner that their L1 strategy is ungrammatical in the L2. Therefore, and as noted by White (1991), the lack of positive evidence makes the need for parameter resetting less obvious, and thus, learners might need negative evidence to start this process.

Recall that, in Spanish, accusative clitic use is definiteness-driven, and the null/overt distribution depends on whether they refer to definite objects (overt) or to indefinite objects (null). In contrast, accusative pronouns in BP are sensitive to animacy, meaning that inanimate objects can be referred to by null clitics whereas animate objects are usually referred to by overt accusative pronouns. In addition to this feature difference, each language presents syntactic particularities in the use of clitics/accusative pronouns. In Spanish, for instance, the use of proclisis versus enclisis depends on the finiteness of the verbal host, and proclisis is notably more frequent. BP also features proclisis as well as enclisis (both of which are rare and typically restricted to formal, written language), but this language also presents strong pronouns as an alternative to clitics, which are the most common option in spoken language. This last option does not exist in Spanish. Therefore, in order to achieve target-like use and acceptability of clitics in their L2 Spanish, the BP-speaking participants have to unassemble animacy to converge on the L2 system. More specifically, the learners need to restrict the use of null clitics only with indefinite antecedents. Additionally, they need to restrict their use of strong accusative pronouns in Spanish.

In light of the literature reviewed in the previous section and the two proposals outlined in this section, the questions guiding the present study are the following:

RQ1: What knowledge of accusative clitics do BP-speaking L2 learners of Spanish have?

Hypothesis 1: We hypothesize that BP-speaking L2 learners of Spanish may have variable knowledge of direct object forms in their L2 Spanish, depending on their stage of L2 acquisition. This variability will be shown in the syntactic strategies employed, which can range from

a mere repetition of the DP, to a null clitic, to a more complex pronominalization using strong pronouns or proclisis. We expect non-target variability to be a result of L1 transfer, which as predicted by FT/FA, should occur more often among low-proficiency learners. Additionally, these learners might have difficulty preempting the increased syntactic complexity of the L1, and because the L1 grammar is a superset of the subset L2 grammar, parsing failures might not be evident given that the Spanish clitic input can be parsed using their BP grammar (Iverson & Rothman 2011; 2015; Rothman 2018).

RQ2: Is knowledge of accusative clitics driven by the animacy of their antecedents among BP-speaking L2 Spanish learners?

Hypothesis 2: We hypothesize that proficiency determines whether the L2 learners' clitics in Spanish are sensitive to animacy features, but we also expect to find variability in the data. Given that, in Spanish, enclisis is infrequent and strong pronouns are not grammatical, it is possible that even low proficiency L2 speakers know the available options in Spanish: either proclisis or null clitics. If animacy is successfully unassembled and definiteness is adopted as the ruling feature to select proclisis versus null clitics, then the data will support the full access claim, meaning that the L2 learners have access to universal features not used in their L1 accusative pronoun system. However, and following FRH, it is possible that the learners at the initial stage of L2 acquisition will not have unassembled the animacy feature. The reassembling of definiteness into the Spanish clitic system is expected to happen among learners in subsequent stages of acquisition. Non-target variability is expected as feature reconfiguration can be more challenging than feature acquisition (Montrul & Yoon 2009; Smeets 2023) because of L1 preemption difficulties. That is, the features that govern the distribution of null/overt clitics in Spanish and in BP (definiteness and animacy, respectively) are different, even though the L2 input can be parsed by the L1 syntax.

RQ3: Is the acquisition of L2 Spanish accusative clitics predicted by L2 productive vocabulary knowledge among BP-speaking learners?

Hypothesis 3: Our third hypothesis states this process is predicted by the participants' productive lexical knowledge, as measured by the PLEP (López Otero & Jimenez 2022). We acknowledge that lexical knowledge is an important component of language ability, as, in any language, the diversity of linguistic forms relies almost entirely on the lexicon, and even L1 grammatical development depends, to a large extent, on vocabulary knowledge (Bates & Goodman 1997). However, we also turn to Cilibrasi & Marková (2022) and posit that the relationship between lexical knowledge and proficiency is not causal, but correlational, and stems from increased target-language exposure and use.

4 Methods

4.1 Participants

The study comprised 97 adult participants: 72 L1 BP-L2 Spanish speakers ((54 female and 20 male; mean age = 33.84, sd = 9.87) who were all born and raised in Brazil, and lived in this country when data collection occurred) and 23 native Spanish speakers from Mexico. The L1 BP participants had learned Spanish in Brazil after puberty through formal education, and they spoke varieties of BP from all the regions in Brazil, with the Southeastern (n = 37) and Northeastern (n = 17) regions being the most represented, followed by the South (n = 10), Central-West (n = 2), and North (n = 1), while seven participants did not disclose what variety of BP they spoke. Participant recruitment occurred through a recruitment flyer that was shared on the website of the *Consejería de Educación en Brasil,* which is the institution that represents the Spanish Ministry of Education and Professional Training in Brazil. All the BP-speaking participants were attending or had graduated college at the time of testing. All the participants lived in urban areas of Brazil when data collection happened. Some of them had not received exposure to Spanish in a Spanish-speaking country (n = 22) whereas most of them had either studied, worked or visited at least one Spanish-speaking country (n = 52), including Argentina (n = 28), Spain (n = 26), Uruguay (n = 19), Chile (n = 18), Peru (n = 8), Bolivia (n = 7), Mexico (n = 6), Paraguay (n = 6), Colombia (n = 5), Dominican Republic (n = 2), Cuba (n = 1) and Ecuador (n = 1). The participants who reported visiting Bolivia, Ecuador, Paraguay and Peru also reported visiting other Spanish-speaking countries, indicating that they had been exposed to several varieties of native Spanish outside the classroom. Therefore, we do not expect regional variation in the use of null clitics among Spanish speakers to play a role in the L2 speakers' knowledge of clitic distribution.

