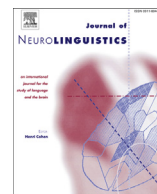




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The forgotten grammatical category: Adjective use in agrammatic aphasia

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ABSTRACT

Background: In contrast to nouns and verbs, the use of adjectives in agrammatic aphasia has not been systematically studied. However, because of the linguistic and psycholinguistic attributes of adjectives, some of which overlap with nouns and some with verbs, analysis of adjective production is important for testing theories of word class production deficits in agrammatism.

Aims: The objective of the current study was to compare adjective use in agrammatic and healthy individuals, focusing on three factors: overall adjective production rate, production of predicative and attributive adjectives, and production of adjectives with complex argument structure.

Method and procedures: Narratives elicited from 14 agrammatic and 14 control participants were coded for open class grammatical category production (i.e., nouns, verbs, adjectives), with each adjective also coded for its syntactic environment (attributive/predicative) and argument structure.

Outcomes and results: Overall, agrammatic speakers used adjectives in proportions similar to that of cognitively healthy speakers. However, they exhibited a greater proportion of predicative adjectives and a lesser proportion of attributive adjectives, compared to controls. Additionally, agrammatic participants produced adjectives with less complex argument structure than controls.

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Conclusions: The overall normal-like frequency of adjectives produced by agrammatic speakers suggests that agrammatism does not involve an inherent difficulty with adjectives as a word class or with predication, or that it entails a deficit in processing low imageability words. However, agrammatic individuals' reduced production of attributive adjectives and adjectives with complements extends previous findings of an adjunction deficit and of impairment in complex argument structure processing, respectively, to the adjectival domain. The results suggest that these deficits are not tied to a specific grammatical category.

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1. Introduction

Over the last decades, much research has examined how processing and production of different grammatical categories are affected in agrammatic aphasia. One prominent finding, which has been reported repeatedly, is that many individuals with agrammatism have difficulty with verb as compared to noun retrieval, both in confrontation naming and in sentence production, where main verbs are often omitted (Miceli, Silveri, Nocentini, & Caramazza, 1988; Miceli, Silveri, Villa, & Caramazza, 1984; Myerson & Goodglass, 1972; Semenza, Luzzatti, & Carabelli, 1997).

Interestingly, in contrast to this extensive literature, little research has focused on the third major grammatical category in human languages, i.e. adjectives. Though variable, the frequency of adjectives in different corpora is around 7% (Hudson, 1994), thus this part of speech constitutes a substantial proportion of language. The few mentions in the literature of adjective production in agrammatic aphasia are mostly anecdotal, and agrammatic patterns reported differ across studies. While some studies suggest production patterns similar to that of cognitively healthy speakers and, in some cases, even over-production of adjectives by agrammatic individuals (Benson & Ardila, 1996; Varley & Siegal, 2000), others find that agrammatic aphasia is characterized by a paucity of adjectives (Bernstein, 2010; Menn, 2004).

In the present paper we investigated adjective use in spontaneous speech in agrammatic aphasia, in order to determine whether and how it differs from adjective use in the speech of cognitively healthy speakers. In addition to being interesting in itself, the study of adjectives in aphasia can shed light on several broader questions having to do with agrammatism. In the following subsections we present these questions and discuss how adjectives can contribute to answering them.

1.1. *The source of selective verb deficits in agrammatic aphasia*

The finding that verb production is often impaired in agrammatic aphasia has been accounted for in numerous ways. In a number of papers, Bird et al. argue that agrammatic speakers' difficulty with verbs can be reduced to a general problem with less imageable concepts (Bird, Howard, & Franklin, 2000, 2003). Since verbs do not refer to concrete objects, they are harder to process than nouns, which often do. The authors further suggest that some patients' verb impairment may be due to damage to functional semantic features (in the sense of Warrington & Shallice, 1984), such that actions, mainly defined by functional properties, are difficult to process. In contrast, other authors have suggested that the primary reason for verb impairment is grammatical, rather than semantic. Caramazza and Hillis (1991) and Hillis and Caramazza (1995) suggest that word forms in a specific grammatical category can be selectively impaired. In addition, Shapiro et al. (Shapiro & Caramazza, 2003; Shapiro, Shelton, & Caramazza, 2000) propose that verb impairments may stem from a morpho-syntactic deficit, namely difficulty with person agreement. A similar explanation is offered by Friedmann (2000), who argues that the functional heads relevant for agreement and tense inflection are missing in the syntactic structures generated by agrammatic individuals. Another account of verb deficits in agrammatism

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