

Reference assignment: Using language breakdown to choose between theoretical approaches

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Abstract

We report results of an experimental study with Dutch agrammatic aphasics that investigated their ability to interpret pronominal elements in transitive clauses and Exceptional Case Marking constructions (ECM). Using the obtained experimental results as a tool, we distinguish between three competing linguistic theories that aim at determining principles responsible for pronoun distribution: Government and Binding (Chomsky, 1981), Reflexivity (Reinhart & Reuland, 1993), and Primitives of Binding (Reuland, 2001). The obtained results are inconsistent with Government and Binding, but consistent with the latter two theories. We further show that the Primitives of Binding framework most naturally explains our results. Our proposal is based on the different performance demonstrated by patients in transitive clauses and ECM constructions, in combination with the often-made claim in the literature regarding the limitation of processing resources in this population (e.g., Haarmann & Kolk, 1991, 1994; Zurif, Swinney, Prather, Solomon, & Bushell, 1993, among others).

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1. Introduction

The referential behavior of pronominal elements has often been discussed in linguistic literature. There are three major theoretical approaches, namely, Government and Binding (Chomsky, 1981), Reflexivity (Reinhart & Reuland, 1993), and Primitives of Binding (Reuland, 2001), which were formulated to account for this behavior. In this study, we would like to distinguish between these theoretical approaches using language breakdown data from agrammatic aphasic speakers. Consequently, we believe that language breakdown data can provide us with information about the healthy system, and that any linguistic theory should at least be compatible with language breakdown data.

Some studies on agrammatism have shown that pronominal reference assignment is impaired in agrammatism and that this impairment is highly constrained by linguistic principles (see e.g., Avrutin, Lubarsky, & Greene, 1999; Blumstein, Goodglass, Statlender, & Biber, 1983; Grodzinsky, Wexler, Chien, Marakovitz, & Solomon, 1993; Love, Nicol, Swinney, Hickok, & Zurif, 1998; Piñango & Burkhardt, 2001). The present study aims at distinguishing between different linguistic approaches to Binding theory with data from Dutch-speaking agrammatic aphasic patients. We would like to show how these data could be used to understand the rules that govern the interpretation of pronominal elements.

The focus of our study will be on the interpretation of pronouns and anaphors in two different structures: transitive sentences and sentences with an exceptional case marking construction (henceforth ECM) as in (1a) and (1b). The crucial difference between those structures is

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that in (1a) the pronoun and the subject are both arguments of the same verb *tickles* (they are so-called coarguments), whereas in (1b) they are not.

- (1) a. *Transitive sentence*
 *Jane_i tickles her_i.
 b. *Exceptional Case Marking construction*
 *Jane_i sees her_i dance.

Reference assignment in these two structures and the differences therein are discussed in the light of different theoretical approaches: on the one hand Government and Binding Theory that does not make a distinction between reference assignment in these sentences (henceforth GB, Chomsky, 1981), and on the other hand the Reflexivity model (henceforth REFL, Reinhart & Reuland, 1993) and Primitives of Binding (henceforth PoB, Reuland, 2001)¹ that both distinguish between reference assignment in (1a) and (1b). First, we briefly introduce GB and some of its problems. After this, we discuss the interpretation of pronouns in transitive sentences and ECM constructions and the way the three different theories deal with it. In the following section, some relevant studies on reference assignment by aphasic speakers are summarized, and our predictions are formulated. Subsequently, the experimental part is described and its results are discussed in the final sections using the theoretical approaches on reference assignment as described in the theoretical background.

The first challenge to theories concerning the referential behavior of pronouns and reflexives is to explain the distribution of these categories as in the sentences (2a) and (2b).

- (2) a. Peter_i complained that Harry_j tickled him_{i/*j}.
 b. Peter_i complained that Harry_j tickled himself_{*i/j}.

In (2a) the pronoun *him* may refer to the matrix subject *Peter*, but cannot refer to the embedded subject *Harry*. The reflexive *himself* in (2b) must refer to the embedded subject *Harry*, and cannot refer to the matrix subject *Peter*. Chomsky presents the standard account for this distribution pattern of pronouns and reflexives in his Government and Binding theory (Chomsky, 1981). To briefly summarize:

*Binding Principles*² (GB, Chomsky, 1981)

A: An anaphor is bound within its governing category.

B: A pronoun is free in its governing category.

Binding is used here as a syntactic notion relevant for the establishment of referential dependencies. The principles state that anaphors must have a local antecedent on which they depend referentially, whereas pronouns must be locally free and have their antecedent outside their governing category. This leads to the prediction that the two elements must be in complementary distribution. There are, however, some problems with this descriptive account of binding phenomena, as discussed by Reinhart and Reuland (1993) and in Reuland (2003). First of all, the assumed complementary distribution between pronouns and reflexives does not hold (see 3). Also, some languages, such as Dutch and Spanish have two types of anaphors (SE³ and SELF-anaphors) that do not have the same distribution, as can be seen in (4). In (3), either a pronoun *her* or an anaphor *herself* may be used to refer to the subject *Jane*. In (4), both *zich* and *zichzelf* are anaphors; however, whether or not they can be locally bound seems to depend on the verb that is used. Clearly, Principles A and B of the GB cannot account for these facts.

- (3) Jane_i hid a present behind her_i/herself_i.
 (4) a. Peter_i ziet *zich_i/zichzelf_i.
 Peter_i sees *SE_i/himself_i.
 ‘Peter sees himself’
 b. Peter_i gedraagt zich_i/*zichzelf_i.
 Peter_i behaves SE_i/*himself_i.
 ‘Peter behaves himself’

The distribution of SE and SELF-anaphors (as in 4), as well as the reference of pronouns and anaphors in sentences like (3) are better captured within more recent models of reference assignment (Reinhart & Reuland, 1993; Reuland, 2001; for a detailed discussion of these structures, but see also Lidz, 2001).

Let us now have a look at the following two structures (that form the two crucial conditions of our study) with a pronoun in a transitive sentence (5a) and a pronoun in an ECM construction (5b):

- (5) a. *Janette_i kietelt haar_i.
 *Jane_i tickles her_i.
 ‘Jane tickles her’
 b. *Janette_i ziet haar_i dansen.
 *Jane_i sees her_i dance.
 ‘Jane sees her dancing’

¹ We focus on these three theories because they represent three clear cases of theoretical paradigms. GB argues that reference assignment is determined (or constrained) by structural considerations; Reflexivity argues for the interaction of structural, lexical and discourse factors, and PoB proposes an economy-based hierarchy as a crucial factor in reference assignment. Naturally, within each of these paradigms there are various ramifications, such as such as Lidz (2001, Rule R), Avrutin (1994, movement of Bound Variables), Chien and Wexler (1990, Principle P), among others. For our purposes it is sufficient to focus on the paradigmatic difference between theories.

² Where α is bound by β if β c-commands α and is coindexed with it and γ is a governing category for α if and only if γ contains α , a governor for α , and an accessible subject. Governing category can be loosely defined as ‘local domain,’ for a precise definition see Chomsky (1986).

³ SE = Simplex Expression, Reinhart and Reuland (1993).

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