The present study investigates the production of null subjects by two aphasic speakers of Brazilian Portuguese. The data were collected from elicitation done through questions, description of figures and asking for opinions on daily facts illustrated in photos and periodicals. The comparative analysis between the data from these two aphasic patients and the ones referent to normal individuals shows a dissociation pattern regarding the production of null subjects in the 1st and 3rd persons. This pattern is in line with the hypothesis that null subjects in Brazilian Portuguese are mentally represented in two different ways: as pronouns in the 1st person and as variables in the 3rd person.

0 Introduction

The studies on language have emphasized the inquiry of what constitutes language knowledge and the way it is acquired. A new source in the studies of language, which comes to join the studies on the mental representation of knowledge and the way that this knowledge is acquired, is the study of the alteration of language due to selective cerebral injuries.

Among the alterations of language due to neurological injuries investigated lately is the study of empty categories. Based on the hypothesis that non-lexical nodes are deleted from S-structure, Grodzinsky (1990) proposed the deletion of traces - one of the empty categories - at this level of structure. Some studies have been developed in this perspective. Sentences generated by movement have become, then, the focus on the studies of language of individuals with cerebral injury.

The null subject or pro, the null counterpart of the lexical subjects of finite clauses, which has always had prominence in the studies on the linguistic knowledge of normal individuals, has not been contemplated, however, with the same intensity as in the studies of individuals with aphasia.

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The null subject, in contrast to the empty category trace, does not have a universal distribution. This is related to another field of interest in the studies of aphasia, which is the preservation or not of the parameters fixed during the process of language acquisition.

In normal individuals, the possibility and the contexts of production of null subjects have been widely studied. In Brazilian Portuguese, for instance, some authors have studied the nature of this subject. For Figueiredo Silva (1994), the null subject in Brazilian Portuguese is characterized as a variable, depending on the existence of an antecedent. For Duarte (1995), in contrast, the null subject in Brazilian Portuguese is characterized as a pronominal, depending therefore exclusively on the verb inflection. In Novaes (1996, 1997), however, the null subject is seen as being mentally represented in two different forms: in the 1\textsuperscript{st} person, as a pronoun; in the other persons, as a variable.

In the spirit of neuropsychological data serving as a way to evaluate the linguistic theories concerning normal individuals, the data gleaned from aphasic individuals can serve to test these hypotheses. For example, the fact that null subjects in normal individuals are not uniform, depending on the grammatical person, leads us to expect that the degree of difficulty of native agrammatic patients of Brazilian Portuguese with null subjects of different grammatical persons is also not uniform. So, it is possible for some aphasic patients to lose the possibility to produce null subjects of 1\textsuperscript{st} person, but preserving the possibility of realization of null subjects in other grammatical persons, while some aphasics lose the possibility to produce null subjects of 3\textsuperscript{rd} person, but preserve the possibility of realizing null subjects in other grammatical persons. The main goal of this work, then, is to study the pattern of subject deletion in aphasic individuals.

In the first section, we present a panorama of the main studies on the character of null subjects and on how the content of these subjects is recovered. In the second section, we present a summary of Novaes' (1996, 1997) hypothesis on the mixed character of null subjects in Brazilian Portuguese. In the third section, we discuss the pattern of deletion of null subjects from data from two aphasic individuals. In the fourth section, finally, we make some considerations on the implications of the proposals presented in this work.

1 Null Subjects in Normal Individuals

Being the null subject, an empty category without universal distribution, it is interesting to investigate which properties the languages exhibit that allow the deletion of the subject. The intuitive idea underlying the first studies on the phenomenon of null subjects is that the subject can be omitted in the cases in which the agreement between the subject and the verb is visible (Chomsky 1981). Thus, in Italian, a language in which the agreement is visible, null subjects are allowed. In (1), we have an example of a verbal paradigm in Italian, in which we can observe the distinction among the six verbal paradigm of the present of the indicative.
(1) io parl o
tu parl i
egli parl a
noi parl iamo
voi parl ate
loro parl ano

Chomsky (1981) considers that, besides licensing the deletion of the subject, shown in (2a), AGR(EEMENT) - one of the INFL(ECTION) components - also licenses the occurrence of several other properties, shown in (2b) - (2e). The clustering of properties listed in (2) constitutes the null-subject parameter or pro-drop parameter.

