
**On some null subject parameter-related properties in
the L3 acquisition of brazilian portuguese**

**Sobre algumas propriedades relacionadas ao parâmetro do
sujeito nulo na aquisição do português brasileiro como L3**

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ABSTRACT

As language undergoing language change, Brazilian Portuguese presents characteristics of both pro-drop and non-pro drop systems. This study investigates the acquisition of two properties assumed to be related to the null subject parameter—clitic-climbing and the *that-t* effect—by adult learners of Brazilian Portuguese who speak a pro-drop language (Spanish) (n = 11) and a non pro-drop language (English) (n = 19) as either L1 or L2. Results of an acceptability judgment task showed that the non-native speakers overall converged on the grammars

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of the Brazilian Portuguese control group ($n = 19$), but there were transfer effects from Spanish for the L1-Spanish speaking learners and from both Spanish and English in the L1-English speaking learners. We discuss the implications of these findings for the role of transfer in L3 acquisition.

KEYWORDS

Null subject parameter. L3 acquisition. Brazilian Portuguese.

RESUMO

O português brasileiro, por estar em processo de mudanças, apresenta características tanto de sistemas pro-drop quanto de sistemas não pro-drop. Este estudo investiga a aquisição de duas propriedades que se assume que estão relacionadas ao parâmetro do sujeito nulo – a subida de clítico e o efeito that-t– por adultos aprendizes do português brasileiro, falantes de uma língua pro-drop (espanhol) ($n = 11$) e de uma língua não pro-drop (inglês) ($n = 19$), seja como L1 ou como L2. Os resultados de um teste de julgamento de aceitabilidade mostraram que, em geral, os falantes não nativos tenderam a se aproximarem da gramática do grupo de controle formado por falantes de português brasileiro ($n = 19$). Porém, observaram-se efeitos de transferência do espanhol para os aprendizes falantes nativos de espanhol e transferências de ambas as línguas, espanhol e inglês, para os aprendizes falantes nativos de inglês. Discutimos as implicações destes resultados para o papel da transferência na aquisição de L3.

PALAVRAS-CHAVE

Parâmetro do sujeito nulo. Aquisição de L3. Português brasileiro.

1 Introduction

A much debated issue in the study of adult second language (L2) acquisition is the initial and eventually deterministic role of the first language (L1) in the acquisition of a second language, especially at the morphosyntactic level. There is little doubt that L1 influence affects the acquisition of phonology (BROWN, 1998; FLEGE, 2002) and some aspects of the lexicon (JARVIS, 2000), but the effects of the L1 at initial and subsequent stages of development with different aspects of syntax and morphology have been less straightforward and subject to considerable theoretical debate. According to some researchers, the L1 in its entirety constitutes the initial state of L2 acquisition, and development toward the target language occurs

through restructuring of the interlanguage system in response to input and guided by Universal Grammar. This is the Full Transfer/Full Access Hypothesis of Schwartz and Sprouse (1996). Others maintain that there is only partial transfer of some L1 properties but not others, be it lexical but not functional categories (VAINNIKA; YOUNG-SCHOLTEN, 1996), or both lexical and functional categories but not the strength of formal features (EUBANK, 1996). At the other extreme are those who deny that L1 transfer plays much of a role at initial stages of L2 development (EPSTEIN; FLYNN; MARTOHARDJONO, 1996; PIENEMANN, 1998). They argue instead that universal linguistic processes or processing considerations guide much of L2 learning at this stage. We shall call the latter theory the no transfer account.

The present study deals with the potential role of transfer in the acquisition of two properties assumed to be related to the Null Subject parameter by English and Spanish-speaking adult learners of Brazilian Portuguese. Because all these learners already have knowledge of a second language, the acquisition of Brazilian Portuguese in this situation represents a case of L3 acquisition rather than of strict L2 acquisition. In the last decade, a few studies have shown that the acquisition of an L3 is different from the acquisition of an L2, especially with respect to the status and role of transfer (CENOZ, 2001, 2003; LEUNG, 2006). At issue is whether transfer in the acquisition of another language beyond the L2 also comes exclusively from the L1, as in L2 acquisition (LEUNG, 2006), from the L2 (BARDEL; FALK, 2007; CABRELLI; ROTHMAN, in press), from both languages (FLYNN; VINNITSKAYA; FOLEY, 2004), or from none (HÅKANSSON; PIENEMANN; SAYHELI, 2002). Yet another possibility is that L1 or L2 transfer will depend on language typology and linguistic proximity between the L1, the L2, and the L3. That is, if the L1 is typologically related to the L3, then L1 transfer will be more likely. But if the L2 is typologically related to the L3, L2 transfer will be favored instead.

The purpose of this article is to contribute to our understanding of these questions through an empirical investigation of two syntactic properties related to the null subject parameter, namely clitic-climbing

and the *that-t* effect as they pertain the present state of development of Brazilian Portuguese, a language that has been undergoing major diachronic change since the 19th century, particularly with inflectional morphology and aspects of subject and object expression. Since Brazilian Portuguese combines properties of both full-fledged pro-drop and non pro-drop systems, it represents an interesting testing case on which to investigate these theoretical issues, especially because the L1 and the L2 of the learners in this study cancel each other out with respect to some of the properties of the null subject parameter. A previous study by Montrul, Dias & Thomé-Williams (in press) tested similar groups of participants to the ones being tested in the present study on their oral production of null/overt subjects in Brazilian Portuguese. They found that, overall, the non-native speakers converged on the grammars of the Brazilian native speakers, but also detected a weak advantage for Spanish-L1 speakers over English-L1 speakers, suggesting that in this particular domain, the typologically closer L1 plays a role in the acquisition of the null subject properties of Brazilian Portuguese as L3. In this study, we ask whether the same transfer effect pattern obtains with other properties assumed to be related to the null subject parameter. As we shall see, our results provide a nuanced answer to this question.

2 The Null Subject Parameter

Brazilian Portuguese used to be a full ledged pro-drop system, but in the 20th century it has gradually become less pro-drop, developing a range of syntactic consequences. In order to understand the types of changes this language has been undergoing, it is important to describe first how the null subject parameter works in full pro-drop systems and in non pro-drop systems.