The comparison group in this study consisted of 23 native Spanish speakers from East-Central and Northeastern Mexico. This group comprised 13 females and 10 males (mean age = 42.87, SD = 14.59). They were all born and raised in Mexico and were residing in the country at the time of data collection. Recruitment for this group involved posting on social media and using the snowball approach, in which participants help recruit additional potential participants. Among these native speakers, 20 had earned college degrees, while three had only completed high school. This group encompassed a diverse range of professions, including teachers, engineers, psychologists, hotel managers, and others.

4.2 Data collection instruments and procedures

Before conducting the study, the participants read and signed a consent form that was previously approved by the IRB and informed them of the length of the study, the procedures, and confidentiality of their data, as well as the compensation for their time (a R$50 gift card for a

store in Brazil or a $200 MXN gift card for a store in Mexico, which is the equivalent of a $10 USD gift card). All the gift cards were electronic codes that were distributed to the participants via email upon completion of the study.

The study had two main parts: First, the participants met with one of the researchers on Zoom to sign the consent form and to complete a language background questionnaire (LEAP-Q; Marian et al. 2007), as well as the *Prueba Léxica de Español y Portugués/Prova Léxica do Espanhol e Português* (PLEP; López Otero & Jimenez), which is a lexical knowledge test that was used as a proxy for general language proficiency. The PLEP is a picture naming task with 58 non-cognate items that are organized based on the lexical frequency. This task was administered first in Spanish and then in BP (for the L2 speakers only). Lexical frequency was controlled following the frequency data available in the *Corpus del Español* (Davies 2018a) and *Corpus do Português* (Davies 2018b). If participants struggled to recognize a picture, they were given semantic or phonemic cues. Correct naming before or after cues was marked as correct. If, even after receiving cues, participants failed to name the object in the picture correctly, the item was marked as incorrect. The scores for each language are reported in Table 1, which shows that the participants' lexical knowledge in BP is stronger and less variable than in Spanish, the L2. Appendix A contains the full version of the PLEP.

	Spanish PLEP	BP PLEP	DELE
Average	34.96/58	56.45/58	45.24/50
Standard deviation	11.80	2.13	3.76
Range	8–55	47–58	31–50 (only 3 participants below 40)

Table 1: DELE scores and PLEP scores of the PLEP in Spanish and Brazilian Portuguese among the L2 speakers.

Measuring language proficiency using productive lexical knowledge as a proxy is congruent with previous literature that has suggested that lexical range, sophistication, and richness in oral production tasks correlate with language dominance in bilingual populations (Daller et al. 2003; Pienemann et al. 2011; Gollan et al. 2012; Treffers-Daller & Korybski 2015). We believe that, in this case, increased vocabulary knowledge reflects more experience with the target language. Similarly, using the PLEP as a proxy for overall proficiency is congruent with research showing the power of picture-naming tasks (such as the Multilingual Naming Test, Gollan et al. 2012) in predicting language dominance (García & Gollan 2022; Sheng, Lu & Gollan 2014).

Following their completion of the PLEP via Zoom, participants were provided with a Qualtrics link and their unique participant code to proceed with the second phase of the study. The Qualtrics link directed them to a modified version of the DELE test (Cuza et al. 2013b), which assesses morphosyntax and lexicon, both of which these two languages share significantly. Table 1 summarizes the PLEP and DELE scores among the L2 speakers. Please note that the Spanish native speakers, who did not complete the DELE or the PLEP in BP, performed at ceiling in the Spanish PLEP (range = 56–58/58; M = 57.78; SD = 0.60).

The participants also completed, on Qualtrics, two experimental tasks: a written Elicited production Task (EPT) and an Acceptability Judgment Task (AJT), which were completed in Spanish first, and then, the bilingual participants completed the tasks in BP. The experimental tasks did not include test items examining indefinite antecedents; therefore, null clitics, although grammatical under a different condition, were not expected to be produced in the Spanish tasks. The AJT also did not contain items examining indefinite antecedents.

The EPT was used to examine the participants' use of clitics/accusative pronouns (or other forms such as strong pronouns) in their two languages based on the animacy of the object. This task required the participants to fill in the blanks with the appropriate use of clitics/accusative pronouns, and the desired verbs were given in parentheses. The condition *animacy* had two levels (animate vs. inanimate) based on the animacy of the direct object. All direct objects were feminine and singular. This task had 32 experimental items (64 distractors per language), distributed in two conditions (k = 8, 16 per language). Due to the high number of cognates between Spanish and BP and for consistency purposes, we avoided non-cognates in these controlled tasks. Table 2 provides sample items per condition in both languages and Appendix B includes all EPT test items.

Animacy	Spanish test item samples
Animate	*Juan conoció a María en Internet en 2012 y ____ (ver) en persona en 2014.* 'Juan met Maria on the Internet in 2012 and ____ (see) in person in 2014.'
Inanimate	*Joaquín rentó su película favorita y ____ (ver) tres veces en un día* 'Joaquín rented his favorite movie and ____ (see) three times in one day.'
Animacy	BP test item samples
Animate	*Mário perdoou a Alícia pelo erro dela e ____ (abraçar) fortemente.* 'Mario forgave Alicia for her mistake and ____(hug) tightly.'
Inanimate	*Carlos salvou a grande árvore e ____ (abraçar) por vários minutos.* 'Carlos saved the big tree and ____ (hug) for several minutes.'