(2) a. Null subject
Ho trovato il libro.
b. Free inversion of subject
Ha mangiato Giovani.
c. Long movement of wh-
L’uomo [che mi domando [chi abbia visto]].
d. Empty resumptive pronouns in embedded clauses
Ecco la ragazza [che mi domando [chi crede [che possa SV]]].
e. Apparent violations of “that-t” filter
Chi credi [che partirà].

The properties described in (2) are present in languages that permit subject deletion, such as Italian and Spanish. In languages in which we do not find null subjects, such as English and French, the described phenomena in (2) are not be found.

Besides their licensing requirements, null subjects must have their content recovered. Chomsky considers that in languages that permit null subjects, the recovery of the subject’s content occurs via local control by AGR, i.e., these null subjects have to be governed by AGR.

The system described assumes that the strength of AGR is the condition that licenses null subjects. Huang’s systems (1984, 1989), however, break this presupposition.

Huang (1984) presents some data demonstrating that Chinese, Japanese and Korean allow the deletion of subjects and objects, although they do not present any system of agreement subject-verb or object-verb.

In order to try to explain this fact, Huang proposes the existence of two types of parameters. The first one distinguishes zero topic languages from the ones that do not possess zero topic. Among languages that possess zero topic are Chinese and Japanese. These languages allow the presence of a variable, an empty category with the features [-anaphora, -pronoun], in the subject position as well as in the object position. This variable is connected, according to Huang, to an operator indexed to a topic of the discourse. The sentences in (3) are examples offered by Huang of variables in object and subject positions, respectively, in Chinese.
(3) a. cv lai-le¹.
   come-LE²
   “He came”.

   b. Lisi hen xihuan cv.
   Lisi very like him.
   “Lisi likes [him] very much”.

Among languages that do not possess zero topic are English and French. According to Huang, the distinction between a zero topic language and a non-zero topic language would be derived from another wider parameter, which would distinguish the languages guided by the discourse from those guided by the sentences. Thus, Chinese, for example, would be a language guided by the discourse while English would be a language guided by the sentence. Huang considers a clustering of properties that would distinguish the languages guided by the discourse from the ones guided by the sentence. The first ones, besides the presence of a variable, would have the anaphor discourse-bound and the topic-comment structure. In (4), we have an example of discourse-bound anaphor in Korean.

(4) Speaker A: John-i salam-il pone-op-∂ss-ni?
   John-NOM man-ACC send-PAST-Q
   “Did John send the man?”

   Speaker B: ani, caki-ka cikc∂p o-∂ss-ta.
   No self-NOM in-person come-PAST-DECL
   “No, self came in person.”

In languages guided by the sentence, as English, the construction in (5) is not allowed.

(5) Did John send the man?
   *“No, himself came”.

An example of a topic-comment structure is the sentence in (6), proposed by Li and Thompson (1981).

(6) neichang huo, xingkui xiaofangdui lai de zao.
   That fire fortunately fire-brigade come-COMP early.
   “That fire, fortunately the fire brigade came early”.

The second parameter involved in the distribution of empty categories, according to Huang (1984), is the pro-drop parameter, which distinguishes languages

¹ As Huang notes, he or she is one of the possible interpretations for the empty category. Depending on the context, this empty category can be interpreted as it, I, etc.
² Perfective aspect marker.
that allow pronominal null subjects from the ones that do not allow such subjects. Chinese and Italian, in this system, are [+ pro-drop], while English and French are [-pro-drop]. In Italian, the identification of null subjects would happen in the way described in the beginning of this section and also by a c-command relation between a NP in the first clause and the empty category in the subject position of the subordinated clause. In Chinese, the identification of pronominal empty subjects would happen only by the second way, as in (7).

(7) Zhangsan_i shefa cv_i bangmang wo.