In null subject languages like Spanish and Italian, subject pronouns and full NPs in finite clauses can be omitted or realized by a phonologically null pronominal or *pro*. This is possible for languages like Spanish (but not for Chinese, according to Jaeggli and Safir (1989) because Spanish has rich verbal inflection in all six persons of the verbal paradigm, which allows person and number information about the subject to be recoverable and

identified. In English, a language with poorer agreement, null pronouns are ungrammatical, as shown in (1b).

- (1) a. Joaquín/ él/ *pro* llegó ayer de Barcelona.
b. Joaquín/he/ **pro* came yesterday from Barcelona.

These main differences between languages like Spanish/Italian and English were originally subsumed under the Null Subject or Pro-drop Parameter (CHOMSKY, 1981; JAEGGLI, 1982; RIZZI, 1982). Pro-drop languages have strong formal syntactic features of Agreement (Agr) and Tense that licence null subjects. Following Minimalism, Kato (1999) proposed that the possibility of having or not overt subjects is related to the properties of agreement. Null Subject languages (Italian, Spanish) have [+pronominal] agreement while non Null Subject languages (English) have [-pronominal] agreement. Because [+pronominal] Agr is the incorporation of personal pronouns in verbal inflection, it is formally a D, and can be assigned a theta role (having Case and phi features). Null Subject languages allow postverbal subjects (VSO) because [+pronominal] Agr can check D and case features of T, and a spec TP is not projected. (See KATO, 1999, for specific details.) Furthermore, Null Subject languages do not have overt expletive pronouns (like English *it* as in *It is clear that*), and allow the *that*-trace effect, or the possibility of extracting a *wh*-element after a lexically filled complementizer as in (2a), which is not possible in English (2b). Unlike Spanish and Italian, English does not have free VS order (RIZZI, 1982).

- (2) a. Quién_i dijiste que t_i llamó?
b. *Who did you say that called?

Another difference assumed to be related to the Null Subject parameter and agreement specifications by Kayne (1989) is the possibility of clitic climbing in Romance languages. Spanish and Italian are pro-drop languages, French is not. As illustrated in (3) Spanish permits the direct object clitic *lo* to appear before the matrix modal (3a) or after the infinitive selected by the modal (3b). Option (3a) is clitic climbing, which is not allowed in French, as (4a) shows.

Although Spanish and Italian have the syntactic mechanisms to license null subjects, the distribution of null and overt subjects is not entirely optional in discourse but regulated by pragmatic and discourse factors (FERNÁNDEZ SORIANO, 1989). For example, null subjects are typically used in topic and non-contrastive focus contexts. When there is topic continuity in discourse, old information is expressed with a null subject, as in (5).

(5) Juan llegó a su casa del trabajo. Primero *pro* se cambió de ropa y luego *pro* decidió ponerse a preparar la cena.

“**Juan** came home from work. First **he** changed his clothes and then **he** decided to make dinner.”

In topic shift contexts, when there is a change in the referent in discourse, the use of an overt subject—pronoun or NP—is typically used, as shown in (6).

Juan llegó a su casa del trabajo. **Su esposa** lo recibió con un abrazo y luego **él** se cambió de ropa y se sentó a leer.

“**Juan** came home from work. His wife welcomed him with a hug and then **he** changed his clothes and sat down to read.”

Brazilian Portuguese (BP) used to be a pro-drop language like Spanish, but in the last century it has progressively become less pro-drop: There has been an increase in the production of overt subjects in places where null subjects are pragmatically licit, as in topic continuity contexts (DUARTE, 2000; DE OLIVEIRA, 2000; KATO, 1999, 2000). For Duarte (2000), the increase of overt subjects in BP, what she calls the loss of the *Avoid Pronoun Principle*, is directly related to the weakening of the inflectional verbal paradigm, but others disagree (DE OLIVEIRA, 2000; NEGRÃO; VIOTTI, 2000; SPROUSE; VANCE, 1999). Duarte conducted a diachronic analysis of subject expression in the last century. As Table 2 shows, BP used to have six distinct endings for person and

number, but today it has only three (*amo, ama, amam*) in most dialects.

Table 2 - Pronominal and inflectional paradigm in present day Brazilian Portuguese (DUARTE, 2000, p.19).

Pers./No.	Pronouns	Paradigm 1	Paradigm 2	Paradigm 3
1st sing.	eu	am-o	am-o	am-o
2nd sing.	tu	am-a-s	—	—
	você	am-a	am-a	am-a
3rd sing.	ele/ela	am-a	am-a	am-a
1st plural	nós	am-a-mos	am-a-mos	—
	a gente	—	am-a	am-a
2nd plural	vós	am-a-is	—	—
	vocês	am-a-m	am-a-m	am-a-m
3rd plural	eles/elas	am-a-m	am-a-m	am-a-m

The morphological paradigms shown in Table 2 correspond to three periods in Duarte's analysis. The first period covers written and oral texts from 1845 to 1918. During this time, BP had six different agreement endings and 20%–25% overt subjects, which were only used for emphasis, focus, or switch reference, as in full pro-drop systems. During the second period (1937–1945), the agreement system lost the 2nd singular (*am-a-s*) and plural (*am-ai-s*), and overt subjects increased to 46%–50%. The third period analyzed (1975–1992) only has a three-form distinction, having replaced the 1st plural (*amamos* 'we love') by the pronominal expression *a gente* (*a gente ama*), although speakers of different generations vary on their use of *a gente* and *nós*. The incidence of overt pronouns in this period is 74%. Although the null subject option has not been entirely lost (i.e., BP is not like English), it is used very infrequently—only 26% of the time—compared with the frequency attested at the beginning of the century—75%–80%. What Duarte noticed is that the erosion of agreement endings is gradual and affects 1st, 2nd and 3rd persons differently. The most affected is the 2nd person (singular and plural), which now displays between 80%–90% overt subjects, the second most affected person is the 1st one (between 67%–79% overt subjects), while the least affected is the 3rd person (between 50%–60% overt subjects). Duarte (2000) shows that in BP today there does not seem to be a single context

in which referential overt subjects are *obligatorily* null, which suggests that the BP overt pronouns have lost the [+topic shift] feature, or the pragmatic layer of complexity, as illustrated by the following examples from Duarte (2000) (c.f. Spanish in 5):

(7) De repente **ela**_i sabe que **ela**_i quando criança ficava meio triste por isso.