Table 2: Spanish and Brazilian Portuguese EPT item samples per condition.

The AJT examined the participants' receptive knowledge of the clitic system. The AJT included 32 experimental items (64 distractors per language) distributed in four conditions ($k = 4$; 16 in each language). The participants were presented with sentences featuring grammatical and ungrammatical sentences with both animate and inanimate objects in each language. The participants were asked to rate each sentence using a Likert scale from 1 to 5 (1 – *muy extraño* 'very odd', 2 – *extraño* 'odd', 3 – *ni bien ni mal* 'neither good nor bad', 4 – *bien* 'good', 5 – *muy bien* 'very good'). Every time a participant rated an item 1 or 2, they were also asked to explain why, in order to confirm that they had rejected the item due to the phenomenon under examination. The items were counterbalanced and pseudorandomized. Tables 3 and 4 show the distribution of items according to conditions in both Spanish and BP, respectively. Please note that, given the variability regarding clitic realization in BP, we do not label any type of clitic as ungrammatical in the BP version of the AJT. Appendix B includes all AJT test items.

Animacy of the referent	Grammaticality	Spanish AJT test item samples
Animate	Gram.	*Juan conoció a María en Internet en 2012 y la vio en persona en 2014.* 'Juan met Maria on the Internet in 2012 and saw her in person in 2014.'
	Ungram.	*Mario perdonó a Alicia por su error y ∅ abrazó fuertemente.* 'Mario forgave Alicia for her mistake and hugged ∅ tightly.'
Inanimate	Gram.	*José rentó su película favorita y la vio tres veces en un día.* 'José rented his favorite movie and saw it three times in one day.'
	Ungram.	*Andrés sembró la planta de su amiga y ∅ cuidó durante el invierno.* 'Andrés planted his friend's plant and took care of ∅ during the winter.'

Table 3: Spanish AJT item samples per condition.

4.3 Data analysis

For this study, only Spanish language data were analyzed with the use of inferential statistics, which were performed with R (R Core Team 2021). The BP data were analyzed using descriptive statistics only as its main purpose is to serve as an L1 baseline for the L2 learners' acquisition of clitics in Spanish.

The data from the EPT were analyzed using two generalized linear mixed effects models (GLMM) with the help of the *glmer* function from the *lme4* package (Bates et al. 2015) in R. These two GLMMs examined the participants' responses from two perspectives: by analyzing between-group differences existing between the native and the L2 speakers and by exploring within-group differences among the L2 speakers, with particular attention to the effects of their productive vocabulary knowledge, as measured with the PLEP. In both GLMMS, the participants' *response* (1 = proclitic vs. 0 = null clitic; *other* responses were discarded) was the dependent variable while *condition* (0.5 = animate antecedent vs. –0.5 = inanimate antecedent) was an independent variable. Additionally, the first GLMM, which examined between-group differences, included *group* (0.5 = Native vs. –0.5 = L2) as an independent variable whereas the second GLMM, which examined within-group differences among the L2 speakers, included *PLEP scores* (continuous variable) as an independent variable. PLEP scores were standardized prior to performing the analysis. Furthermore, the second GLMM included interactions between *condition* and *PLEP scores*. No other fixed effects structures were tested in any GLMM. Both GLMMs included random intercepts for each subject as well as for each item.

Animacy of the referent	Clitic type	BP AJT test item samples
Animate	Overt	*O pai carregou a bebezinha Mariana e a colocou no berço.* 'The dad carried little baby Mariana and put her in the crib.'
	Null	*Lauro ligou para a Clara a semana passada e ∅ visitou na cidade hoje.* 'Lauro called Clara last week and visited ∅ in the city.'
Inanimate	Overt	*Ricardo passou a sua camisa e a colocou no seu armário.* 'Ricardo ironed his shirt and put it in his closet.'
	Null	*Marcos desenhou a sua melhor paisagem e ∅ deixou na casa do seu amigo.* 'Marcos drew his best landscape and left ∅ at his friend's house.'

Table 4: Brazilian Portuguese AJT item samples per condition.

The AJT data were analyzed using two ordinal regression models (ORM) with the *clmm* function from the *ordinal* package (Christensen 2022) in R in order to determine the effects of grammaticality, animacy, and productive vocabulary knowledge on the participants' receptive grammatical knowledge. In both ORMs, *response* (1 through 5) was the dependent variable while *grammaticality* (0.5 = grammatical vs. –0.5 = ungrammatical), and *condition* (0.5 = animate

antecedent vs. –0.5 = inanimate antecedent) were independent variables. As in the EPT analysis, the two ORMs examined the AJT data from two perspectives: by analyzing between-group differences and within-group effects. The first ORM, which examined between-group differences, included *group* (0.5 = Native vs. –0.5 = L2) as an additional independent variable whereas the second ORM, which examined within-group differences among the L2 speakers, included *PLEP scores* (continuous variable) as an additional independent variable. Both ORMs tested for all possible interactions between their independent variables and included random intercepts for each subject as well as for each item. Appendices C and D include the code used to perform the GLMMs and ORMs as well as their outputs, respectively.