Zhangsan try help I.

“Zhangsan tried to help me.”

Huang’s (1984) system admits, then, the possibility of empty subjects (pronominal or not) to occur in languages in which AGR is absent.

In summary, both Italian and Chinese can present null subjects of pronominal nature when they occupy a subject position of a subordinated clause. In this case, the recovery of the content of null subjects in Chinese occurs necessarily by a c-command relation to a NP in the first clause and the empty category in subject position.

In main clauses, however, only languages with strong AGR can present null subjects of pronominal nature. In languages as Chinese, in which AGR is weak, null subjects have necessarily variable character, being recovered, therefore, via linking to an operator.

2 Null Subjects in Brazilian Portuguese

The status of Brazilian Portuguese (henceforth BP) in relation to the two paradigms described above - Italian and Chinese - is not clear. On the one hand, there is no doubt that BP is among the languages that licenses null subjects. On the other hand, some studies have demonstrated that in BP there has been a trend to overtly expressing lexical subjects. Moreover, the subject deletion seems to depend more and more on the existence of an antecedent in the speech.

In this context, some hypotheses have lately appeared in an attempt to explain the phenomenon of null subjects in BP. In Figueiredo Silva (1994), these null subjects are seen as not pronominals. In other words, to Silva, null subjects in BP exhibit a variable character. In Duarte (1995), null subjects in BP are seen as having a pronominal character. In Novaes (1996, 1997), null subjects in BP are seen as a mixed system.

Novaes (1996, 1997) is based on Speas’ (1995) paper, in which the distribution of null subjects is seen as derived from the action of economy principles, dispensing with the idea that the distribution of null subjects is derived from specific conditions of

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3 According to Huang, pronominal empty objects are forbidden in all languages, by virtue of the interaction of two principles: disjoint reference (a pronoun must be free in its governing category) and generalized control rule (co-index an empty pronoun with the closest nominal element).

4 In the case of Italian, the null subject of an embedded clause can either have the same reference or not of the subject of the main clause. In this case, the recovery occurs by virtue of the existence of a strong AGR.
licensing. In this system, therefore, the variation observed among languages is not explained as a consequence of the existence of a parameter, such as the pro-drop parameter or the zero topic parameter.

Speas considers AGR, not receiving any independent interpretation, not to be obliged to occupy an independent syntactic nucleus before Logical Form. Thus, she proposes that AGR is generated as an independent nucleus only in languages in which the inflection is rich. From there, she extracts the following generalization:

(8) a. A language can have a null subject if AGR is generated in the base as an independent nucleus.
   b. A language cannot have a null subject if AGR is generated in the base on the verb.
   c. A language can have a null subject if it does not have AGR.

In view of the economy principle that establishes that a phrase is only projected if it has content, if AGR is generated as an independent nucleus, then a null subject is licensed since AGRP can be projected without the specifier position having to be filled before spell-out. When AGR is generated on the verb, the specifier position of AGRP has to be filled before spell-out, thus disallowing the null subject. In a language in which there is no marker for AGR, AGRP is not projected and consequently nothing forces the specifier position of AGRP to be filled.

The possibility of projecting an affix as an independent lexical entry, thus being able to project AGRP without a specifier until spell-out, according to Speas, depends on the existence of something that she calls full paradigm. A language has a full paradigm if it obeys the following conditions:

(9) a. In at least one number and one verbal tense, the features of 1st and 2nd persons are distinctively marked.
   b. In at least one person of a verbal tense, the feature of singular number [singular] is distinctively marked.

By Speas’ analysis, Brazilian Portuguese would have a full paradigm, thus being able to generate AGR as an independent nucleus. If AGR is generated as an independent nucleus, then AGRP can be projected without a specifier until spell-out. It turns out, however, that the contexts in which null subjects appear in BP, mainly in root clauses, are more and more restricted when compared to Italian and Spanish.

