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Null Subject Behavior in the Attrition of Brazilian Portuguese

Tammer Castro
Florida International University, tcast010@fiu.edu

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Abstract

The syntax of referential null subjects in Brazilian Portuguese (BP) is the topic of much recent work (Kato & Negrão 2000; Ferreira 2000, 2004; Martins & Nunes 2005, 2010; Modesto 2000; Rodrigues 2002, 2004). In light of the Interface Hypothesis (Tsimpli, Sorace 2006), uninterpretable features such as purely syntactical elements should not undergo attrition. This study tests whether this theory is valid in regard to the Null Subject behavior in the production of BP speakers under influence of L2 English. In order to do so, I conducted an experiment with monolingual BP speakers and bilingual (English/BP) speakers to establish a clear-cut comparison. The experiment consisted of an elicited production task and a grammaticality judgment task. The results of the data analysis show that BP speakers under influence of L2 English do seem to indicate attrition, thus encouraging further studies questioning the Interface Hypothesis.

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1 Introduction

The main goal of this study is to provide a comparative analysis involving two groups of Brazilian Portuguese speakers in order to determine whether syntactic attrition takes place. Köpke (2004) defines language attrition as "the loss of structural aspects of language, i.e., change or reduction in form". The Critical Period Hypothesis states that there is a period of time that is critical with respect to language acquisition (generally up until around puberty). It is assumed that late L2 learners (after the Critical Period (CP)) are unable to attain native-like proficiency, but several studies have shown that there are cases of late L2 learners who are able to reach that goal, thus providing an argument against the CP Hypothesis.

The findings of this study will test the validity of the Interface Hypothesis of Language Attrition, which suggests that syntax-discourse interface areas are more complex and more prone to L1 attrition, whereas syntactic features will remain unattrited regardless of L2 interference (e.g., Sorace, 2000, 2005; Tsimpli and Sorace, 2006; Tsimpli et al. 2004).

In order to test for attrition, it is fundamental that the subjects tested have been outside their L1 environment for a certain length of time, and that they left their home country after the CP, which rules out any possibility of them being native speakers in their L2 as well. I conducted elicited production and grammaticality judgment tasks in these domains in native monolingual BP speakers, and in native BP speakers living in the United States for over seven years.

2 Language Attrition and the Interface Hypothesis

First Language Attrition is understood in the present work to be "the nonpathological erosion of previously-acquired L1 properties (lexical, syntactic, semantic/pragmatic) due to intense contact with a dominant second language" (Cuza, 2009). (For discussion, see Gürel 2004; Köpke and Schmid 2004; Montrul 2002; Schmid 2002; Seliger 1996; Silva-Corvalán 1991; Sorace 2004). Cuza, 2008; Köpke & Schmid, 2004; Sorace, 2000; Seliger & Vago, 1991).

Research on first language attrition indicates that significant changes occur in the representation of the native language (L1) under the influence of a non-native language (L2). Previous research has aimed to determine the ways in which a native language changes under influence from a foreign language. A dominant view in the literature on L1 attrition is known as the Interface Hypothesis, according to which syntax-discourse interface areas (interpretable domains) are more complex and more permeable to L1 attrition. In contrast, purely syntactic features will remain unproblematic to L2 interference and therefore spared from L1 attrition (e.g., Sorace, 2000, 2005; Tsimpli and Sorace, 2006; Tsimpli et al. 2004).

3 Syntax of Pronominal Subjects in Brazilian Portuguese and English

The Null Subject Parameter (NSP) divides languages into pro-drop languages (such as Peninsular Spanish and Romance languages in general) and non-pro-drop (such as English). In this section, I provide an overview of the relevant literature on the Pro-drop Parameter in Brazilian Portuguese and English.

In typical null subject languages such as Peninsular Spanish, the pronominal subject of a finite clause is typically not expressed overtly, as in (1).

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(1) Peninsular Spanish:
    Salí   de   la casa.
    Left.1SG from the house
    'I left the house.'