‘It may happen that she knows that she as a child would be sad for that.’

Kato (1999) claims that the loss of null referential subjects correlates with the weakening of the agreement system in BP: Agr was [+ pronominal] but is now [–pronominal], with concomitant loss of VSO word order. Furthermore, Duarte asserts that BP also exhibits structures unattested in full pro-drop systems, such as left-dislocated subjects, as in (8).

(8) A Clarinha, **ela**_i cozinha que é uma maravilha.

the Clarinha she cooks that is a marvel

‘Clarinha, she can cook wonderfully.’

Null non-referential arbitrary subjects are being filled with the pronouns *você* (you), *eles* (they) and *a gente* (one).

(9) É sempre assim. Quando **você/a gente** não sabe o que fazer, **você/a gente** pede ajuda para alguém.

‘It is always like that. When one doesn’t know what to do, one asks somebody’s help.’

From a full pro-drop system, BP still retains the *that-t* effect and null expletives (see Table 1), under syntactic analyses that link the *that-t* effect to the pro-drop parameter. Kato (1999, p. 247-248) also notices that postverbal subjects are still possible in spoken BP, but the few instances of VS word order are restricted to unaccusative verbs (*Tinha chegado muitas cartas* ‘There arrived many letters’) and existential constructions (*Tem um gato embaixo da mesa*. ‘There is a cat under the table’), which do not assign accusative case.

Interestingly, BP still patterns with Italian and Spanish in that extraction from complement clauses introduced by the complementizer *que* are grammatical regardless of the position extracted from. An example with a subject extraction from Negrão and Viotti (2000, ex. 10a, p.116), is shown in (10).

- (10) a. Quem_i você acha [que t_i saiu da festa mais cedo]?
 Who do you think that left the party earlier?
 b. *Quem_i você acha [t_i saiu da festa mais cedo]?
 Who do you think left the party earlier?

BP has also lost clitic climbing (CYRINO, 2008; PAGOTTO, 1993; PIRES, 2005) and BP today has no climbing with 1st and 2nd person clitics, as shown in (11). This is the result of the loss of both verb and clitic movement (PIRES, 2005). (Examples [11b,c] are examples [11a] and [12] from Kato, Cyrino & Corrêa, (in press).

- (11) a. *Pedro me deve telefonar hoje. climbing
 Pedro CL must telephone today
 b. Pedro deve [me telefonar] hoje. middle
 Pedro must CL telephone today
 c. Pedro deve [telefonar-me] hoje. no climbing
 'Pedro must telephone me today.'

Although (11b) and (11c) are acceptable positions in BP, it appears that the acceptability of these sentences depends on register (spoken vs. written varieties) and person.² Example (11c), with the 1st person clitic in the lower verb, is acceptable in EP and classic Portuguese, and less acceptable in BP, but 3rd person clitics in the lowest position are acceptable in BP. The opposite seems to be the case with clitics in the middle position, as in example (11b). While 1st and 2nd person clitics are acceptable in BP in between the finite verb and the clitic, 3rd person clitics are ungrammatical. Loss of clitic climbing could be related to the weakening of Agreement and the loss of other null subject properties, since according to Pagotto (1993) clitics in BP lost the capacity of

² See Pires's (2005) discussion of clitic positions with 1st, 2nd and 3rd person clitics and experimental results with BP native speakers obtained by Montrul, Dias & Santos (under review).

climbing to the upper verb. Therefore, they could still be enclitic to the lower verb if they moved to a position inaccessible for clitics. But because BP lost verb movement in the 19th century (DUARTE, 1992; ROSSI, 1993; PIRES, 2005), the only possible position for clitics is the proclisis to the lower verb. Although we are aware that the acceptability of clitic position between 1st, 2nd, and 3rd person is variable, in this paper we will not take into account this distinction.

Given these facts, Duarte (2000) explains the current state of BP as the coexistence of two grammars (one pro-drop and one non pro-drop). Duarte stresses that the new generation acquiring the language as a first language will extend the change by continuing to realize lexically non-referential subjects, as in full non-pro-drop systems. In this study, we ask how this hybrid pro-drop system is acquired by adults who already have knowledge of full pro-drop and non-pro-drop systems.

3 Acquisition of Null/Overt Subjects in Pro-drop Languages

The formal properties associated with the two settings of the null subject parameter have been the subject of extensive investigation since the early days of the parametric approach to L2 acquisition (AL-KASEY; PÉREZ LEROUX, 1998; LICERAS, 1988; PHINNEY, 1987; WHITE, 1985, 1986). An important question at that time was whether parameter resetting was possible in adult L2 acquisition, and whether L2 learners transferred the parameter settings from their L1 (see discussion in White (1989)). Through the collective findings of many studies, it became clear that not all structures assumed to be related to the parameter clustered in L2 grammars, but the L1 played a prominent role at initial stages of development.

Most recently, research has turned its attention to the acquisition of the discourse-pragmatic distribution of overt and null subjects in pro-drop systems, an issue originally raised by Liceras (1988) for L2 Spanish. Even though L2 learners reset the formal properties of the parameter early in development, problems with the discourse-pragmatic distribution of overt subjects in Spanish (and Italian) remain and persist until quite advanced levels of proficiency (LOZANO, 2002, 2008; MONTRUL;

RODRÍGUEZ LOURO, 2006; PÉREZ-LEROUX; GLASS, 1999). Since the L2 learners in all these studies were English-speaking, a natural explanation for the delayed acquisition of the pragmatic distribution of overt subjects is related to transfer from English.

Such transfer effects are corroborated by a recent study of the L2 acquisition of the semi-pro-drop nature of Brazilian Portuguese conducted by Xavier (2006). Xavier studied the naturalistic production of 6 learners of Portuguese (2 beginners, 2 intermediate and 2 advanced), 3 (one in each proficiency level) spoke English as native language and the other 3 spoke Italian. One subject in each group represented. The subjects were living and learning Portuguese in Brazil in a total immersion context. They were recorded in naturalistic conversations every week for an hour, for an average of 4-5 hours of recording per subject. Analysis of the oral productions revealed that the beginner learners overproduced and underproduced overt and null subjects and followed their L1: The Italian subjects produced more null subjects than what is reported for Brazilian Portuguese native speakers while the English speakers produced more overt subjects than the norms established for Brazilian native speakers. The learners at the intermediate and advanced levels converged on the rates of overt and null subjects reported for Brazilian native speakers.