Based on the picture presented above, Novaes (1996, 1997) considers Brazilian Portuguese to be undergoing a change in the status of AGR. This alteration would be happening in one of the two described directions to follow. The first possibility for alteration in the AGR status would be the loss of the possibility of AGR to be

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5 Having the same fundamental motivation, namely the lack of semantic interpretability, Chomsky (1995) proposes the elimination of AGR from the universal grammar.

6 Speas’ proposal of the existence of languages in which AGR is not projected, allowing null subjects to coincide to a large extent with the system considered by Huang, described in the previous section.
generated as an independent nucleus. A second possibility for change in the status of
AGR would be the loss of the possibility of AGR to be generated at all.

No matter the case, the inflection of agreement of 1st person of some verbal
tenses such as the present and the past of the indicative is seen in this system as
generated as an independent nucleus, allowing a null subject. This null subject of 1st
person would be pronominal in character and would not depend therefore on an
antecedent in the speech so that its content could be recovered.

For the other persons, we would have both options pointed above, which are:
either AGR is not generated as an independent nucleus or AGR is not generated at all.
For the first option, we could consider, as Galvez (1991, 1993) does for all persons,
that AGR is not generated as an independent nucleus, but indeed as an affix of
TENSE. The problem with this proposal is that the existence of AGR, even in a
residual way, would imply the AGRP projection. Being the AGR nucleus, in this
system, generated on TENSE, then the only way of AGRP to be projected would be to
have a movement of nominal phrase for the specifier position of this projection, thus
disallowing a null subject. The data is evidence, however, for the existence of null
subjects of 2nd and 3rd persons in Brazilian Portuguese, besides the null subjects of 1st
person.

The other possible analysis would be to consider that BP is undergoing a
change, resulting in the disappearance of the agreement referring to inflections of 2nd
and 3rd persons. In this context, AGRP would not be projected, thus allowing a null
subject with the properties of a variable.

In summary, Brazilian Portuguese would possess null subjects of varying
natures, depending on the grammatical person: as a pronoun, in the 1st person; as a
variable, in the other persons. This proposal is in line with the fact that BP possesses
the properties described in (2) as well as the ones described in (4) and (6).

The proposal that in BP null subjects are mentally represented in two different
ways allows us to expect that in the speech of patients with agrammatism, for
example, one can find different patterns of realization of null subjects. Thus, it is
possible that some patients with agrammatism produce null subjects of 1st but not of
2nd and 3rd persons or, then, the opposite. It is exactly what we are going to examine in
the next section.

3 Null Subjects in BP Native Aphasic Individuals

Two patients have been investigated: SS, 44 years old, and OL, 60 years old. The first
patient is a man, who attended an elementary school course and had three episodes of
cerebral vascular accident in 1997. In the computerized tomography (CT scan) his
lesion was located in the left frontal lobe. The second one is also a man, who attended
4 years of an elementary school course and had a cerebral vascular accident in 1998.
In the computerized tomography (CT scan) his lesion was located in the left frontal
lobe and in the right occipital lobe. Their physical results and performances on the
test of Boston (Goodglass 1972) indicated that these patients are Broca’s aphasics.

For attainment of the aphasic patients’ data, records of speech of these patients
from elicitation done through questions, description of figures and asking for their
opinions on daily facts illustrated in photos and periodicals were performed. Later, the
transcriptions and then the comparative analysis between the data from these two aphasic patients and the ones for normal individuals have been made.

The first table mentions the percentage of appearance of null subjects in normal and aphasic individuals. The data referring to the normal individuals were extracted from Novaes (1996, 1997).

(10)

<table>
<thead>
<tr>
<th>NORMAL INDIVIDUALS</th>
<th>APHASIC INDIVIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(average between SS and OL)</td>
</tr>
<tr>
<td>29.5%</td>
<td>68.09%</td>
</tr>
</tbody>
</table>

The second table also shows the rate of appearance of null subjects in normal and aphasic individuals, analyzing individually the production of null subjects of the two aphasic patients examined. This procedure, which will be adopted henceforth, takes into consideration the fact that individual variations in the performance of different aphasic patients can exist, independently of the analyzed phenomenon (see, among others, Berdnt and Caramazza 1999).