In these languages, the expression of a pronominal subject of a finite clause is typically interpreted as contrastive or focused, as in (2):

(2) *Yo salí   de   la   casa*.
    I   left.1SG from the house
    'It was I who left the house.'

On the other hand, in typical non-null subject languages such as Modern English, the pronominal subject of a finite clause is expressed overtly, as in (3).

(3) I left the house.

In these languages, the omission of a pronominal subject of a finite clause is unacceptable, as in (4).

(4) *Left the house.

Brazilian Portuguese, as has been noted, seems to behave in a transitional way in the sense that some of its pro-drop properties have been or are being lost, and is therefore referred to as a "restricted null-subject" language. The main claim suggested by this theory is that in main clauses, "first and second referential null subjects are not *pro* – instances of topic-deletion" (Ferreira 2000, Modesto 2000, and Rodrigues 2004).

The empty category in the subject position of constructions such as (5a), for instance, is taken to be a variable bound by a zero topic; thus, the presence of an intervening *wh*-element between the empty topic and the variable in subject position in (5b) yield a Minimality effect. Fully Null Subject languages such as Peninsular Spanish or Italian do not show this restriction.

(5) a. *Fiz   um bolo*.
     made.1SG.PST a   cake
     'I made a cake.'
  b. ?**O que fiz*?
      what made.1SG.PST
     'What did I make?

BP does not generally allow third person referential null subjects in main clause:

(6) a. **pro estava   cansado*   (Rodrigues, 2004)
      was.3SG tired
     'He was tired.'
  b. *Ele estava   cansado*.
     He was.3SG tired
     'He was tired.'

However, BP licenses null third person referential subjects in embedded finite clauses. This is illustrated in (7).

(7) Pedro disse que *pro* falava alemão.
    Pedro said that *pro* spoke German
    'Pedro said that he spoke German.'

Significantly, embedded clause third person referential empty subjects need to have an antecedent which is the closest c-commanding one in the clause. (Fully Null Subject languages, such as Spanish and European Portuguese, do not exemplify these restrictions on the distribution of embedded subjects.)

(8) *Ele disse que* [*o   pai   do   Pedro*]$_i$ *acha que* (*ec*)$_i$ *vai   ser promovido*
      He   said that [the father of-the Pedro]$_i$ thinks that (ec)$_i$ goes be promoted
      He said that [Pedro's father]$_i$ thinks that he$_i$ is going to be promoted'

(9) *Ele$_i$ disse que o   pai   do   Pedro acha que* (*ec*)$_{*i}$ *vai   ser promovido*
      He$_j$ said that the father of-the Pedro thinks that (ec)$_{*i}$ goes be promoted
      He$_j$ said that Pedro's father thinks that he$_i$ is going to be promoted'

(10) *Ele disse que o   pai   d* [*o   Pedro*]$_k$*acha que* (*ec*)$_{*k}$ *vai   ser promovido*
      He   said that the father of[the Pedro]$_k$ thinks that (ec)$_{*k}$ goes be promoted
      He said that [Pedro$_k$]'s father thinks that he$_{*k}$ is going to be promoted'

(11) *Ele disse que o   pai   do   Pedro acha que* (*ec*)$_{*l}$ *vai   ser promovido*
      He   said that the father of-the Pedro thinks that (ec)$_{*l}$ goes be promoted
      He said that Pedro's father thinks that he$_{*l}$ is going to be promoted'

Sentence (8) carries the natural interpretation that the null subject refers back to the subject of the embedded clause that antecedes it. Sentence (9) is unacceptable as the null subject cannot refer back to the subject of the matrix clause. Sentence (10) is also unacceptable as the null subject does not refer back to Pedro (but to his father, since 'father' is the main part of the subject of the embedded clause). Sentence (11) is unacceptable as the null subject cannot refer to a person other than the subject of the embedded clause that antecedes it.