These same issues were also recently addressed by Montrul, Dias & Thomé-Williams (in press) in their study of null subject expression in the oral production of non-native speakers of Brazilian Portuguese, who were native speakers of English and Spanish and also had knowledge of English or Spanish as a second language. Because the present study was motivated by the findings of Montrul, Dias and Thomé-Williams, we review the latter in some detail.

The purpose of Montrul, Dias and Thomé-Williams's (in press) study was to ascertain whether there would be transfer from the L1 (English or Spanish) in the acquisition of the hybrid pro-drop properties of Brazilian Portuguese. A group of 15 native Brazilian Portuguese speakers, a group of 20 English-speaking learners of Brazilian Portuguese (with knowledge of Spanish) and a group of 15 Spanish-speaking learners of Brazilian Portuguese (with knowledge

of English) were asked to complete three oral production tasks. The 30 non-native participants were enrolled in beginner and intermediate level Portuguese classes at the University of Illinois, Urbana-Champaign. Their mean age was 24.2. On a scale of 1 to 5, with 1 being “beginner” and 5 “near/native speaker,” the learners self-rated their proficiency in Portuguese between 1 and 3 in the scale, mean 2.23.

Overall results showed that the non-native speakers were not very different from the control group of Brazilian Portuguese native speakers on the production rates of null/overt subjects with different persons. Unlike Xavier’s study which was cross-sectional and included speakers of three proficiency levels, Montrul et al.’s study included beginner and intermediate learners, some of which may have already overcome the initial period of L1 influence detected by Xavier in her data. Thus, many learners in the Montrul et al. study already converged on the grammar of Brazilian Portuguese. Contrary to Duarte’s assertion about loss of pragmatic restrictions, it was found that the native BP speakers tested in the Montrul et al.’s study used null subjects in topic continuation contexts (61.1%), even if using an overt subject is not entirely pragmatically illicit in BP. There were also some weak effects for L1 transfer. The NN-Spanish L1 learners produced 22.5% more null subjects than the NN-English L1 learners. The English speakers produced many overt subjects in topic continuation contexts (64.6%), 25.7% more than the BP native speakers, and 22.5% more than the NN-Spanish L1 speakers, a difference that was statistically significant. The results of null/overt subjects in topic shift contexts were very similar among the three groups. Analysis of VS(O) word order showed no quantitative differences between the groups, but the analysis of lexical diversity (verb types) showed that the Spanish speakers matched the production of the BP native speakers closer than the English speakers.

In conclusion, this study of oral production showed that acquiring the hybrid properties of the BP pro-drop system is not very problematic for adult learners who know Spanish and English as L1 or L2. Since English and Spanish cancel each other out with respect to these properties, it seems that the cumulative effect of the two languages may have facilitated the acquisition of these properties in BP. Still, the

Spanish speakers, whose language is closer to Portuguese, were more native-like than the English speakers, but the effects of the L1 were very subtle, and more visible in the results of the English speakers than of the Spanish speakers. Montrul, Dias and Thomé-Williams (in press) suggested that the effects of the L1 would perhaps be more robust if one were to use a grammaticality judgment task which would include other structures that differ in Spanish and English and which do not occur spontaneously in speech, such as the *that-t* effect, and other structures unattested in full pro-drop systems.

4 The Study

The objective of the present study was to follow up on the initial findings of Montrul, Dias and Thomé-Williams (in press) and further investigate the potential effects of L1 or L2 transfer in the L3 acquisition of Brazilian Portuguese in other structures assumed to be related to the Null Subject parameter in a similar group of non-native speakers. In particular, this study used an acceptability judgment task and focused on knowledge of clitic-climbing (grammatical in Spanish but ungrammatical in English and Brazilian Portuguese) and extractions with complementizers or the *that-t* effect (grammatical in Spanish and Brazilian Portuguese but ungrammatical in English). The relevant properties being tested are summarized in Table 3.

Table 3 - Patterns of grammaticality for clitic climbing and *that-t* effect in the three languages.

	Brazilian Portuguese	Spanish	English
clitic climbing	no	yes	no
no climbing	yes	yes	no ¹
extractions with complementizers	yes	yes	no
extractions with no complementizers	no	no	yes

Note: English does not have clitics. It has strong pronouns.

Taking into account existing theoretical positions on transfer in L3 acquisition, the following hypotheses were formulated.

4.1 Hypotheses:

If the L1 plays a prominent role in the acquisition of an L3, then Spanish speakers will accept more clitic climbing and sentences with extractions and a complementizer (*that-t*) in Brazilian Portuguese than the English speakers, who will tend to reject both sentence types.

If the L2 plays a prominent role in the acquisition of an L3, we expect the opposite of hypothesis (1): the Spanish speakers with knowledge of English as L2 will reject clitic climbing and extractions with complementizer (*that-t*) in Brazilian Portuguese while the English speakers with knowledge of Spanish will be more accepting of both sentence types.

If transfer comes from both the L1 and the L2, as in the *Cumulative Enhancement Model* (FLYNN; VINNITSKAYA; FOLEY, 2004), the same pattern of responses is expected by the two groups of non-native speakers.

If typological proximity plays a role, and if Portuguese is assumed to be closer to Spanish and other Romance languages than to English, transfer will come from Spanish as L1 or L2 in the two groups of learners.

4.2 Participants

A total of 55 volunteer participants took part in the study. Nineteen were Brazilian Portuguese native speakers tested in the United States and in Brazil. Of the original pool of 55 participants, 40 were learners of Brazilian Portuguese enrolled in beginner and intermediate Portuguese classes at the University of Illinois at Urbana-Champaign. Nineteen were native speakers of English and 16 of them spoke Spanish or Italian, both pro-drop languages, as an L2. Eleven participants were native speakers of Spanish, and they all spoke English. The rest of the participants, whose results were not included in the analysis, were native speakers of Arabic, Russian, Japanese, Tagalog, Lithuanian and Dutch. Because we are interested in the role of L1 and L2 transfer, we will only focus here on the 19 English-L1 and the 11 Spanish-L1 speakers

for data analysis.