5 Results

5.1 Brazilian Portuguese results

The BP EPT collected 1184 responses. The participants produced mostly proclitics (n = 673; 56.84%), particularly referring to animate antecedents (n = 393; 66.39% vs. n = 280; 47.30%). Null clitics were the second most produced response (n = 338; 28.55%), especially in contexts featuring inanimate referents (n = 240; 40.54% vs. n = 98; 16.55%). The participants' responses also included enclitics (n = 61; 5.15%) as well as strong pronouns (n = 18; 1.52%), but with lower frequency. A total of 94 responses were discarded (7.94%) due to different reasons: the use of a periphrasis instead of the verb provided for the test item (e.g., *Mário queria visitar a sua cidade natal e **poder visitar** finalmente o ano passad*o 'Mário wanted to visit his birth city and to be able to finally visit last year' where the main verb to be used was *visitar* 'visit') or different interpretation of the argument structure of the main verb (e.g., *Carlos salvou a grande árvore e **se abraçaram** por vários minutos* 'Carlos saved the big tree and they hugged for several minutes'). Additionally, the responses of one participant were discarded as they used Spanish to complete this task. Table 5 provides a distribution of the participants' response types across conditions (i.e., animate and inanimate).

	Response type				
Condition	**Proclitic**	**Null clitic**	**Enclitic**	**Strong Pronoun**	**Other**
Animate (n = 592)	393 (66.39%)	98 (16.55%)	33 (5.57%)	10 (1.69%)	58 (9.80%)
Inanimate (n = 592)	280 (47.30%)	240 (40.54%)	28 (4.73%)	8 (1.35%)	36 (6.08%)
Total (n = 1184)	673 (56.84%)	338 (28.55%)	61 (5.15%)	18 (1.52%)	94 (7.94%)

Table 5: Distribution of response types in the Brazilian Portuguese EPT across conditions.

These results indicate that proclitics are the most frequent response across conditions and within each condition. Nevertheless, null clitics account for over 40% of the responses in the inanimate object condition. Overall, proclitics and null clitics represent over 85% of the participants' responses. Strong pronouns were rarely produced (18 items or 1.52% of the time). Out of these 18 items, 13 were produced by a male speaker from Espirito Santo, 4 by a female speaker from Ceara, and 1 by a female speaker from Rio Grande do Sul. Given the low number of participants using strong/tonic pronouns and their different origins, we do not believe that regional variation played a role in the control experiment.

The BP AJT data also included 1184 responses across grammaticality and animacy conditions, 41 (3.46%) of which were discarded as the participants had rejected them for reasons unrelated to the phenomena under examination in this study. Table 6 shows the BP-speaking L2 Spanish speakers' acceptability data distribution across the contexts under examination in their L1.

Condition	Animate object		Inanimate object		Total
Clitic	**Overt**	**Null**	**Overt**	**Null**	**Total**
Ratings	Counts Total: 296/1184 (25%)	Counts Total: 296/1184 (25%)	Counts Total: 296/1184 (25%)	Counts Total: 296/1184 (25%)	Total across conditions: 1184/1184 (100%)
1	16/296 (5.41%)	26/296 (8.78%)	17/296 (5.74%)	8/296 (2.70%)	67/1184 (5.66%)
2	53/296 (17.91%)	99/296 (33.45%)	53/296 (17.91%)	72/296 (24.32%)	277/1184 (23.40%)
3	39/296 (13.18%)	32/296 (10.81%)	31/296 (10.47%)	22/296 (7.43%)	124/1184 (10.47%)
4	92/296 (31.08%)	61/296 (20.61%)	88/296 (29.73%)	92/296 (31.08%)	333/1184 (28.13%)
5	84/296 (28.38%)	66/296 (22.30%)	94/296 (31.76%)	98/296 (33.11%)	342/1184 (28.89%)
Discarded rejection	12/296 (4.05%)	12/296 (4.05%)	13/296 (4.39%)	4/296 (1.35%)	41/1184 (3.46%)
Total by condition	296/296 (100%)	296/296 (100%)	296/296 (100%)	296/296 (100%)	

Table 6: Distribution of the Brazilian Portuguese-speaking L2 Spanish speakers' acceptability ratings across conditions in the BP AJT.

The BP AJT data shows variability in their responses. It also shows, nevertheless, that null clitics referring to animate objects receive balanced ratings and the highest number of rejections across conditions: 125 (26 + 99) out of 296 ratings were rejections and 127 (61 + 66) were acceptances. On the other hand, null clitics referring to inanimate objects received the highest

amount of acceptance ratings across the four contexts under examination: 190 (92 + 98) out of 296 ratings were acceptances. These findings are consistent with previous literature describing that in BP null clitics are preferred to refer to inanimate objects and usually avoided to refer to animate objects (Kato et al. 2009).

5.2 Spanish language results

The Spanish EPT gathered a total of 1552 responses: 1184 of these responses were produced by the 74 L2 group while 368 were given by the native Spanish-speaking group. Most of the L2 group responses were instances of proclitics (n = 771; 65.54%), particularly referring to animate antecedents (n = 419; 70.78% vs. n = 352; 59.46%). On the other hand, the majority of null clitics were used to refer to inanimate antecedents (n = 198; 33.45% vs. n = 118; 19.93%). Discarded responses amounted to 97 of the EPT Spanish responses (8.19%): 55 (9.29%) of these were produced in the animate object condition while 42 (7.09%) belong to the inanimate object condition. These discarded responses included cases of use of a non-finite verb form (e.g., *José cargó a la bebé Mariana y **colocarla** en la cuna* 'José took the baby Mariana and place her in the crib'), of a periphrasis instead of the verb provided for the test item (e.g., *Juan conoció a Maria en Internet en 2012 y **fue verla** en persona en 2014* 'Juan met María on the Internet in 2012 and went see her in person in 2014' where the main verb to be used was *ver* 'to see') or of a different main verb (e.g., *Luis llamó a Clara la semana pasada y **ella fue** en su casa hoy* 'Luis called Clara last week and she went in his house today' where the main and only verb to be used was *visitar* 'visit'). The native speakers produced proclitics across the board: out of 368 responses, 329 (89.04%) were proclitics and only 6 (1.63%) were null clitics. The remaining 33 (8.97%) responses were discarded due to reasons similar to the ones affecting the production of the L2 speakers. Table 7 shows the distribution of response types across conditions and groups in the Spanish EPT.