Note that Modern English does not show a contrast between main and embedded clauses - the pronominal subject of finite clauses must be overtly expressed, whether in the main clause, as indicated by the examples in (12), or in the embedded clause, as indicated by the examples in (13):

(12) a. I made a cake
     b. *pro made a cake
(13) a. He said that Pedro's father thinks that *he* is going to be promoted.
     b. *He said that Pedro's father thinks that *pro* is going to be promoted.

4 Methodological Approach

4.1 Participants

Participants for the current study are divided into two groups: (i) monolingual Brazilian Portuguese speakers and (ii) bilingual Brazilian Portuguese and English speakers. Participants in the first group were recruited in and near the cities of Fortaleza and São Luís, in the northeast of Brazil. The second group of participants consists of bilinguals living in Miami-Dade and Broward Counties.

Twenty-three monolingual BP speakers were recruited in Brazil. Of these, six subjects were excluded due to technical problems during the experiment. It is important to note that the term 'monolingual' used here applies to native speakers of BP who have little or no knowledge of a foreign language. A total of twenty-five bilinguals were recruited in the Miami-Fort Lauderdale area, of which eight were excluded due to technical problems. All of the participants had normal or corrected vision as well as normal hearing. No compensation was offered for their participation.

4.2 Items

Experimental items consist of fifty sentences in the grammaticality judgment task, among which twenty-four are fillers. All of the items are complete sentences with a subject and one or more verbs. For the elicited production task, a comic strip was used as the basis for elicitation of the participants' natural speech. "Monica's Gang" (originally titled in Portuguese 'Turma da Mônica')

is the most famous comic book series designed for all audiences made in Brazil, and for that reason it was chosen since all subjects were familiar with the characters of the story.

4.3 Tasks

4.3.1 Elicited production task

Participants were asked to browse a comic strip with empty speech bubbles in order to avoid priming effects. They were given as much time as needed to make sure they understood the sequence of actions. After that, participants were asked to tell the story in their own words. Their version of the narrative was recorded as they spoke. Participants took an average of 2-3 minutes to tell the story with its important details.

4.3.2 Grammaticality judgment task

The grammaticality judgment task consists of a set of fifty sentences (among which twenty-four are fillers). The participants were asked to read each sentence out loud and then, according to their judgment of the acceptability of the sentence, choose one of five options (completely impossible, sounds strange, possible, completely acceptable, don't know) before moving onto the next sentence, while their responses were being recorded. If they judged a sentence as "completely impossible" or "sounds strange", which fall into the *unacceptable* category, they were asked to provide an *acceptable* version of the sentence. The reason for this was to identify what strategies participants were using to determine whether or not the sentence was acceptable. In addition, the *acceptable* versions given by the participants may raise interesting questions, which will be addressed in the discussion. Sentence (14) is a sample sentence from this task:

(14)   *Ela disse que o pai do Pedro acha que é alta.*
       Completamente impossível – Soa estranho – É possível – Completamente aceitável – Não sei dizer
       'She said that the father of Pedro thinks that Ø is tall (fem.).
       Completely impossible – sounds strange – is possible – completely acceptable – do not know.'

4.4 Apparatus and procedure

The grammaticality judgment task was presented using a small netbook (10.5'') in a PowerPoint presentation format. The same netbook, which has a built-in microphone, was used to record the auditory stimuli in both tasks. The software used to record the participants' voices was Praat, a program designed by the University of Amsterdam commonly used for phonetics and speech analysis.

       During the elicited production task, participants were asked to retell the story they had looked over as if they were telling it to a friend, making it as informal as possible and not worrying about grammatical mistakes. Their speech was recorded using Praat. Once finished with the story, the recording was stopped and we engaged in informal conversation before starting the grammaticality judgment task. For this second task, they were told to be comfortable judging the sentences according to how the language is spoken, again not focusing on grammar errors. It was necessary to point out that they were not being evaluated on the basis of their grammatical knowledge.