All participants were first asked to complete a linguistic background questionnaire including some biographical information with questions related to age, native language, knowledge of other languages, and proficiency self-ratings in Brazilian Portuguese. The self-ratings were estimated on a 5 point scale, where 1 = non-native and 5 = native. All participants, including the native speakers, completed a Brazilian Portuguese proficiency test developed by the third author, H elade Santos. The test consisted of a multiple choice cloze test (20 points) and a multiple choice vocabulary test (30 points). Reliability statistics using Cronbach alpha on the 50 standardized items in the test proved very high (.95, where any value above .8 is considered very reliable). Information about the participants' age at the time of testing, age of first exposure to Brazilian Portuguese, self-ratings in Brazilian Portuguese and proficiency scores on the Brazilian Portuguese Proficiency test are displayed in Table 4.

Table 4. Participants' mean age and proficiency scores

Group	N	age		AoA BP		Proficiency self-rating (max 5)		Proficiency Test score (max 50)	
		mean	sd	mean	sd	mean	sd	mean	sd
BP native speakers	19	34.5	(8.1)	--	--	4.9	(.3)	47.9	(2.3)
NN-English L1	19	24.6	(5.9)	22.2	(5.4)	2.4	(1.3)	29.2	(10)
NN-Spanish L1	11	22.4	(3.2)	21.4	(3.1)	2.9	(.53)	33.5	(4)

One way-ANOVAs comparing the three groups showed significant differences in age of testing ($F(2,48) = 15.93, p < 0.01$) between the native speakers and the non-native groups. Tukey HSD showed no differences between the English-L1 and the Spanish-L1 non-native speakers ($p = .63$), who were college students of the same age. The ANOVAs for age of acquisition (AoA) of Brazilian Portuguese ($F(2, 48) = 20, p < .01$), proficiency self ratings ($F(2,48) = 40.9, p < 0.01$), and proficiency test scores ($F(2,48) = 38.8, p < 0.01$), were significant

between the native speakers and the non-native speakers. The two experimental groups did not differ in their AoA of Brazilian Portuguese ($p = .855$), in their self-ratings ($p = .31$), or in their proficiency test scores ($p = .21$), according to Tukey HSD tests. Therefore, any difference we find between the English L1/Spanish L2 and Spanish L1/English L2 groups in the experimental task cannot be attributed to proficiency or age of acquisition since the two groups are entirely matched on these variables.

Figure 1 shows the relationship between the self-rating scores and the proficiency test scores for the two experimental groups. Pearson correlations were significant for the scores of the English-L1 group (NNE) ($r = .67$, $p < 0.01$), but not for the Spanish-L1 group (NNS) ($r = .25$, $p = .45$).

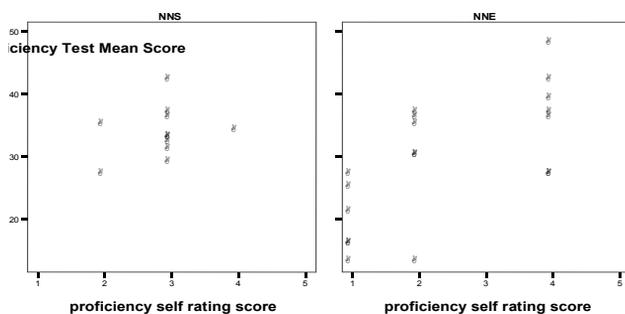


Figure 1 - Correlations between self-rated proficiency in Brazilian Portuguese and Portuguese proficiency test score.

4.3 Task

The main experimental task was a written acceptability judgment task. It consisted of 128 grammatical and ungrammatical sentences. Among these sentences, 16 tested clitic climbing and 16 tested no climbing (4 with 1st person, 4 with 2nd person, 4 with 3rd person animate and 4 with 3rd person inanimate), following the acceptable positions in Spanish. Our instrument also included sentences with clitics in

middle position, as in (11b), but these examples will not be discussed in this article because they are discussed in detail in Montrul, Dias and Santos (under review).³ In addition to the clitic climbing and no climbing sentences, 8 sentences tested grammatical sentences with subject extractions and complementizers and 8 sentences were the ungrammatical counterpart without the complementizer. We only report the results of these 48 sentences in this article. The remaining sentences included clitic pronouns with finite and non-finite verbs in different positions, and the results of these sentences are being reported elsewhere (MONTRUL; DIAS; SANTOS, under review). An example of each sentence type is given in Table 5. The full lists of sentences whose results are reported here are presented in the appendix.

Table 5 - Sentence types tested.

sentence type	number	examples	judgment
clitic climbing	16	Você me pode esperar na porta do cinema.	ungrammatical
no climbing	16	Você pode esperá-lo na porta do cinema.	grammatical
that-t	8	Quem a Ana disse que me ligou ontem?	grammatical
*that-t	8	Quem a Ana disse comprou um vestido?	ungrammatical

Because some sentences are clearly grammatical, others are clearly ungrammatical, but many showed variable acceptability according to native speaker judgments, each sentence was presented with a 4-point acceptability scale underneath. Because learners of Brazilian Portuguese are exposed to a more formal register in textbooks, the participants were specifically instructed to think about written Brazilian Portuguese when judging the sentences. The scale meant the following:

³These sentences with clitics in middle position received overall acceptability scores of 2.7 over 4 for the Brazilian native speakers, as compared with 1.8 for clitic climbing and 3.4 for the lowest position (see Figure 1). There was extreme variation by person (1st vs. 2nd and 3rd) with the middle position, but much less variation for clitic climbing and the lowest position. Because we decided not to discuss the effects of person in this article, we only report the results of the clitic climbing and no climbing positions, which are also the acceptable positions in Spanish.

- 1 = impossible
- 2 = probably impossible
- 3 = probably possible
- 4 = perfectly possible

Participants were also given a separate option, “don’t know”, if they were unable to make a judgment. “Don’t know” answers were excluded from the statistical analysis.

The task, together with the proficiency test and the language background questionnaire, was administered online through survey gizmo (www.surveygizmo.com). The non-native speakers were tested during regular class time in a computer lab, in the presence of the course instructor and one of the members of the research team. The native speakers were tested individually in Illinois and in Brazil, since the survey is available on-line.

