Communicative Value of Self-Cues in Aphasia

Connie A. Tompkins
University of Washington, Seattle, Washington

Robert C. Marshall
Veterans Administration Medical Center, Portland, Oregon

INTRODUCTION

Interest in the anomic component of aphasia has been widespread and enduring. Numerous investigations have examined factors influencing the production of a desired word (Oldfield and Wingfield, 1965; Goodglass, Klein, Carey and Jones, 1966; Carroll and White, 1973; Gardner, 1973; Mills, Knox, Juola and Salmon, 1979), and behaviors employed by aphasic persons in word-finding attempts (Barton, 1971; Marshall, 1976; Goodglass, Kaplan, Weintraub and Ackerman, 1976).

A range of therapeutic approaches and cuing strategies for individuals or groups of aphasic patients has evolved from this literature (Berman and Peele, 1967; Whitney, 1975; Mills, 1977; Linebaugh and Lehner, 1977; Pease and Goodglass, 1978). The bulk of therapeutic emphasis has been placed on facilitation of patients' ability to generate specific words. Successful word retrieval has been the objective of both clinician-imposed cuing regimens and self-cuing strategies. However, this focus disregards the communicative potential of the gestures, descriptions, and other behaviors that an aphasic person employs in attempting to produce a target utterance. The word-retrieval process may convey as much or more to a listener than the patient's ultimate word production.

Recent studies of the word-finding behaviors of a diverse group of treated aphasic patients at the Portland Veterans Administration Medical Center has shown that two-thirds of their self-cuing attempts did not result in production of the desired response. In no instance was a patient's success rate better than 50%, and for one patient, no correct words were emitted in 12 attempts. This information leads to a conclusion similar to Holland's (1977), that perhaps too much treatment time is directed toward attaining a specific linguistic response at the expense of the communicative value of a patient's message.

The present investigation attempted to examine information transfer inherent in the total self-cuing process. The following questions were addressed:

1. Can listeners predict target utterances from observing only self-cuing behaviors?

2. Do certain types of cues have more communicative value than others?

3. Is the communicative effectiveness of individual aphasic patients increased by considering the information transmitted within the total self-cuing process?

METHOD

Preparation of Videotape. One hundred seven samples of self-cuing behaviors from 10 aphasic patients were randomized for inclusion on a videotape. These behaviors were emitted by patients in response to a 100-item battery of

single-word speaking tasks. Any self-cue, regardless of the accuracy of the patient's final response, was included on the tape. Each sample was edited such that the patient's final responses (regardless of accuracy) were eliminated prior to preparation of the master tape. Two speech pathologists independently classified the self-cues into one of eight categories, or combinations of the eight categories, with agreement of 93%. Self-cues were also coded as to whether the aphasic patient had succeeded in producing the correct word. Classifications and examples of self-cues are shown in Table 1.

Table 1. Classifications and examples of self-cuing behaviors.

Categories	Examples
Verbal Associations	"eggs for bacon "cup and" for saucer
Written cues	pantomimes writing action
Description of use, context of use, function	"You write with it" "You use it when it's cold"
Description of form, position in space, outward characteristic	"It's round" "It's on the wall"
Gesture of action, or function	pantomimes shaving, climbing a ladder
Gesture shape, location, outward characteristic	points to the wall, indicates shape of a book
Spelling or letter cues (correct or incorrect)	"B-l-i-c-k" "It starts with A"
Production of sound made by the object	"ding-a-ling-a-ling" for bell

Subjects. Six normal adults (graduate students and interns) viewed the 107-item videotape. None had received prior formal exposure to aphasic patients. The six observers were randomly assigned to one of two groups; a control group (N=3), and a group provided with some training and context (N=3).

Control group. Members of the control group received limited instructions about the task. They were told that the tape contained 107 samples of aphasic persons trying to say certain words, and were asked to predict what they thought the patients were trying to say. This condition approximated a situation in which a listener might be approached by an unfamiliar aphasic person attempting to initiate some message.

Context group. Members of the context group were provided a general explanation of word-finding difficulties in aphasia, along with descriptions and examples of the types of self-cues listed in Table 1. Their answer sheets contained four possible responses (the target word and three foils) for each stimulus. Foils for each item were taken from error responses of pilot observers and the errors made by control subjects. Some foils were semantically or phonetically related to the target body, and others were outright errors. This condition was designed to resemble a situation in which a listener would be familiar with aphasic persons' communication

strategies, and might have some idea about an aphasic person's possible topics of conversation.