		Response type		
Group	**Conditions**	**Proclitics**	**Null clitics**	**Other (discarded from analysis)**
L2 speakers	**Animate** (n = 592)	419 (70.78%)	118 (19.93%)	55 (9.29%)
	Inanimate (n = 592)	352 (59.46%)	198 (33.45%)	42 (7.09%)
	Total (n = 1184)	771 (65.54%)	316 (26.69%)	97 (8.19%)
Native speakers	**Animate** (n = 184)	166 (45.11%)	2 (0.54%)	16 (4.35%)
	Inanimate (n = 184)	163 (44.29%)	4 (1.09%)	17 (4.62%)
	Total (n = 368)	329 (89.40%)	6 (1.63%)	33 (8.97%)

Table 7: Distribution of response types across conditions and groups in the Spanish AJT.

The first GLMM (GLMM1) analyzing the Spanish EPT data, which focused on between-group differences, revealed that the native speaker group produced more proclitics than the L2 participants ($\beta = 4.58$, SE $= 0.89$, z $= 5.14$, p < 0.01). Predicted probabilities also indicate this contrast: the predicted probabilities for native speakers to produce proclitics are 0.99 for both inanimate and animate referrents. On the other hand, the predicted probabilities for L2 speakers to produce proclitics is 0.74 and 0.91 for inanimate and animate referrents, respectively.

Additionally, the second GLMM (GLMM2), which explored within-group effects among the L2 speakers, revealed that L2 speakers were less likely to produce proclitics when referring to inanimate objects ($\beta = 1.31$, SE $= 0.38$, z $= 3.40$, p < 0.01) and that higher PLEP scores led to more use of proclitics ($\beta = 1.60$, SE $= 0.34$, z $= 4.65$, p < 0.01). The model failed to find an interaction between these two main effects ($\beta = 0.21$, SE $= 0.24$, z $= 0.89$, p $= 0.38$), which indicates that the L2 learners produce more proclitics as their productive vocabulary increases regardless of the animacy features of the object to which those proclitics refer. This effect is also noticeable in the model's predicted probabilities: these remain below 0.60 for both inanimate and animate conditions on the lower end of the PLEP scores (at –2 and –1.5 from the standardized PLEP scores) versus values above 0.97 on the higher end of the PLEP scores (1.5 and 2 from the standardized PLEP scores). Indeed, predicted probabilities signal that the L2 speakers' development of productive knowledge of the distribution of clitics under examination plateaus after their standardized PLEP scores reaches 0.5 as they remain above 0.9 whereas a steeper increase takes place on the lower half range of the standardized PLEP scores. Appendix D includes the outputs of the GLMMs and predicted probabilities discussed above.

The Spanish AJT also collected 1552 responses (1184 from the L2 group and 368 from the native Spanish-speaking group). Ten responses from the L2 speakers were discarded as they were cases of rejections due to reasons unrelated to the scope of the study. Table 8 below shows the distribution of response types across conditions and groups in the Spanish EPT.

The first ORM (ORM1) analyzing the Spanish AJT data focused on between-group differences and found that, in general, grammatical test items received higher ratings than ungrammatical test items ($\beta = 4.22$, SE $= 0.14$, t $= 23.00$, p < 0.01) and native speakers gave overall lower ratings ($\beta = -1.14$, SE $= 0.43$, t $= -2.64$, p < 0.01). No other main effects were significant. However, ORM1 found one significant two-way interaction between grammaticality and group ($\beta = 2.00$, SE $= 0.26$, t $= 7.58$, p < 0.01), suggesting that the native speakers were more likely to reject ungrammatical items than the L2 speakers. These effects are reflected in predicted probabilities. For instance, the predicted probabilities for native speakers to rate ungrammatical test items as '1' or '2' were 0.27 and 0.58, respectively, for both inanimate and animate objects whereas, for L2 speakers, the predicted probabilities were 0.03 and 0.28 for inanimate objects and 0.06 and 0.42 for animate objects.

Group	Condition	Animate object		Inanimate object		Total
	Grammaticality	Gram. (proclitics)	Ungram. (null clitics)	Gram. (proclitics)	Ungram. (null clitics)	
BP-speaking L2 speakers	Ratings	Counts Total: 296/1184 (25%)	Counts Total: 296/1184 (25%)	Counts Total: 296/1184 (25%)	Counts Total: 296/1184 (25%)	Total across conditions: 1184/1184 (100%)
	1	0/296 (0%)	38/296 (12.84%)	0/296 (0%)	27/296 (9.12%)	65/1184 (5.49%)
	2	6/296 (2.03%)	129/296 (43.58%)	4/296 (1.35%)	100/296 (33.78%)	239/1184 (20.19%)
	3	16/296 (5.41%)	19/296 (6.42%)	10/296 (3.38%)	23/296 (7.77%)	68/1184 (5.74%)
	4	96/296 (32.43%)	54/296 (18.24%)	97/296 (32.77%)	70/296 (23.65%)	317/1184 (26.77%)
	5	173/296 (58.45%)	55/296 (18.58%)	183/296 (61.82%)	74/296 (25%)	485/1184 (40.96%)
	Discarded rejection	5/296 (1.69%)	1/296 (0.34%)	2/296 (0.68%)	2/296 (0.68%)	10/1184 (0.84%)
	Total by condition	296/296 (100%)	296/296 (100%)	296/296 (100%)	296/296 (100%)	

