

COPULA AND AUXILIARY PATTERNS FROM THE CONVERSATIONAL SPEECH OF NONFLUENT APHASICS

by

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ABSTRACT

Copula and auxiliary verb usage in the conversational speech of ten nonfluent aphasics was analyzed. Of particular interest was the question of consistency in patterns of use of these linguistic structures in spontaneous speech. The relationship between copula/auxiliary verb usage and the variables of severity, self-correction, semantic and phonological/articulatory error was examined, and a comparison of these results with those obtained by Schnitzer (1974) was made. Results indicated inconsistent and variable patterns of usage/deletion of these verb forms and no significant relationships with any of the other variables were obtained. The results are discussed in terms of the need for caution in generalizing from single subject research and the need for individualized assessment and treatment strategies. The question of the nature of the language handicap represented by nonfluent aphasia is also discussed.

Several research techniques developed from the area of linguistics have been used to analyze language patterns in adult aphasics. A significant number of studies have used a single-subject research design (Green, 1969; Goodglass, et al, 1972; Kehoe and Whitaker, 1973; Lesser, 1973; Schnitzer, 1974; Schnitzer and Martin, 1974; Ulatowska and Richardson, 1974). While detailed analyses of single cases provide valuable information, there is some question as to the validity of generalizations about aphasic language which derive from single-subject research.

Examples of inconsistent language performance in aphasic subjects are numerous. Goodglass, et al (1972) noted that their single subject, a nonfluent, Broca's aphasic, was not consistent in his use of various linguistic structures when tasks were repeated. Gleason, et al (1975), in a replication of the 1972 study using eight Broca's aphasics, again found inconsistent use of syntactic forms within and between subjects. Another source of linguistic pattern change in aphasic subjects has been related to the process of recovery, as reported by Green (1969). This inconsistency and change seem to indicate that generalizations based upon the analysis of a single corpus of aphasic utterances should be made with caution.

Of interest to the present study is Schnitzer's (1974) proposal for five linguistic hypotheses based on expressive and receptive responses observed in one nonfluent aphasic. One of the Schnitzer hypotheses concerned the use of copulas and receptive judgments of sentences with copula deletions. He proposed that his subject optionally failed to create the copula when it was unmarked or if it contained only information found elsewhere in the sentence. His aphasic subject used the contracted and past tense forms of the copula but omitted copula forms which carried no semantic information.

The present study provides a partial replication of Schnitzer's research through the analysis of copula and auxiliary verb usage in the conversational speech of ten nonfluent aphasics. Conversational speech was chosen for analysis in order to avoid specific attempts to elicit copula and auxiliary forms, which might bias the findings. An

additional purpose concerned the further exploration of the pattern of language performance in nonfluent aphasia, which has frequently been characterized as agrammatism (Goodglass and Mayer, 1958; Goodglass, et al, 1972; Zurif, Caramazza and Myerson, 1972). The following questions were posed: (1) Are patterns of copula and auxiliary usage in nonfluent aphasia consistent? (2) Are patterns of copula and auxiliary usage similar to those found by Schnitzer? (3) To what extent is copula and auxiliary deletion related to other aphasic variables; i.e. amount of self-correction, semantic paraphasia, phonological/articulatory error and severity level?

Method

Ten nonfluent aphasic males ranging in age from 23 to 58 years (\bar{X} 45.2, SD 11.144) participated in this study. All were diagnosed by professional staff at the Boston Veterans Administration Hospital using the **Boston Diagnostic Aphasia Examination** (BDAE) (Goodglass and Kaplan, 1972) as Broca's aphasics. Severity levels ranged from 1 to 4 (\bar{X} 2.4, SD 2.898) and months since onset ranged from 2 to 31 (\bar{X} 9.6, SD 8.631). Table 1 provides a descriptive summary of the subjects.

Table 1

Summary of subjects

Ss	Age (years)	Onset (Months)	Severity
1	57	4	3
2	38	13	2
3	42	3	1
4	36	31	1
5	44	12	2
6	51	8	3
7	57	10	3
8	23	11	3
9	46	2	4
10	58	2	2
X	45.2	9.6	2.4
SD	11.144	8.631	2.898
Range	23-58	2-31	1-4

Taped recordings of the first section of the BDAE (expository and conversational speech) were transcribed by two experienced speech pathologists with omission of passages on which there was not complete agreement. These transcriptions were analyzed by the authors for number of self-corrections, semantic paraphasias, phonological/articulatory errors and copula and auxiliary occurrence and deletion. Decisions were based on two out of three agreements by the authors. Patterns of copula and auxiliary occurrence and deletion were analyzed and compared to variables listed in question 3.

