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Processing of Contrastive Focus in agrammatism: The role of Predictability

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Introduction

This study explores the hypothesis that comprehension deficits in agrammatism can be (partly) characterized in terms of Predictability (Santi & Grodzinsky, 2012), i.e. whether syntactic dependencies can be identified at an early stage of processing based on syntactic factors. This hypothesis predicts a dissociation between processing of overt A'-Movement and (covert) leftward A' -Movement in the LF component. To test this hypothesis, we investigate processing of sentences with contrastive foci (CF) by Greek-speaking agrammatic patients. Greek provides an appropriate minimal pair, with CF either moved (1a) or in situ (1b). The contrastive interpretation of in situ CF requires leftward LF Movement:

(1) a. Ti GINEKA$_1$ filai o adras t_1 ohi to koritsi.
the WOMAN$_{1\ ACC}$ is kissing the man$_{NOM}$ t_1 not the girl
b. O andras$_{NOM}$ filai ti GINEKA$_{ACC}$ ohi to koritsi.
the man is kissing the WOMAN not the girl
'The man is kissing the WOMAN, not the girl.'

Methods

Four chronic patients with aphasia (three agrammatic and one non-agrammatic) and four non-brain-damaged individuals performed a picture-selection task. The agrammatic patients exhibited impaired comprehension of *wh*-questions and passives during background testing. Their performance on the Digit Span and the Corsi block-tapping tasks indicated WM deficits. The non-agrammatic patient performed within normal limits.

Results

The agrammatic patients performed significantly lower in the condition with displaced object-CF compared to the condition with in situ object-CF (Table 1). The non-agrammatic patient performed relatively well on both conditions. Controls performed at ceiling.

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Table 1 Number of correct responses (/total) in the picture selection task.

	moved object-CF	in situ object-CF
AG	3/20	16/20
AV	8/20	14/20
AA	15/20	20/20
MD	19/20	20/20

The horizontal line is used to distinguish between the agrammatic (AG, AV, AA) and the non-agrammatic (MD) patients.

Discussion

These findings provide evidence that predictability and the load it places on WM is a key factor in Broca's aphasia. In overt A'-Movement, the processor encounters the filler early on and provides a warning that the reader/hearer should store the DP in memory and go hunting for a gap (predictable dependency). In covert A'-Movement no such cues are available (unpredictable dependency). Hence, overt A'-Movement puts greater demands on storage processes, but covert A'-Movement on retrieval processes. This conclusion is further supported by the finding that agrammatic patients perform normally on ambiguous doubly quantified sentences (Saddy, 1995; Varkanitsa et al., 2012), whose inverse scope reading involves (leftward) Quantifier Raising in the LF component (May, 1977).

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