Group	Condition	Animate object		Inanimate object		Total
	Grammaticality	Gram. (proclitics)	Ungram. (null clitics)	Gram. (proclitics)	Ungram. (null clitics)	
	Ratings	Counts Total: 92/368 (25%)	Counts Total: 92/368 (25%)	Counts Total: 92/368 (25%)	Counts Total: 92/368 (25%)	Total across conditions: 368/368 (100%)
Spanish native speakers	1	0/92 (0%)	26/92 (28.26%)	2/92 (2.17%)	26/92 (28.26%)	54/368 (14.67%)
	2	3/92 (3.26%)	51/92 (55.43%)	4/92 (4.35%)	48/92 (52.17%)	106/368 (28.80%)
	3	5/92 (5.43%)	7/92 (7.61%)	1/92 (1.09%)	9/92 (9.78%)	22/368 (5.98%)
	4	23/92 (25%)	6/92 (6.52%)	24/92 (26.09%)	6/92 (6.52%)	59/368 (16.03%)
	5	61/92 (66.30%)	2/92 (2.17%)	61/92 (66.30%)	3/92 (3.26%)	127/368 (34.51%)
	Discarded rejection	0/92 (0%)	0/92 (0%)	0/92 (0%)	0/92 (0%)	0/368 (0%)
	Total by condition	368/368 (100%)	368/368 (100%)	368/368 (100%)	368/368 (100%)	

Table 8: Distribution of the participants' acceptability ratings across conditions and groups in the Spanish AJT.

The second ORM (ORM2), which explored within-group effects among the L2 speakers, found grammaticality effects (β = 3.33, SE = 0.17, t = 19.12, p < 0.01), which indicates that grammatical test items received higher ratings than ungrammatical ones. Moreover, ORM2 found a significant two-way interaction between grammaticality and PLEP scores (β = 1.09, SE = 0.13, t = 8.34, p < 0.01), which highlights that L2 speakers with higher PLEP scores were more likely to reject ungrammatical test items. A look at the predicted probabilities shows that L2 speakers on the lower end of the PLEP scores (at –2 in standardized PLEP scores) rarely rated ungrammatical test items as '1' or '2' (0.004 and 0.6, respectively, for inanimate objects and 0.008 and 0.10 for animate objects) whereas L2 speakers on the higher end of the PLEP scores (at 2 in standardized PLEP scores) consistently rated ungrammatical test items as '1' or '2' (0.16 and 0.58, respectively, for inanimate objects and 0.29 and 0.57 for animate objects). Appendix D includes the outputs of the ORMs as well as the predicted probabilities discussed above.

5.3 Summary of the results

The BP EPT data show that participants produced mostly proclitics and null clitics and that these were not distributed evenly across animacy conditions: proclitics were the most frequent strategy used in both animacy conditions, yet more instances of null clitics were produced when referring to inanimate antecedents than when the antecedents were animate. This relationship between null clitics and inanimate objects is also observed in the BP AJT data: null clitics referring to animate objects received low ratings whereas null clitics referring to inanimate objects received high ratings. Overall, the BP results indicate that null clitics in BP are mostly used to refer to inanimate objects.

Regarding the Spanish data, we can conclude that the L2 participants have acquired that proclitics are the grammatical clitic form in combination with finite verbs: no enclitics or strong pronouns were produced. Nevertheless, the native group baseline allows us to determine that, overall, the L2 speakers are still in the process of acquiring the distribution of proclitics in Spanish, particularly as opposed to null clitics. The L2 speakers with higher PLEP scores produce more proclitics and abandon the use of null clitics regardless of the animacy features of the object to which the clitics refer. Similarly, the L2 speakers with higher PLEP scores were more likely to reject ungrammatical test items. Overall, PLEP scores predicted the L2 speakers' productive and receptive grammatical knowledge.

6 Discussion

The present study investigated the acquisition of clitics in the L2 Spanish of native speakers of Brazilian Portuguese (BP). In BP, accusative pronoun expression, particularly the distribution of strong accusative pronouns and clitics versus null clitics, has been argued to be sensitive to the animacy features of its antecedent. In Spanish, on the other hand, definiteness, and not animacy,

plays a role in the expression of clitics. Therefore, this study examined the L2 acquisition of a non-animacy-driven clitic system by speakers of a language presenting an animacy-driven accusative pronoun system. This process may be accounted for by Lardiere's (2008; 2009) Feature Reassembly Hypothesis (FRH), which states that L2 acquisition involves reassembling features into L2 forms, as well as by Schwartz & Sprouse's (1996) Full Transfer/Full Access hypothesis (FT/FA), which predicts that initial stages of L2 acquisition are characterized by having the abstract properties of the L1 grammar transferred to the L2. Specifically, we collected data on the written production and receptive grammatical knowledge of 74 BP-speaking L2 learners of Spanish in Brazil in order to examine the role of animacy in their L2 Spanish clitic system, as well as in their L1 BP accusative pronouns. Additionally, a comparison group of 23 native speakers of Spanish completed the study.