5 Results

Mean numerical scores for each sentence types were submitted to statistical analysis. Figure 2 shows the results of the two clitic conditions: clitic climbing (ungrammatical) and no climbing (grammatical).

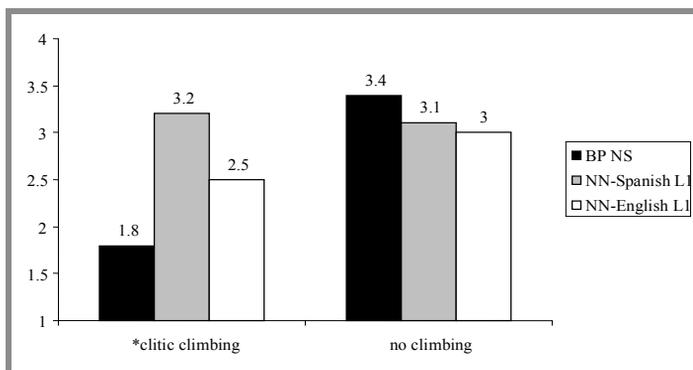


Figure 2 - Mean acceptability judgments on sentences with clitic climbing and no climbing.

A two-way ANOVA with sentence type as within subjects variable and group as between subjects variable showed a main effect for sentence type ($F(1,48) = 33.14, p < 0.01$), a main effect for group ($F(2,48) = 3.6, p = 0.03$), and a group by sentence interaction ($F(2, 48) = 20.4, p < 0.01$). The three groups did not differ from each other on their ratings of grammatical sentences with no climbing ($F(2,48) = 2.6, p < 0.081$), but the difference between the three groups for clitic climbing was highly significant ($F(2,48) = 12.63, p < 0.01$). The Spanish-L1 speakers were significantly more accepting of clitic climbing (*mean* 3.2) than the native speakers (*mean* 1.8) ($p < 0.01$) and the English L1 speakers (*mean* 2.5) ($p = 0.03$). Since clitic climbing is grammatical in Spanish, this result suggests that there is influence from Spanish as L1 in the Spanish speakers and from Spanish as L2 in the English speakers in the acquisition of this property of Brazilian Portuguese. The ratings for sentences with clitic climbing were significantly lower than for non climbing for the Brazilian native speakers ($t(18) = 11.28, p < 0.01$), but they were not significantly different for the Spanish-L1 speakers ($t(10) = .48, p = .64$) and only marginally non-significant for the English-L1 speakers ($t(18) = -1.9, p = 0.06$).

Figure 3 shows the results of *that-t* sentences: extractions with complementizer (grammatical in Brazilian Portuguese and Spanish, but ungrammatical in English) versus extractions with no complementizer (ungrammatical in Brazilian Portuguese and Spanish, but ungrammatical in English).

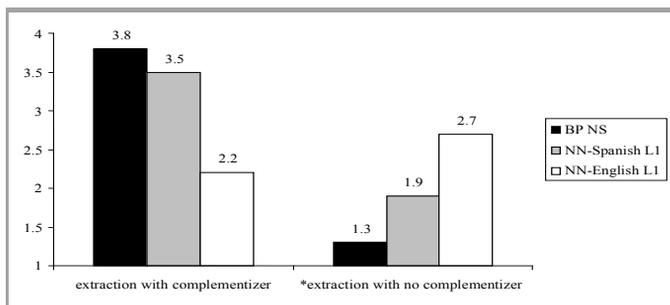


Figure 3 - Mean acceptability judgments on sentences illustrating the *that-t* effect.

An ANOVA with repeated measures showed a significant main

effect for sentence ($F(1,48) = 116, p < 0.01$), a significant main effect for group ($F(2,48) = 3.1, p = 0.05$) and a significant sentence by group interaction ($F(2,48) = 64.8, p < 0.01$). The mean acceptability ratings of the Brazilian native speakers and the Spanish L1 speakers did not differ from each other (Tukey HSD $p = .22$) but the mean ratings of both groups differed significantly from the mean ratings of the English L1 speakers ($p < 0.01$). For the ungrammatical sentences, the English-L1 speakers were significantly more accepting of these sentences (mean 2.7) than the Brazilian native speakers (mean 1.3) ($p < 0.01$) and the Spanish speakers (mean 1.9) ($p = 0.04$). However, the Spanish-L1 speakers were also more accepting of these sentences than the native speakers ($p = 0.03$). The mean ratings for the grammatical and ungrammatical sentences were significantly different for the Brazilian native speakers ($t(18) = 19, p < 0.01$) and for the Spanish-L1 speakers ($t(10) = 8.1, p < 0.01$). The English-L1 speakers, by contrast, rated grammatical and ungrammatical sentences fairly similarly (mean 2.2 and mean 2.7, $t(18) = 1.3, p = 0.18$).

In conclusion, these results also confirm a strong L1 effect for both the Spanish-L1 and the English L1 speakers.

5.1 Individual results

In order to better ascertain the effects of the L1 or the L2 in the acquisition of clitic climbing and of the *that-t* effect in Brazilian Portuguese we examined individual results, by looking at the participants' ratings for each sentence. If a participant assigned ratings of 3 or 4 to 75% of the grammatical sentences in each type (6/8 for *that-t* and 9/12 for clitic climbing) or ratings of 1 or 2 to ungrammatical sentences, we took this pattern of responses to mean that such participant consistently treated a given group of sentences as grammatical or ungrammatical. We then examined the linguistic performance of each individual participant in each group to determine whether they were following the Brazilian Portuguese pattern, the Spanish pattern or the English pattern for the judgment of the Brazilian Portuguese sentences. These results are presented in Table 6 for the native speakers, Table 7 for the Spanish-L1

speakers and Table 8 for the English-L1 speakers.

Table 6 - Brazilian Native speakers.

