

Grammatical-lexical pronoun dissociation in Moroccan Arabic agrammatism

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Abstract

The ProGram theory assumes that pronouns can be classified into lexical and grammatical pronouns. Based on Boye & Harder's (2012) theory of the distinction between lexical and grammatical elements, it is predicted that grammatical pronouns are significantly more impaired than lexical pronouns in agrammatic aphasia. The objective of this study was to investigate whether Moroccan Arabic agrammatic subjects exhibit a dissociated processing ability between grammatical and lexical pronouns. Narrative speech was elicited from 5 agrammatic patients and 5 normal controls using the "Cookie Theft" picture description task from the Boston Diagnostic Aphasia Examination. Findings supported a grammatical-lexical dissociation in Moroccan Arabic agrammatism.

Keywords: Pronouns, agrammatism, Moroccan Arabic, ProGram theory

Introduction

Agrammatism, often associated with Broca's aphasia, is characterized by omissions and substitutions of function words and grammatical morphemes. Agrammatic subjects are said to have trouble processing pronouns (Miceli & Mazzucchi, 1990). The current state of knowledge suggests that the pronoun deficit in agrammatism is not an across-the-board phenomenon, and that specific pronouns are more vulnerable to impairment than others (Avrutin, 2006).

Boye & Harder (2012) suggest a new conceptualization of the relation between the lexicon and the grammar, by arguing that whereas lexical items can stand alone and can convey the main point of a speech act, grammatical items cannot and are dependent on other items for their interpretation. Boye and Harder's (2012) account argues in disfavour of a general understanding of pronouns as closed-class items. It rather suggests a criterion by means of which a decision could be made as to whether a linguistic unit is grammatical or lexical. This is known as the focus test. The idea is that pronouns (or other structures) that cannot pass the focus test by means of clefting, focus particle or stressing are grammatical, whereas those pronouns that pass the test are classified as lexical. To this end, the present study examines the validity of the usage-based approach to grammatical status by drawing evidence from Moroccan Arabic (MA) agrammatism. Our goal is to use the focus test to first classify pronouns

as lexical or grammatical, and then investigate whether a dissociation exists between the production of the two pronoun categories in agrammatic speech. We predict that (1) patients with agrammatic aphasia (henceforth, PWAA) will produce fewer pronouns overall than non-brain-damaged participants (henceforth, NBDs), and that (2) grammatical pronouns will be more impaired than lexical pronouns in PWAA.

Methods

Participants

Data for the study were collected from 5 agrammatic patients (3 females, 2 males, mean age: 48, SD: 11.46; mean years of education: 6.2, SD = 1.9), and 5 non-brain-damaged participants (3 females, 2 males; mean age: 48.4, SD:10.73; mean years of education: 7; SD: 1.58). Months post-onset ranged from 8 to 13. PWAA received a diagnosis of Broca's aphasia with agrammatism based on the results of three measures: (1) the Short Version of the Moroccan Aphasia Test, (2) an action and object naming battery, and (3) a guided conversation from the Moroccan Arabic version of the Montreal-Toulouse Protocol of Aphasia Linguistic Examination (El Alaoui Fares et al., n.d). Patients met the classic criteria of agrammatic speech.

Material and procedure

Narrative speech samples were collected from participants using the "Cookie Theft" picture from the Boston Diagnostic Aphasia Examination (Goodglass & Kaplan, 1983). Speech samples were transcribed and analysed for the number of nouns and pronouns in addition to the percentage of grammatical and lexical pronouns produced.

Classification of MA pronouns into grammatical or lexical pronouns

We used the focus test (clefting and focus particle) to classify 91 Moroccan Arabic pronouns as either grammatical or lexical. 47 pronouns were classified as grammatical, whereas 44 were classified as lexical.

Results

The results indicating the performance of PWAA and NBDs are summarized in figures 1 and 2.

Between-group comparisons suggested that PWAA produced significantly fewer pronouns and nouns than NBDs (Mann Whitney U Test: $Z=-2.611$, $p=.009$ for pronouns; $Z=-2.627$, $p=.009$ for nouns). Comparisons also indicated that PWAA produced significantly fewer grammatical pronouns than NBDs ($Z=-2.611$, $p=.009$). The difference between the number of lexical pronouns produced by both groups did not reach statistical significance ($Z=-.107$, $p=.915$).

The NBD group descriptively produced more pronouns than nouns (mean pronouns=23.8; mean nouns=19.2), although this difference did not reach statistical significance (Wilcoxon Signed Ranks Test: $Z=-1.214$, $p=.225$). NBDs produced significantly more grammatical than lexical pronouns ($Z=-2.023$, $p=.043$). The PWAA group descriptively produced fewer pronouns than nouns (mean pronouns: 7; mean nouns: 12.4), although this difference did not reach statistical significance ($Z=-1.461$, $p=.144$). PWAA produced descriptively fewer grammatical than lexical pronouns (mean grammatical pronouns: 2.6; mean lexical pronouns: 4.4), although this difference did not reach statistical significance ($Z=-1.089$, $p=.276$).

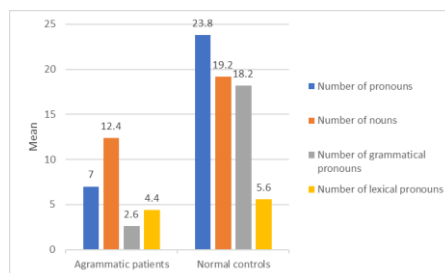


Figure 1. Mean number of nouns, pronouns, grammatical & lexical pronouns produced by agrammatic patients and normal controls in picture description.

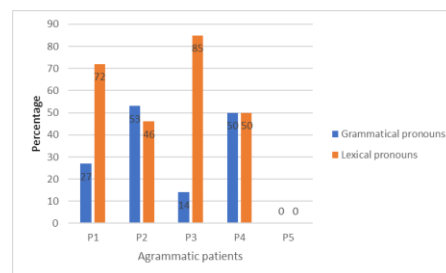


Figure 2. Percentage of grammatical & lexical pronouns produced by individual PWAA.

Discussion

Our results confirmed our hypotheses. PWAA produced significantly fewer pronouns than NBDs, and produced fewer grammatical than lexical pronouns.

Regarding the grammatical-lexical distinction, the NBD group in this study produced significantly more grammatical than lexical pronouns. This aligns with the findings of Martinez-Ferreiro et al. (2018) who found that NBDs produced more grammatical pronouns than lexical pronouns. Following Martinez-Ferreiro et al. (2018), we advance that this reflects frequency effects optimizing the production of grammatical pronouns in the speech of normal participants. In addition, given the pro-drop nature of MA and the nature of the picture description task (focus on verb elicitation), a significant number of null subject pronouns (grammatical) were produced cliticizing to the main verb. Our results also indicated that PWAA had more difficulty producing grammatical (but not lexical) pronouns when compared to NBDs (Ishkhanyan et al., 2017).

Although the results of this study provided interesting support for the validity of the ProGram theory (Boye & Harder, 2012) in the sense that

grammatical pronouns were more vulnerable than lexical pronouns in the agrammatic group, it is important to note that the dissociation was not consistent across all the patients tested.

The study has both theoretical and clinical implications. A theoretical understanding of pronouns as belonging to the closed-class category of words is challenged on empirical grounds. Clinically, the current state of knowledge points to an additional symptom of agrammatic speech that can be used for linguistic diagnosis: reduction in the number of grammatical pronouns produced.

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