Our first research question addressed the BP-speaking knowledge of the forms that direct objects can take when referring to an antecedent in the discourse. We hypothesized that cross-linguistic influence from their L1 may lead to variable or non-target knowledge of accusative pronouns in Spanish (e.g., repetitions of DPs, proclitics, enclitics or even strong pronouns): while in Spanish overt clitics are the preferred option, BP can feature null and overt clitics, in both pre- and post-verbal positions, as well as strong accusative pronouns, which can be driven by the animacy features of the antecedent. It is noteworthy to mention that the experimental tasks did not include test items examining indefinite antecedents; therefore, no null clitics were expected to be produced in the Spanish tasks. Our results indicate that, besides the discarded responses, all of the participants' responses were cases of either proclitics or null clitics. These two options are available in Spanish grammar, yet null clitics were not grammatical in our experimental tasks given that all antecedents were definite. In sum, the L2 speakers' production indicates that they have knowledge of the forms that direct objects can take in Spanish: proclitics or null clitics. No instances of ungrammatical strong accusative pronouns or of infelicitous full DPs were produced in Spanish although the BP production data does show a few cases of enclitics and strong accusative pronouns.

In light of these results, our hypothesis is rejected: in spite of the BP production data presenting some cases of enclitics and strong accusative pronouns, the L2 Spanish data only features proclitics as well as null clitics, which rules out the possibility of cross-linguistic influence with regard to the form of direct objects. At this juncture, our data do not point to a full transfer stage (as predicted by the FT/FA hypothesis) since enclitics and strong pronouns (both present in BP) were not produced by the participants. Overall, despite the challenge that preemption represents for BP-speaking L2 learners of Spanish due to their need to become aware of the syntactic options allowed in Spanish as well as relevant semantic restrictions absent in their L1, L2 learners seem to have preempted their L1 grammar to match the L2 syntax (Trahey 1992; Trahey & White 1993; Iverson & Rothman 2011; 2015). Nevertheless, as pointed out by a reviewer, the lack of

strong pronouns may be a result of pragmatic choices in BP and not a sign of L2 development in Spanish, ruling out the possibility of rejecting FT/FA as this group of educated BP speakers may avoid strong pronouns in a written task (Perini 2002; Bagno 2009; Schwenter 2014; Schwenter et al. 2022).

Our second research question inquired as to whether the L2 learners' knowledge of Spanish clitics was driven by the animacy features of their antecedents. Following the FRH, we hypothesized that the L2 learners were in the process of reassembling the features involved in the phenomenon under examination in their language pair: specifically, they are in the process of disassembling the animacy features present in their strategies to express direct objects in their L1 from their L2 Spanish clitics, which are not driven by animacy. Therefore, the learnability task for BP-speaking L2 learners of Spanish to acquire the clitic system in their L2 Spanish requires the disassembly of the animacy features in their L1. Additionally, we hypothesized that, at an initial stage of L2 acquisition, learners show an animacy-driven productive and receptive grammatical knowledge, as predicted by the FT/FT hypothesis. Our results show a continuum in the disassembly process, and L2 proficiency seems to determine where in the continuum the learners fall. In line with the FT/FA hypothesis, higher PLEP scores lead to more proclitics overall, but low-proficient speakers use more null clitics. The increase in use of proclitics occurred regardless of the animacy features of the antecedent.

These results show a complex picture with regard to animacy and type of knowledge: animacy effects were found in the L2 learners' production data but not in their receptive grammatical knowledge. Furthermore, the lack of interactions between animacy and proficiency, operationalized as productive vocabulary knowledge, eliminates the possibility that these animacy effects are dependent on proficiency. While we attested that the L2 learners abandon null clitics across the animate and inanimate conditions at similar rates, we still see that null clitics are used more with inanimate objects, suggesting an effect of L1 grammar in their L2 production. The reassembly of a semantic feature happened slower than the syntactic reconfiguration required by the Spanish clitic system. That is, the learners never fully transferred their L2 syntax, but they used null clitics in Spanish, following their L1 rules. The variability found in these results is consistent with previous studies claiming that feature reconfiguration can be more challenging than feature acquisition (Montrul & Yoon 2009; Smeets 2023) and that feature reassembly may happen slowly if the L1 feature obstructs the reassembly process (Cho & Slabakova 2014). However, with additional exposure to the target input, these learners should be able to initiate the appropriate resetting to fully match the L2 requirements.

Our data are also in line with the FRH itself, which states that productive knowledge can be more variable than receptive grammatical knowledge.

Together, the findings only show that BP-speaking L2 learners of Spanish appear to be in the process of disassembling the animacy features involved in their L1 direct object system when

acquiring the non-animacy-driven clitic system in Spanish. This finding is noticeable in their productive knowledge, yet only suggested by a two-way interaction between grammaticality and PLEP scores in their receptive grammatical knowledge: L2 speakers with deeper productive vocabulary knowledge in Spanish rated ungrammatical items lower than their counterparts with lower PLEP scores. Overall, these findings indicate that the L2 speakers in this study represent a range of snapshots into an L2 acquisition process involving the disassembly of the features involved in the L1. Specifically, we observe cases of initial L1 transfer followed by feature disassembly.