(11)

<table>
<thead>
<tr>
<th>NORMAL INDIVIDUALS</th>
<th>APHASIC INDIVIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SS</td>
</tr>
<tr>
<td>29.5%</td>
<td>58.14%</td>
</tr>
</tbody>
</table>

The two tables above affirm that the production of null subjects in aphasic individuals is significantly larger than in normal individuals. However, when we extract the set of null subjects from those produced in answers with sentences containing the same verbs expressed in the questions made by the investigator, as in the example below, the occurrence of null subjects decreases significantly (see tables in (13) and (14) below).

(12) - E lá tem algum tipo de animal?
     (And there, there is some type of animal?)
     “And there, is there some type of animal?”
     - Tem muito.
     (There is much)
     “There are many”.

(13)

<table>
<thead>
<tr>
<th>NORMAL INDIVIDUALS</th>
<th>APHASIC INDIVIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.5%</td>
<td>48.86%</td>
</tr>
</tbody>
</table>

(14)

<table>
<thead>
<tr>
<th>NORMAL INDIVIDUALS</th>
<th>APHASIC INDIVIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SS</td>
</tr>
<tr>
<td>29.5%</td>
<td>40.98%</td>
</tr>
</tbody>
</table>
We had to adopt the procedure above in order to avoid the effect of context in which the occurrence of null subjects is facilitated. However, despite the reduction in the number of null subjects produced by each individual, there was no alteration in the rates of these subjects between the two individuals in relation to what is produced when the null subjects are all computed, as the comparison between table (11) and table (14) demonstrates. It is also necessary to note that the reduction in the amount of null subjects described above was not enough to make the rate of production of null subjects by the aphasic patients equal to one produced by the normal individuals. It is possible that the trend to produce more null subjects than the normal individuals is a consequence of the economic speech produced by aphasic patients, dropping everything that is authorized by their grammar.

Aside from the procedure adopted above, the percentage of null subjects produced by the aphasic individuals as a function of the grammatical person was investigated, and compared with that of normal individuals. The following table shows the percentages of null subjects produced by the aphasic patients, considering all null subjects independently of the type of verb used in the answer.

(15)

<table>
<thead>
<tr>
<th>GRAMMATICAL PERSONS</th>
<th>NORMAL INDIVIDUALS</th>
<th>APHASIC INDIVIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>61.50%</td>
<td>61.46%</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>0.50%</td>
<td>0</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>38.00%</td>
<td>38.54%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

The previous table shows that the pattern of production of null subjects as a function of the grammatical person in the aphasic individuals is similar to that of the normal individuals. However, when we look separately at the production of null subjects in both aphasic individuals (table to follow) we observe that while SS produces more null subjects of 1<sup>st</sup> person, OL produces fewer null subjects of this same grammatical person, both compared to normal individuals. The opposite can be observed in relation to null subjects of 3<sup>rd</sup> person: while SS produces fewer null subjects of 3<sup>rd</sup> person, OL produces more null subjects of this same grammatical person, also compared to normal individuals.

(16)

<table>
<thead>
<tr>
<th>GRAMMATICAL PERSONS</th>
<th>NORMAL INDIVIDUALS</th>
<th>APHASIC INDIVIDUALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>61.50%</td>
<td>78.00%</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>0.50%</td>
<td>0</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>38.00%</td>
<td>22.00%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

The profile shown by the previous table becomes clearer when one subtracts the set of null subjects from the ones produced in answers with verbs that coincide with the ones from the question made by the investigator, as shown in the table to follow. This dissociation between the null subjects of 1<sup>st</sup> and of 3<sup>rd</sup> persons produced...
by the two aphasic patients is compatible with the hypothesis that these null subjects are of a different nature from each other in BP.

