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OBJECT AND CLITIC CLIMBING IN SPANISH AGRAMMATISM: A CASE STUDY

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Introduction. Research have shown that production of clitics in agrammatic Broca’s aphasia is compromised, either by analyzing spontaneous speech (Nespoulous et al., 1988; Reznik et al., 1995; Stavrakaki and Kouvava, 2003; Chinellato, 2004; Rossi, 2007) or by testing clitic production in an experimental setting (Rossi, 2007; Gavarró, 2008, Nerantzini, 2008; Martínez-Ferreiro, 2010). Clitics in agrammatism have only been explored in Greek, Italian, French and Ibero-Romance (Spanish, Catalan and Galician). In Spanish, the study reported by Reznik et al. (1995) explicitly focused on the production of clitics in aphasic spontaneous speech, while Martínez-Ferreiro (2010) tested clitic production and comprehension in an experimental setting. This study focuses on the morpho-syntactic problems of Spanish agrammatic speakers with emphasis on the production of sentence word order. Because of the particular flexible word order with which Spanish can be grammatically produced, and due to the predictions that can be drawn from the ‘Derived Order Problem Hypothesis’ (DOP-H) (Bastiaanse & van Zonneveld, 2005), the present study focuses on two movement operations, clitic and object scrambling, in a way that has not been explored before as apparently it is not grammatically plausible in many languages studied so far (such as Dutch, English, French, German, Greek, Italian, Turkish, Hindi and Swahili), but it is in Russian and Spanish languages. It is hypothesized that syntactic complexity, in a linguistic way, is a critical factor in agrammatic production, and, therefore, it is predicted that sentences with object movement and clitic movement will be more difficult than sentences with basic word order, regardless of the position in the syntactic tree.

Method

Participant	Age	Time Post-Onset (years)	Etiology	City
Brain-Damaged	34	8	Hematoma due to diffuse vasculitis	Barcelona
Control	33	—	—	Barcelona

Stimuli. A set of 48 semantically reversible target sentences with transitive verbs and animate subjects and objects were used, the first 16 employed by Bastiaanse, Edwards and Rispens (2002) in the development of the Verb and Sentence Test (VAST), and another 32 sentences derived from them. The set

included three target sentence types: (a) active declarative sentences with a transitive (finite) lexical verb, that is assumed to stay in its base-generated position in English and Spanish (the “full object in base position” condition; e.g., “The man pinches the woman – El hombre pellizca a la mujer”) (n=16); (b) active declarative sentences with a clitic pronoun, assumed to move from post-verbal to preverbal position (e.g., “The man *la* pinches – El hombre *la* pellizca”) (n=16); and (c) active declarative sentences with a finite lexical verb in which the full object moves to preverbal position (e.g., “The man to the woman pinches - El hombre a la mujer pellizca”) (n=16). In all the sentences the subject and object differed in gender to avoid correct answers in the second (clitic) condition due to repetition, as in Spanish the use of third person singular clitics depends on the gender they refer to (lo-la refer to male or female respectively). For testing each sentence or item, black-and-white picture pairs developed by Bastiaanse et al. (2002) were used (Figure 1). The first picture in the pair depicts the prompting sentence and the other depicts its semantically reversed counterpart. As half of the items have a male subject performing the action in the second part of the phrases, the two types of clitics (lo, la) were tested equally. A set of 48 picture pairs (16 original pairs and 2 copies of each) was used to elicit the three sentence conditions mentioned above. The picture on the left always depicted the first sentence, and the picture on the right depicted the sentence which participants had to complete. The order of the items was pseudo-randomly assigned (each picture occurred only once in the first 16 items, once in the second 16 items, etc.), but the order was the same for each participant.



Figure 1. Taken from Bastiaanse et al. (2002), with permission.

Procedure. Using each pair, the 3 sentence conditions previously described were elicited using a sentence production priming task in the following way: the experimenter pointed to the first picture of the pair reading aloud the prompt sentence, after which the experimenter pointed to the sec-

ond one, reading only the subject of the sentence aloud. The participant was expected to complete the sentence depicted in the second picture using the same sentence structure the examiner used before (e.g., the examiner said: “Here the man carries the woman, and here the woman...”, and according to the 3 sentence conditions, the participant responded: (a) “carries the man”, (b) “lo (male Spanish clitic) carries”, or (c) “to the man carries”). The experiment was carried out in a quiet room. The participant sat in front of a computer screen and the experimenter sat next to him/her, and the experimental procedure was explained to the participant. There were three trial sentences (the last trial was different from the first experimental sentence type). In case the task was not clear, any questions were allowed and additional trial sentences were added until the task was understood by the participant. The whole procedure was repeated after a five minutes break. All the responses were transcribed for analysis.

Results. Correct sentence production per brain-damaged participant. Raw percentages:

Participant	Age	n	Correct
Brain-Damaged	(a) –mov –clitic	32	100
	(b) +mov +clitic	32	15.625
	(c) +mov –clitic	32	0
Control	All	32	100

In the second and third conditions the agrammatic speaker made more mistakes than the nonbrain-damaged control ($p = <0.0001$, Fisher's exact test).

The first sentence condition was easier to produce than the other three ($p < 0.0001$ Fisher's exact test).

One main error category was observed: in conditions 2 and 3 the object is produced in base position (as in condition 1).

Discussion. The present data support the hypothesis that it is difficult to move the object, whether it is a clitic or a full Determiner Phrase (DP).

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