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Examples of the copula and auxiliary forms, taken from the data are:

copula: That is all I remember.
 copula past: I **was** in the Air Force.
 copula contraction: There's a woman.
 auxiliary: They **are** stealing.
 auxiliary past: I had trouble and **was** sent to . . .
 auxiliary contraction: I don't know what they're supposed to do.

Results

Table 2 summarizes percentages of copula and auxiliary deletion for each subject. Individual data revealed that only two subjects (3 and 6) consistently deleted the

Table 2
Individual percentages of copula-auxiliary deletion

Ss	Copula	Copula Past	Copula Contraction	Auxiliary	Auxiliary Past	Auxiliary Contraction
1	none	none	none	none	none	none
2	33.3	100.0	none	75.0	none	none
3	100.0	25.0	none	none	none	none
4	50.0	16.7	none	none	none	none
5	50.0	none	none	25.0	50.0	none
6	100.0	42.9	40.0	100.0	33.3	none
7	8.3	none	none	10.0	none	none
8	none	none	none	33.3	none	none
9	60.0	none	none	30.8	none	none
10	12.5	none	none	none	100.0	none
Total	23.2	14.8	3.0	16.7	25.0	none

unmarked copula. Both subjects also deleted some copula-past constructions, and subject 6 also deleted some copula contractions. Subjects 5, 8, 9 and 10 inconsistently deleted the unmarked copula while retaining the copula past and copula contraction forms. Only subject 6 approached consistent similarity between copula and auxiliary pattern usage by completely deleting the unmarked forms and partially deleting the past tense forms. However, he demonstrated no deletion of auxiliary contractions although he partially deleted copula contractions.

Group results indicate that although the unmarked copula was deleted more often than the copula past or contraction, the unmarked auxiliary was deleted less frequently than the auxiliary past. Overall, copula-auxiliary deletion occurred only 11.5% of the time. Group data indicated that copulas and auxiliaries were used significantly more often than deleted ($X^2 25.653, df 5, p < .001$).

Table 3 summarizes ratings of severity, self-corrections, semantic paraphasias, phonological/articulatory errors and percent of copula and auxiliary deletion for each subject.

Rank order for severity, self-correction, semantic paraphasias and phonological/articulatory errors were compared with rank order of copula-auxiliary deletion. Kendall

Table 3

Summary of ratings of severity, self-corrections, semantic paraphasias, phonological/articulatory errors and percentages of copula-auxiliary deletion for each subject.

Ss	Severity	Self-Corrections	Semantic Paraphasias	Phon./Artic. Errors	% Copula-Auxiliary deletion
3	1	15	0	8	7.4
4	1	41	1	9	10.0
2	2	27	1	13	37.0
5	2	75	3	11	8.9
10	2	21	2	13	11.1
1	3	95	7	17	none
6	3	13	1	45	39.0
8	3	24	0	2	6.3
7	3	80	1	51	3.7
9	4	44	2	40	15.9
X	2.4	43.5	1.8	20.9	11.5

rank order correlations were not significant for any of these comparisons. Amount of copula-auxiliary deletion did not appear to be related to severity, self-correction or amount of semantic or sound errors.

Discussion

Only two subjects totally deleted the unmarked copula as did Schnitzer's subject. Unlike Schnitzer's subject, however, these two subjects also deleted past and contracted copula forms. Four subjects deleted only the unmarked copula, while retaining the other copula forms. Failure to use the unmarked form, however, was far from consistent. Generally, subjects who deleted various copula forms did not display similar patterns with respect to auxiliary forms. Group data indicated that, although more copulas than auxiliaries were deleted, subjects tended to use both these non-main verbs more often than they deleted them. That is, the greatest degree of within and between subject consistency was found to be correct copula-auxiliary usage and not deletion.

Two of our subjects demonstrated 100% deletion of the unmarked copula and one subject showed 100% deletion of the unmarked auxiliary. However, we speculate that larger samples of conversational speech from these individuals may have revealed less than complete deletions of these forms.

No correlation was found between copula-auxiliary deletion and the variables of severity, self-correction, semantic or sound errors.