(17) | GRAMMATICAL PERSONS | NORMAL INDIVIDUALS | APHASIC INDIVIDUALS |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>61.50%</td>
<td>76.00%</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>0.50%</td>
<td>0</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>38.00%</td>
<td>24.00%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

The comment of the sentences in which the subjects are dropped indicates that the conditions in which the deletion of the subject occurs in aphasic patients are similar to the ones observed in normal individuals (see the examples in (18)). The recovery of null subjects of 3<sup>rd</sup> person in aphasic individuals depends on the presence of an antecedent, while the content of null subjects of 1<sup>st</sup> person can be recovered without the presence of an antecedent, due to the inflection of the verb. In summary, the same restrictions imposed for the recovery of the content of null subjects in normal individuals are observed for the recovery of the content of null subjects in aphasic individuals.

(18) a. Example of a null subject (of 1<sup>st</sup> person) produced by SS

Interviewer: Qual o nome delas?
(What the name of them?)
“What are their names?”

Aphasic: Agora, agora ec esqueci.
(Now, now ec forgot.)
“No, I forgot”.

b. Example of a null subject (of 3<sup>rd</sup> person) produced by OL

Interviewer: O que aconteceu com o Figueira?
(What happened to Figueira?)
“What happened to Figueira?”

Aphasic: Ele caiu, ec caiu no carro, ec entrou no carro.
(He fell, ec fell in the car, ec entered in the car.)
“He fell, he fell in the car, he entered the car”.

It is interesting to notice that SS - the aphasic person who does not frequently use the strategy of repeating the same verb of the question in the reply - is the individual who produces more null subjects of 1<sup>st</sup> person, which, according to Novaes (1996, 1997) has a pronominal character, thus not depending on the context for their recovery. On the other hand, OL – the aphasic patient who frequently uses the strategy cited above - is the one who produces more null subjects of 3<sup>rd</sup> person, which depends on the context for their recovery.

A possible explanation for the maintenance of the capacity of aphasic patient SS to produce null subjects of 1<sup>st</sup> person is that he continues to produce AGR as an
independent nucleus for this person. In relation to the 3rd person, it is possible that sometimes SS produces AGR on the verb, thus disallowing null subjects; sometimes he does not produce AGR, thus allowing the realization of null subjects with variable character. The high rate of deletion of subjects of 1st grammatical person would be explained by a sharp trend of the agrammatic aphasic patient to drop any constituent if possible.

In relation to aphasic OL, it is probable that he has been reducing his use of AGR as an independent nucleus for the 1st person. In this case, he would be either producing AGR as an independent nucleus or producing AGR on the verb. In relation to the 3rd person, this aphasic would be reducing his use of AGR, thus justifying the high rate of production of null subjects with a variable character in this person. Moreover it is necessary to notice that this aphasic patient maintains the capacity to establish links among the constituents of the sentence, as the empty category in the subject position and the topic - null or not, so that these null subjects are produced every time an antecedent has been introduced in the speech. If this is true, it is probable that this patient has a reasonable performance in comprehension tasks with sentences generated by movement, sentences that depend on the indexation trace-antecedent for their interpretation.

As the question of realization of null subjects is directly related to the specifications contained in the functional categories Tense and Agreement, we examined the number of violations of tense and agreement (person and number) produced by these two aphasic individuals. While patient SS committed thirteen violations of tense, patient OL produced three violations, which represented something around 7% of productions involving tense. This percentage can be considered a performance problem, as proposed by Harris and Wexler (1996). In relation to the agreement number/person, each patient committed two violations. It is not clear, though, if either that they had produced constitutes violations in fact or if they constitute simple variations (“morde” for “mordem”/“bites” for “bite”, for example).

If we consider the tense violations as a competence problem, these data would be in line with the one proposed by Friedmann and Grodzinsky (1997), concerning the dominance of tense in relation to agreement, and the possibility of loss of inflections could be expressed in terms of the positions they occupy in the syntactic tree. Another possible interpretation is that the dissociation between tense and agreement is due to the fact that the first one is [+interpretable] while the second one is [-interpretable] or, in other words, only the first one is conceptually motivated, as proposed by Chomsky (1995) and Speas (1995).