<i>subject</i>	<i>L1</i>	<i>L2</i>	<i>self-rating</i>	<i>Proficiency Score</i>	<i>clitic climbing</i>	<i>no climbing</i>	<i>that-tG</i>	<i>that-tU</i>
1	Portuguese	English	5	49	no	yes	yes	no
53	Portuguese	English	5	50	no	yes	yes	no
58	Portuguese	English	5	44	yes	yes	yes	no
30	Portuguese	English	5	45	no	no	yes	yes
33	Portuguese	English	5	49	no	yes	yes	yes
13	Portuguese	English	5	50	no	yes	yes	no
91	Portuguese	English	5	48	yes	yes	yes	no
17	Portuguese	English	4	50	no	yes	yes	no
18	Portuguese	Spanish	5	48	no	yes	yes	no
16	Portuguese	Spanish	5	46	no	yes	yes	no
40	Portuguese	English	5	48	yes	yes	yes	no
14	Portuguese	English	5	49	no	yes	yes	no
3	Portuguese	English	5	48	no	yes	yes	no
4	Portuguese	English	5	48	no	yes	yes	no
8	Portuguese	English	5	50	no	yes	yes	no
41	Portuguese	English	4	47	yes	yes	yes	no
19	Portuguese	English	5	46	no	yes	yes	no
96	Portuguese	English	5	50	no	yes	yes	no
8	Portuguese	English	5	50	no	yes	yes	no

Table 6 shows that almost 80% of the native speakers (15 of 19) consistently accepted no climbing and rejected clitic climbing, while 4 individuals (20%) accepted both options, as in Spanish. Only one person tended to reject no climbing, but also rejected climbing, a sign of a mixed pattern. As for extractions with complementizers, all the native speakers accepted the grammatical sentences with complementizers and two speakers (10%) also accepted the ungrammatical sentences with no complementizers, as in English. This is also evidence of a mixed pattern because the responses of this person are not entirely consistent with Portuguese or with English. But, overall, the Brazilian native speakers behave as described in the existing linguistic literature on the current

linguistic state of the Brazilian Portuguese language.

Table 7 - Spanish L1 speakers

<i>subject</i>	<i>L1</i>	<i>L2</i>	<i>self-rating</i>	<i>Proficiency Score</i>	<i>clitic climbing</i>	<i>no climbing</i>	<i>that-G</i>	<i>that-U</i>
26	Spanish	English	3	33	no	no	yes	no
25	Spanish	English	3	36	yes	yes	yes	no
21	Spanish	English	3	42	yes	yes	yes	no
29	Spanish	English	3	31	yes	yes	yes	no
23	Spanish	English	3	29	yes	yes	yes	no
52	Spanish	English	3	33	yes	yes	yes	yes
50	Spanish	English	2	35	yes	yes	yes	no
82	Spanish	English	3	37	yes	yes	no	no
83	Spanish	English	3	32	yes	yes	yes	yes
85	Spanish	English	4	34	yes	yes	yes	no
89	Spanish	English	2	27	yes	yes	yes	no

Table 7 shows that 90% of the Spanish L1 speakers (10 out of 11) adopted the grammar of Spanish for judging sentences with clitic climbing and no climbing in Brazilian Portuguese. That is, these speakers accepted both options as grammatical, which is the case in Spanish (see Table 3). The other participant displayed a mixed pattern of rejecting both options, the same pattern displayed by subject # 30 in the Brazilian native speakers group. The results of the *that-t* sentences also showed that 8 out of 11 or 73% of the participants also converged on the grammar of Brazilian Portuguese, which does not differ from Spanish in this regard. These subjects accepted the grammatical sentences with complementizers and rejected the ungrammatical sentences without complementizers. The remaining 3 subjects showed a mixed pattern: 2 of them accepted both options, like subjects #30 and #33 in the native speakers group, while the other subject (#82) rejected both sentence types. Thus, we can safely conclude that the Spanish-L1 speakers have transferred their L1 values with both clitic-climbing and the *that-t* effect in Brazilian Portuguese.

Table 8 - English L1 speakers.

<i>subject</i>	<i>L1</i>	<i>L2</i>	<i>self-rating</i>		<i>clitic climbing</i>	<i>no climbing</i>	<i>that-G</i>	<i>that-U</i>
24	English	Spanish	4	37	yes	yes	no	yes
25	English	Spanish	2	30	yes	yes	yes	yes
29	English	Spanish	2	37	yes	yes	no	no
52	English	Spanish	2	35	no	yes	yes	yes
55	English	Spanish	2	30	yes	yes	no	no
52	English	Spanish	1	21	no	yes	yes	yes
50	English	Spanish	2	13	yes	yes	no	yes
57	English	Spanish	4	27	yes	yes	yes	no
81	English	Spanish	4	36	yes	yes	yes	no
82	English	Italian	4	39	yes	yes	yes	yes
85	English	Spanish	4	27	yes	no	no	yes
32	English	Italian	1	16	yes	no	no	no
33	English	Italian	1	16	yes	no	no	yes
89	English	Spanish	4	42	no	yes	no	yes
36	English	Spanish	1	27	no	no	no	yes
37	English	Spanish	2	36	yes	yes	no	no
38	English	Spanish	1	13	yes	yes	yes	yes
39	English	Spanish	1	25	yes	yes	no	yes
40	English	Spanish	4	48	no	yes	yes	no

If patterns of L1 transfer are clearly delineated in the results of the Spanish speakers, the results of the English-L1 speakers present a truly mixed pattern of L1 and L2 influence. There is 11/19 or close to 60% of individuals who treated clitic climbing and no climbing as in Spanish, accepting both sentence types as grammatical. There are three other subjects (#85, #32 and #33) who may also be said to fall in the Spanish pattern because they accepted clitic climbing and rejected no climbing. (Some Spanish-speakers may actually prefer climbing to no climbing and tend to reject one of the options in judgment tasks.) Only 4 speakers (20%) have the grammar of Brazilian Portuguese, rejecting clitic climbing and accepting no climbing. Finally, there is only one subject (#36) with very low proficiency

in the language, who rejects both options, and this could be consistent with an English-based analysis, since English has no clitics.

As for sentences with *that-t*, 7 individuals (37%) followed their L1 (English), rejecting grammatical sentences with complementizers and accepting ungrammatical sentences without complementizers. Only three subjects (#57, #81 and #40) performed like the Brazilian native speakers and the Spanish-L1 speakers, who could be said to have been aided by transfer from Spanish. The remaining 8 subjects showed a mixed pattern, of rejecting or accepting both sentence types. Therefore, in the English-L1 group we see a nuanced picture of transfer from L1 and L2 depending on the construction.