5 Statistical analysis

In this section, I provide an overview of the data analysis. As shown above, some of the participants took longer than others to tell the story, yielding then fewer subject occurrences as they produced fewer sentences. After transcribing every participant's voice recordings, I counted the number of subjects produced by each participant, then divided those subjects into Non-Pronominal, Expletive, Null Pronominal and Overt Pronominal. This division was crucial in

identifying the difference in pattern between the monolingual production and the bilingual production.

The grammaticality judgment data analysis was performed using the SPSS (Statistical Package for the Social Sciences) software for statistical and logical analysis. Out of the fifty sentences in the task, the twenty-four fillers were removed, and the twenty-six remaining sentences were converted into numbers (s1, s2, etc). The answers given by each participant were also converted into numbers, according to the following scale:

(15) 1 – completely impossible
       2 – sounds strange
       3 – is possible
       4 – completely acceptable
       5 – don't know

5.1 Elicited production task

In order to analyze the data collected during the elicited production task, it was necessary to transcribe each participant's speech. This procedure is fundamental to determine the total number of subjects uttered, and out of these, which ones are relevant for our analysis. It is important to mention that a certain participant may have taken longer than another to finish his/her story, which then would most likely imply a higher number of subjects. To avoid complications this difference may cause, exact numbers and percentages are provided in order to yield a more accurate analysis.

It is important to note that coordinated clauses with the same subject are not counted as null occurrences, as NNSLs can also have such constructions such as in the English example below:

(16) John woke up, brushed his teeth, put on his best tie and went to work.

Sentence (16) does not show any null subject occurrence, since John is the matrix subject of all four coordinated clauses. Constructions such as (16) were not considered for the purpose of this analysis, since no null subject occurrences are present.

	MONOLINGUALS	BILINGUALS
Non-Pronominal Subjects	146	196
Expletive Subjects	11	17
Pronominal Subjects (Null)	78	40
Pronominal Subjects (Overt)	286	299
TOTAL NUMBER OF SUBJECTS	521	552

Table 1 – Distribution of subjects

Out of the total produced by each group, first examined were the Non-Pronominal Subjects, i.e., DPs such as "Monica", "the dog" or "the puddle", for example. These constitute 28% of the occurrences in the monolingual group, and 35.5% among the bilingual subject utterances. This difference is one not of significance for the purposes of this study, yet it yields more solid numbers for the other subject occurrences that I will more closely investigate.

Expletive occurrences are low in both groups: 2% among the monolinguals and 3% among the bilinguals. It is worth mentioning that all expletive occurrences were strictly null, as shown in the example below, from participant FFM:

(17) *A Mônica tava passeando e viu o Cebolinha comendo um pirulito, mas Ø tinha uma poça de lama no meio do caminho.*
       'Mônica was strolling by and saw Cebolinha eating a lollipop, but there was a mud puddle in the way.'

After separating Expletives and Non-Pronominal Subjects, there were 364 Pronominal Subjects produced by the monolingual group, and 339 produced by the bilinguals. Out of these,

78.6% were overt and 21.4% null among the monolinguals, which reinforces the claim suggested by Duarte (1996), that BP's status as a Null Subject Language is in transition. The bilinguals produced 88.2% overt subjects and only 11.8% null subjects. A parallel study conducted in the summer of 2011 in Portugal with native speakers of European Portuguese confirmed that these numbers are much closer in EP, showing a stronger preference for null subjects than in BP.

These numbers tell us that speakers of Brazilian Portuguese under the influence of L2 English have a slight preference for usage of overt subjects versus null subjects in comparison with monolingual BP speakers who have never left Brazil. The Interface Hypothesis suggests that syntactic features remain unaffected in the language attrition process, and this analysis shows that bilinguals do behave slightly differently from monolinguals with respect to the usage of null and overt subjects.