Actually, the problem involving violations of tense is slightly more complex. Among the thirteen violations of tense committed by one of the patients - SS, six consist of the production of non-finite sentences without subjects and one of gerund without the auxiliary and the subject. In these cases, we can affirm that the absence of the subject is expected and that we have an omission rather than a subject deletion, as it occurs in languages of null subjects. The other patient, OL, committed three violations of tense, one of them consisting of the production of a non-finite sentence, without subject. We can confirm that the omission of subject is expected due probably to the absence of a position for it.
The fact that the aphasic patients do not produce overt subjects in non-finite clauses is in line with the idea that the deficit these individuals have is highly selective and that, consequently, they preserve the syntactic knowledge to a large extent.

In view of the fact that violations of tense occur in low percentage of the cases, another possible interpretation is that these violations happen as a result of an under-specification of the functional categories rather than of a total absence of these categories or, then, that these violations are due to the absence of checking of the features in the functional categories, by virtue of a limitation in the language processing system, in the line proposed by Crain, Ni and Shankweiler (2001). In this last case, the percentages of violations of tense and agreement number/person would not have any relation to the changes of rates of null subjects discussed in this work.

4 Final Considerations

One of the interesting debates in the studies of the representation of the language in the brain is whether the universal principles and the parameters are hosted in the same area of the brain. This question becomes remarkable once it explains why an aphasic individual can lose a structure that is universal in preserving a parameterized structure or vice versa.

In this work, the question of the realization of null subjects, an exclusive phenomenon of some languages, in agrammatic individuals was discussed. The data presented in the previous section do not allow us to conclude that the investigated individuals have lost the possibility to produce null subjects. However, we cannot help but to consider that the approach adopted in this work sees the distribution of null subjects as derived from economy principles, thus breaking the earlier notion that the distribution of null subjects is derived from specific conditions of licensing. As the aphasic patients have continued to produce null subjects, whatever the analysis for the possibility of realization of null subjects is - parameterization or economy conditions, we must admit that these aphasic patients keep the conditions that favor the deletion. The examination of the properties that are claimed to pertain to the pro-drop parameter, such as the subject inversion, will allow us to know in a more precise way if the realization of null subjects is the result of either a parameter or an economy principle.

Another interesting question concerns the areas of the brain where the principles that provide an account of the possibility to produce null subjects (of 1st and 3rd persons) would be represented. The dissociation argued in this work could indicate that null subjects of 1st and 3rd persons would be represented in different areas of the brain. However, although the CT scans indicate injuries in the left frontal lobe of both patients, we do not have enough details on the accurate regions of these injuries. Moreover, we do not have enough knowledge concerning individual differences in the representation of mental principles in the brain.

It is still necessary to underscore the selectivity of the deficit presented by these aphasic patients, so that in the cases in which they produce non-finite verbs, they necessarily produce clauses without a subject, which is compatible with the non-existence of structural positions for this subject. This seems to demonstrate that these aphasic patients keep the syntactic knowledge necessary to know that non-finite
clauses cannot host a subject. In the last instance, we can conclude that the examined aphasic patients distinguish perfectly null subjects from omitted subjects. The examination of the realization of null subjects by native aphasic patients of languages that normally do not allow the deletion of the subject can come in providing more insights to these questions.

Finally, about the main issue discussed in this work - the dissociation in production of null subjects of 1<sup>st</sup> and 3<sup>rd</sup> persons, we can conclude that the data presented here do not disconfirm (in the Popperian sense of the term) the hypothesis proposed by Novaes (1996, 1997) that the null subjects of these grammatical persons are mentally represented in two different ways: as pronouns in the 1<sup>st</sup> person and as variables in the 3<sup>rd</sup> person. So, the data proceeding from neuropsychological studies once more come to serve as a base for the establishment of a dialogue between the theories concerning normal individuals and the ones that try to give account of the alterations of knowledge as a result of selective neurological injuries.

The dissociation argued in this work still supplies evidence in favor of the studies that point to the advantage of neuropsychological case studies in comparison to group studies, since a treatment that looked at the averages would not allow us to visualize the different patterns of subject deletion presented by the two examined aphasic patients.

**References**