The most obvious implication of the present findings concerns the validity of generalizations based upon analysis of a single subject. Even with aphasic subjects who are classified as belonging to the same type, variability in the use of linguistic structures appears to be more common than Schnitzer's hypothesis would suggest. Our findings are supportive of the contention of Gleason et al (1975) that the agrammatism of the nonfluent aphasic does not represent a general impairment across classes of linguistic forms. Therefore, it is to be expected that, even with a single subgroup of aphasics, relative difficulty in the use of specific linguistic structures will vary from patient to patient.

This variability strongly suggests that diagnostic and remedial strategies must be based upon careful delineation of the performance of each individual aphasic patient. Analysis

of conversational speech has the potential to provide the clinician with much valuable information. Yet this assessment strategy is not included in several of the commonly used tests for aphasia. The addition of the relatively simple procedure of transcribing and analyzing a portion of conversational speech appears to be a means of strengthening all assessment procedures and, in turn, allowing for specification of remedial strategies.

An additional implication of these results involved the concept of agrammatism itself, long presumed by some (Jakobson, 1964) to be a disorder of syntax. If, indeed, nonfluent, Broca's aphasics manifest primarily syntactic disturbances, one would expect to find the severity of the disorder reflected in frequency of copula-auxiliary deletion or misuse. As noted above, this did not occur. Kintsch (1972) has described the unmarked copula form as a "semantically empty dummy form" (p. 255). He also noted copula absence in the surface structure of several languages such as Greek, Latin and Russian. Copula forms may be viewed as excellent representatives of the syntactic or structural elements of language. Because of the relative lack of content in copula forms, especially the unmarked, these forms appear to be prime candidates for omission in the speech of nonfluent aphasics. And, indeed, these forms do appear to be somewhat vulnerable to deletion in the speech of some nonfluent aphasic individuals. The failure to find consistent patterns across the sample of subjects or within the corpus for each subject, however, makes it difficult to substantiate the claim of primary syntactic disability, or even, as Goodglass et al (1972) suggested a "surface structure" disability.

Gardner (1978), while praising the enormous contribution to aphasiology made by the discipline of linguistics, also concluded that some linguistic concepts have proved to be of doubtful relevance. Specifically, he mentioned the linguistic distinction between competence and performance, which has not been supported by the evidence from aphasia. It is possible that the linguistic distinction between deep and surface structure is yet another concept which has failed to capture the phenomena observed in aphasia. It also appears to be the case that some of the concepts of aphasiology itself fail to reflect all the data. One of these concepts is that of agrammatism. Various underlying mechanisms or explanatory constructs have been proposed with regard to "agrammatism". The major points of view are presented below.

Jakobson (1964) defined agrammatism as a contiguity disorder, an inability/disability in the ordering of linguistic elements. He viewed it as a specific defect involving the sequential aspects of language. Goodglass (1968) introduced the concept of saliency, defined as the psychological resultant of stress, affective value and phonological prominence, and he speculated that the unsalient language functors (words which primarily function for grammatical purposes) were the ones which were not realized in the speech of nonfluent aphasics. Zurif, et al (1976) and Zurif, Caramazza and Myerson (1972) have argued that syntactic computation is a specialized language function and that it is located in the anterior speech area. Economy of effort due to articulatory difficulty has also been proposed by Pick (Spreen, 1973). As mentioned above, Gleason, et al have proposed a surface structure defect hypothesis. Farmer and O'Connell (1979) viewed the shortened utterance length and variable functor omissions of nonfluent aphasics as reflective of the under-arousal, and over-inhibition of the neuropsychological system which mediates language behavior. This construct has the virtue of parsimony, as under-arousal of the system incorporates many of the observations of previous investigators. In this view, the various constructs outlined above seem complimentary rather than competitive. The under-aroused system:

1. makes available to the speaker fewer elements to be sequenced;
2. is influenced by saliency of elements;
3. seems to result from anterior brain damage;
4. gives the impression of economy of effort and carries with it the notion that articulatory accuracy may also be affected;
5. may have variable access to those low meaning-bearing elements which have been characterized as grammatical or surface structures.

If, with Lashley (1951) we view language activity as the result of a determining tendency, an arousal/activation of expressive elements and a selection and ordering made from those aroused units, the phenomena of syntactic performance in nonfluent aphasia becomes more logically apprehended. Perhaps it is time to discard a term which imputes "lack of grammar" to nonfluent aphasic speakers.

The principal findings of many investigators, including the present ones, suggest that linguistic behavior in nonfluent aphasia is too variable to be accounted for by linguistic constructs alone.

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