5.2 Grammaticality judgment task

The purpose of this task was to analyze differences in the judgment of prompt sentences in both groups with respect to the null subject behavior in matrix and embedded clauses. Fifty sentences were presented to the participants on a computer screen. Participants were then asked to judge how acceptable the sentence sounded to them, by choosing any of the five options presented below the sentence. Because the Interface Hypothesis suggests that syntactic attrition should not take place, one can infer that there will not be significant differences in judgment by both groups in the twenty-six sentences. Differences, however, were found in this analysis. In this section, I will investigate these differences and discuss them in light of the Interface Hypothesis.

The answers given by the participants were grouped into (i) acceptable and (ii) unacceptable for this analysis. Hence, "completely unacceptable" and "sounds strange" merged into one category, as well as "is possible" and "completely acceptable". This merging was helpful in order to visualize significant differences. Sentence (18) will be used to exemplify this change, and the reasons for it.

(18) *Ele é possível solicitar fotografias das obras expostas*.
    'It is possible to request photographs of the pieces shown.'

Originally, the division in five categories showed results as shown in the table below:

(18)		Monolinguals	Bilinguals	Total
	1 - Completely Impossible/Sounds strange	12 (70.6%)	14 (82.4%)	26 (76.5%)
	3 – It is possible/Completely acceptable	5 (29.4%)	3 (17.6%)	8 (23.5%)
Total		17 (100%)	17 (100%)	34 (100%)

Table 2 – Sentence (18) post-merging results

This chart shows that very few participants in both groups judged this sentence as acceptable, whereas most of them classified it as acceptable. This justifies the purpose of merging the answers into two distinct categories.

While it is true that no significant differences were detected in most sentences, the few occurrences where syntactic attrition could be an influence are discussed here. Sentence (19) is one of these occurrences:

(19) *Como nos custou a despedir aquele empregado!*
    'How it cost us to fire that employee! (indicating surprise)'

The crosstab below shows the judgments for (19).

(19)		Monolinguals	Bilinguals	Total
	1 - Completely Impossible/Sounds strange	4 (23.5%)	0 (.0%)	4 (11.8%)
	3 – It is possible/Completely acceptable	13 (76.5%)	17 (100%)	30 (88.2%)
Total		17 (100%)	17 (100%)	34 (100%)

Table 3 – Sentence (19) results

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	4.533[b]	1	.033		
Continuity Correction [a]	2.550	1	.110		
Likelihood Ratio	6.080	1	.014		
Fisher's Exact Test				.103	.051
Linear-by-Linear Association	4.400	1	.036		
N of Valid Cases	34				

a.   Computed only for a 2x2 table
b.   2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.00.

Table 4 – Chi-Square Tests

The charts above indicate a marginally significant difference between monolingual and bilingual groups on the acceptability of sentence (19), p=.103. 76.5% of monolingual speakers thought this was possible or completely acceptable, while all (100%) of bilingual speakers did. Such a finding is especially intriguing, since the null expletive is expected to be less common in attrited BP, but the reverse is shown here. However, adding an overt expletive would not make the sentence more acceptable; it would, instead, cause it to be ungrammatical as overt expletives are not a feature present in Brazilian Portuguese. Therefore, I come to the conclusion that such discrepancy in judgments cannot be attributed to influence of L2 English, but perhaps unrelated factors which are irrelevant to this discussion.

Note that it is significant that speakers of BP under the influence of English are showing a formal distinction in their grammar between expletive and non-expletive null subjects. The precise analysis of this distinction has been debated in the literature; however, the fact that there is a syntactic contrast between expletive and non-expletive subjects is standardly assumed. Therefore, the fact that speakers of BP under the influence of English treat differentially the expletive from the non-expletive structures indicates that their grammar is being selectively affected by the influence of English, which is an important finding.

The same numbers were found in sentence (20).

(20) *Eu disse ao Robertinho que eu gostava de música ao vivo.*
       'I told Robertinho that I liked live music.'

The crosstab below shows the participants' judgment of (20).