Our third research question focused on the role of productive vocabulary knowledge as a valid operationalization of proficiency in order to predict acquisition outcomes in L2 learners, particularly the acquisition of clitics in L2 Spanish among L1 BP speakers. Our third hypothesis states that L2 acquisition outcomes can be predicted by the operationalization of proficiency into productive vocabulary knowledge as measured by the PLEP. Previous literature has suggested that productive lexical knowledge can be used as a proxy for overall language proficiency (Daller et al. 2003; Pienemann et al. 2011; Gollan et al. 2012; Treffers-Daller & Korybski 2015), and it has also been documented that an increased lexical development is a significant predictor for grammatical development, even in the L1 (Bates & Goodman 1997). Our results confirm our third hypothesis: the L2 learners' productive vocabulary knowledge as measured by the PLEP predicts both their productive and receptive grammatical knowledge in their L2 Spanish. In their production data, their productive vocabulary knowledge predicts their use of proclitics while, in their receptive grammatical knowledge, higher PLEP scores lead to stronger grammaticality effects. In other words, those L2 learners with higher PLEP scores reject ungrammatical test items more frequently than their counterparts presenting a more restricted productive vocabulary knowledge. This relationship between lexical knowledge is not causal, but a correlation stemming from increased target-language exposure and use. Thus, our data support Cilibrasi & Marková's (2022) claim that the acquisition of vocabulary and the development of overall L2 proficiency can be predicted faithfully by looking at daily language use.

In general terms, our study shows that L2 development cannot be systematically predicted, especially when learners need to restructure syntax and semantics simultaneously. While full transfer of the L1 syntax was not found (as learners selected the appropriate L1 options to match the L2 syntax), there was non-target variability in the reassembly of the relevant semantic feature. More specifically, our findings point out to cross-linguistic effects in the acquisition of Spanish clitics in this group of BP-speaking L2 learners, as their L1 appears to influence their acquisition of clitics in their L2 Spanish as seen in their production data. Their use of clitics is modulated by the animacy features of the antecedents to which they refer. Additionally, as the present study also examined their knowledge of this phenomenon in their L1 in order to establish a comparison

baseline between their two languages, we confirmed the relationship between null clitics and inanimate objects, as described by previous literature (Kato et al. 2009).

7 Conclusion

This study investigated the acquisition of third-person accusative clitics in L2 Spanish among Brazilian Portuguese (BP) speakers, which requires learners to disassemble the animacy features that rule the direct object system in their L1 and adopt the definiteness-driven system that exists in the L2. Using production and acceptability data, we tested Lardiere's (2008; 2009) Feature Reassembly Hypothesis (FRH), Schwartz & Sprouse's (1996) Full Transfer/Full Access hypothesis (FT/FA) and investigated the presence of cross-linguistic influence across proficiency levels, which were determined using the productive lexical knowledge test PLEP.

Our findings show that L2 participants have acquired that proclitics are used with finite verbs in Spanish; however, null clitics were also found in the data. While null clitics do exist in the Spanish grammar, they do not occur with definite antecedents, which was the only context offered in test items. More specifically, the learners with lower PLEP scores still relied on the animacy feature to determine their distribution of proclitics versus null clitics, while those with higher PLEP scores produced more proclitics and abandoned the use of null clitics regardless of animacy. A similar finding was uncovered by the acceptability data: higher PLEP scores led to higher rejection rates of ungrammatical items. Collectively, our findings show that the L2 learners in our study are in the process of disassembling the animacy features that rule the use of direct objects in their L2. More specifically, the learners go through a stage of initial L1 transfer, which is congruent with the FT/FA hypothesis, that is then followed by feature reassembly, as predicted by the FRH. In addition, we determined that the L2 speakers' productive and receptive grammatical knowledge was successfully predicted by their PLEP scores.

We emphasize the importance of employing assessment tools tailored to the specific language pair, as utilizing a conventional grammar test like the DELE proved ineffective in gauging grammatical and lexical knowledge in our study. It appears that the PLEP, rather than the DELE, may be a more suitable tool for assessing overall proficiency in this context, as the similarities in syntax and morphology between these languages led to scores that could be misleading. That is, L2 learners could rely on their L1 knowledge to make correct guesses. For example, in the DELE, 71 out of 74 L1 BP participants scored above 40 out of 50, indicating an advanced level that is not congruent with their performance in the PLEP and in the two experimental tasks.

Our findings also show an infrequent use of strong pronouns, which is a striking finding given that the literature identified them as a preferred alternative over the use of clitics (Corrêa 1991; Kato 1999; Galves 2002; Galves et al. 2005), especially when referring to animate antecedents (Cyrino et al. 2000). The low use of strong accusative pronouns in our data may derive from the

written modality of the production task, as the use of proclitics, enclitics, and strong accusative pronouns has been reported to be affected by register and formality. Thus, we put forward three considerations: first, the production task might have promoted the use of clitics over strong pronouns, as clitics occur more often in written than in spoken language (Galves et al. 2005). Second, although enclitics are common in written, formal registers (Duarte et al. 2005; Galves et al. 2005; Montrul et al. 2011), the language of the task might not have been sufficiently formal to encourage the use of enclitics. The structure of the production task, which always had the blank to be filled in before the verb, can account for the significant preference for proclitics. Finally, a reviewer pointed out that the lack of strong pronouns may be a result of pragmatic choices in BP and not a sign of L2 development in Spanish, ruling out the possibility of rejecting FT/FA as this group of educated BP speakers may avoid strong pronouns in a written task. Further research should examine this phenomenon in a less controlled, oral task.

Abbreviations

1 = first person, 2 = second person, 3 = third person, ACC = accusative, acc.marker = accusative marker, CL = clitic, F = feminine, GER = gerund, IMP = imperative, INF = infinitive, M = masculine, PL = plural, PRS = present, PST = past, SG = singular.

Supplementary files

All appendices are available at https://osf.io/kd5cn/?view_only = 397cfda6b0214b229178 e46cda459f87.

Ethics and consent

The study was approved by the Institutional Research Board of Davidson College before data collection (protocol number 19147266, approved on 26 February 2021). All participants read and signed written consent forms before participating in the study.

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Competing interests

The authors have no competing interests to declare.

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