5.2 Discussion

The purpose of this study was to revisit the issue of language transfer in the acquisition of null subject related properties in the interlanguage grammars of adult English and Spanish-speaking adults learning Brazilian Portuguese. Because Brazilian Portuguese, according to Kato (2000) and Duarte's (2000) proposals, has been undergoing diachronic change from a pro-drop to a non-pro drop system in the last century, the hybrid properties of the language provide an interesting testing case for learnability. A previous study by Montrul, Dias and Thomé-Williams (in press) found that the adult learners tested were very similar to the Brazilian native speakers in their rates of oral production of null and overt subjects Brazilian Portuguese. It was not the case, for example, that the English-speaking learners applied exclusively their non pro-drop settings from English or that the Spanish speakers relied exclusively on the pro-drop settings from Spanish in expressing subjects. However, this study also showed a weak L1 effect because the Spanish-speakers were very similar to the Brazilian native speakers in rates of null subjects with 3rd person, accuracy on agreement, and lexical diversity in VS-order patterns. Given the small-scale nature of their study, Montrul, Dias and Thomé-Williams's study left an important issue unaddressed and

unresolved. All the participants also had knowledge of another language, with Brazilian Portuguese being the 3rd or nth language being learned. All the Spanish-L1 subjects were very fluent speakers of English and all the English-L1 speakers had at least intermediate-level knowledge of Spanish. In recent years it has been argued and demonstrated that knowledge of an L2 facilitates knowledge of an L3, and one of the main concerns of the growing field of L3 acquisition is to determine more precisely how each of the previously known languages contributes or not to the acquisition of a third language. Thus, in this particular case the pro-drop settings of the L1 and the L2 cancel each other out, and the combined influence of the two previously known languages may have contributed to quite accurate convergence on the Brazilian Portuguese target, at least with respect to production of subjects.

The present study aimed to address the issue of potential L1 or L2 influence in the L3 acquisition of Brazilian Portuguese more directly by recruiting similar groups of Brazilian Portuguese learners as in Montrul, Dias and Thomé-Williams (in press) and by changing the methodology. In particular, the present study used a written acceptability judgment task to test two structures assumed to be related to the null subject parameter—clitic climbing, grammatical in Spanish but no longer possible in Brazilian Portuguese, and extractions with complementizers (the *that-t* effect), grammatical in Spanish, still available in Brazilian Portuguese, but ungrammatical in English. By testing two structures that differ in the three languages under consideration it is possible to tease apart more precisely the potential contribution of Spanish and English as L1 or L2 in the acquisition of Brazilian Portuguese. Furthermore, this study also used an independent measure of proficiency developed by the third author, which turned out to be highly reliable.

Four possible hypotheses were considered: 1) exclusive transfer from the L1, 2) exclusive transfer from the L2 (BARDEL; FALK, 2007), 3) cumulative transfer from L1 and L2 (FLYNN; VINNITSKAYA; FOLEY, 2004), 4) transfer from the typologically closer language. Let us consider now the extent to which our results confirm each of these hypotheses.

According to the L1 transfer hypothesis, L3 acquisition would be like L2 acquisition, and if there is transfer it will come almost exclusively from the L1. Therefore, the Spanish L1 speakers were expected to accept clitic-climbing in Brazilian Portuguese and to also accept extractions with complementizers. By contrast, the English speakers were expected to reject both sentence types. The results of the Spanish speakers are highly consistent with the L1 transfer hypothesis, but the results of the English speakers are not, since many individuals accepted clitic climbing in Brazilian Portuguese. Therefore, the L1 transfer hypothesis is not entirely supported.

The L2 transfer hypothesis seems to apply in part for some of the English speakers because they accepted clitic climbing as in Spanish, but does not apply to the results of the Spanish speakers, who also accepted both clitic-climbing and extractions with complementizers as in Spanish.

A strict reading of the *Cumulative Enhancement Model*, based on the evidence Flynn et al. (2004) present, led us to hypothesize no differences between the Spanish and English-L1 speakers. The combined influence from the two languages (L1 and L2) would presumably facilitate convergence on the target, but this is not what the results of our study showed.

Finally, we also considered a hypothesis based on perceived linguistic proximity and typology, broadly defined. Since both Spanish and Portuguese are Romance languages, they share a great deal of the lexicon and more structural characteristics with each other than with English, such as the availability of object clitics and null subjects. Thus, transfer may come from the typologically closer language, which in this case happens to be Spanish for the two groups, regardless of its L1 or L2 status in the interlanguage systems. The results of the Spanish group are highly consistent with this hypothesis, but the results of the English speakers differ by structure. Close to 75% of the English speakers (14/19) accepted clitic climbing as in Spanish, their L2, but only 3 individuals accepted extractions with complementizers as in Brazilian

Portuguese and Spanish. A third of the subjects followed the English pattern and the other third showed a mixed pattern. The question is why L1 and L2 transfer operates differently for the English speakers. It may be the case that the triggering evidence for the two constructions is different. Although 3rd person clitics are also slowly disappearing from the Brazilian Portuguese language, there are still 1st and 2nd person clitics used with finite and non-finite verbs. The presence of clitics in the language may lead them to perceive the Spanish and Portuguese systems as quite similar, and they have not realized that the climbing option is not longer possible in the language.

But what is the triggering evidence for the *that-t* effect? According to Rizzi's (1982) analysis, the *that-t* effect is related to the availability of postverbal subjects in null subject languages. Kato (1999) states that postverbal subjects are still possible in spoken Brazilian Portuguese, even if they only occur with unaccusative verbs and existential constructions. It is possible that this evidence is not robust enough to trigger unlearning of extractions without complementizers in Brazilian Portuguese. The fact that we find a third of the subjects showing a mixed pattern of acceptance or rejection suggests that they may still be in the process of sorting out the right system.

6 Conclusion

In conclusion, we see that L1, the L2 and the typology hypotheses are all partially supported, and the role of L1 and L2 transfer in L3 acquisition is quite nuanced and far from straightforward. This study showed that both the L1 and the L2 and their typological proximity to the L3 play a role in the acquisition of an L3, but there is individual variation by subject and by linguistic structure. To our knowledge, the particular contribution of different structures and their salience in the input has not been addressed in the L3 debate. Further research needs to look more deeply at the interplay of language transfer with different constructions and the nature of the input in L3 acquisition.

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