(20)		Monolinguals	Bilinguals	Total
	1 - Completely Impossible/Sounds strange	4 (23.5%)	0 (.0%)	4 (11.8%)
	3 – It is possible/Completely acceptable	13 (76.5%)	17 (100%)	30 (88.2%)
Total		17 (100%)	17 (100%)	34 (100%)

Table 5 – Sentence (20) results

There is also a marginally significant difference between monolingual and bilingual groups on the acceptability of sentence (20), p=.103. 76.5% of monolingual speakers judged this sentence as acceptable, while all (100%) of bilingual speakers did.

This sentence, however, is more interesting to our analysis, in the sense that it shows a clear case of an overt embedded subject versus a null embedded subject. 23.5% of the monolingual speakers judged this sentence as unacceptable due to the repetition of the 1st person singular pronoun "eu" (I). BP allows for *pro* in this embedded context, referring back to the subject of the matrix clause. While all bilinguals considered this sentence acceptable with the overt embedded subject "eu", a significant amount of monolinguals found it unacceptable, and changed it by replacing it with a null subject, yielding:

(21) *Eu disse ao Robertinho que Ø gostava de música ao vivo.*

While it is true that most monolinguals also judged this sentence as acceptable, it is crucial to point out that no bilinguals considered it mandatory to have a null subject occurrence in the environment in question. This leads to the conclusion that bilinguals under the influence of L2 English do not judge overt embedded subjects as unacceptable due to the fact that such construction is not possible in English:

(22) *I told Robertinho that *pro* liked live music.

Taking into account that the sample size was thirty-four participants, one can infer that more significant results may have arisen if a similar study had been conducted with a larger number of participants.

6   Conclusion

6.1 Restatement of aims and methodological approach of study

The main purpose of this research study is to investigate whether bilingual speakers of Brazilian Portuguese under influence of L2 English undergo language attrition from a syntactic perspective. I took into consideration the Interface Hypothesis of Language Attrition (Tsimpli, Sorace, Heycock, Filiaci 2004), which suggests that only interpretable features are affected in a context where bilinguals are immersed in the L2 environment, i.e., living in the country where the L2 is spoken. However, according to this theory, uninterpretable features such as the behavior of words and expressions at the syntactic level should remain unaltered. This study tested whether such claim was, in fact, accurate with respect to the null subject, syntactic feature present in BP but absent in English.

6.2 Summary of findings

After comparing both groups' spontaneous production, the following numbers were obtained from this analysis: 78.6% of the pronominal subjects produced by the monolinguals were overt, and 21.4% null. In contrast, the bilingual group produced 88.2% overt pronominal subjects and only

11.8% null subjects. This slight difference in behavior is not significant enough to affirm that syntactic attrition took place. I do believe, however, that a study conducted with a larger sample size could potentially bring this slight discrepancy in pattern to a significant level. The results of this task do not negate the validity of the Interface Hypothesis since both groups behaved similarly with respect to the spontaneous production of matrix and embedded null subjects.

The grammaticality judgment task yielded results that show little or no difference between both groups in most of the sentences presented to the participants. Sentence (20) is an example that suggests that bilinguals prefer a construction with an overt embedded subject, like in English. Therefore, one can infer that a sentence such as (20) shows some syntactic attrition. Considering the sample size used for this study, the findings of this task were not significant enough to counter-argue the Interface Hypothesis. A pattern, however, is seen where syntactic discrepancies take place. Investigating this pattern more closely could be a way to test this theory in more depth.

6.3 Recommendations for further research

Although the results were not significant enough to argue against the Interface Hypothesis, they certainly have provided further evidence suggesting that syntactic attrition could take place given certain contexts. EP is a language where the null subject remains a strong syntactic feature. A similar study comparing EP and English may yield results that could show evidence against the Interface Hypothesis. Another study comparing different syntactic features that are present in one language but lacking in another would surely be relevant to the language acquisition field and certainly contribute to innovative discoveries in Linguistics.

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English Department, Linguistics Program
Florida International University
Miami, FL 33199
tcast010@fiu.edu