Preparation of the Data. Only those self-cues that occurred a minimum of four times in the 107-item corpus were included in the analyses. In addition, categories of self-cues were slightly revised to reflect those cuing behaviors (or combinations) which occurred more than four times. The revised classifications are shown in Table 2. The ability of each observer to predict target utterances was determined by scoring each response as correct or incorrect. A correct response indicated that the observer had predicted the intended word from the information contained in the patient's self-cue; an incorrect response indicated that the observer had not been able to identify the intended word on the basis of the information inherent in the cue.

Table 2. Revised categories of self-cues.

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1. Verbal associations includes superordinate, coordinate, subordinate

2. Description of Function (demonstrates use in context)

3. Description of characteristic (outward characteristic: position in space)

4. Gestures function (demonstrates use)

5. Gestural characteristic (shows shape, location, outward characteristic)

6. Spelling (oral spelling or letter cues e.g. starts with)

7. Combined 1 and 2

8. Combined 1 and 3

9. Combined 3 and 4

To determine the communicative efficiency of self-cuing behaviors for individual aphasic patients two computations were carried out. The first involved determining the percentage of self-cues that ultimately led to the production of the intended word, and the second involved calculating the percentage of unsuccessful self-cues for which five of six observers were able to predict the intended word. For example, in 10 self-cue efforts, a patient might successfully employ a self-cue to retrieve a target word three times (30%). Of his seven unsuccessful efforts, two target utterances might be correctly predicted by five of six observers (20%). The sum of these values (50%) was taken as an overall measure of self-cuing efficiency for the patient.

RESULTS

Prediction of Target Utterances. Figure 1 shows the mean percentages of correct predictions for the control and the context groups for each of the cuing categories. The mean percentage of correct predictions for the control group ranged from 29-34%, with a mean of 31%. Means of correct prediction for the context group ranged from 47-65% with a mean of 56%.
Self-cue Types. Figure 2 shows the percentages of correct predictions for each observer in the control and context groups for each category of
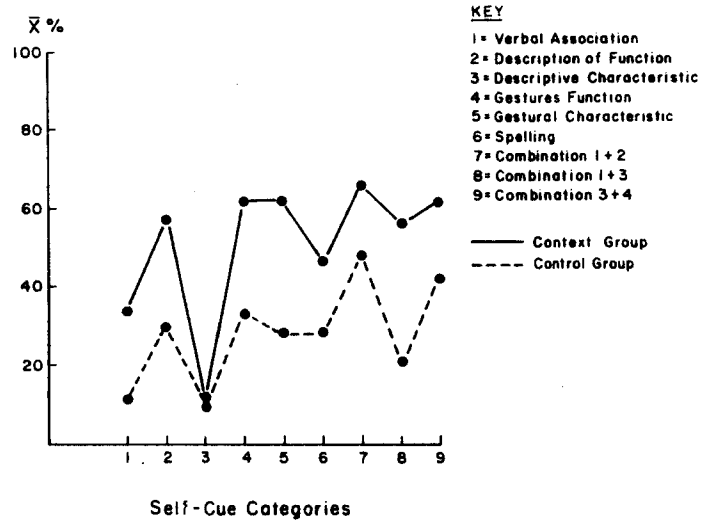
KEY

1 = Verbal Association
2 = Description of Function
3 = Descriptive Characteristic
4 = Gestures Function
5 = Gestural Characteristic
6 = Spelling
7 = Combination 1 + 2
8 = Combination 1 + 3
9 = Combination 3 + 4

——— Context Group
- - - - Control Group

Self-Cue Categories

Figure 1. Mean percentages of correct predictions for control and context groups for each self-cuing category.

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1 = Verbal Association
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● Context
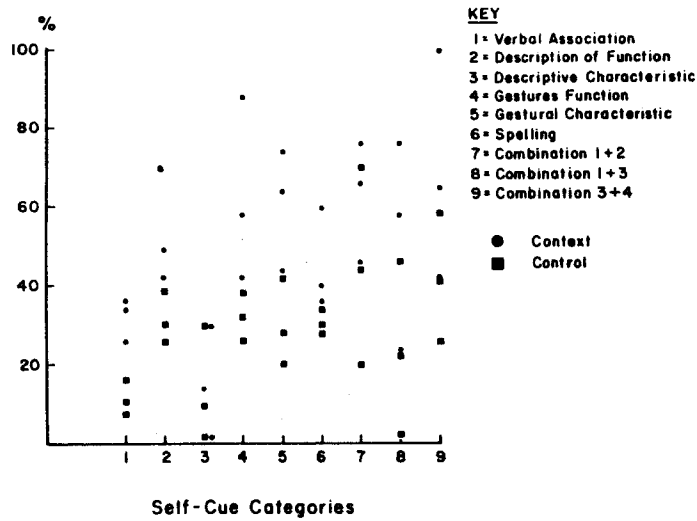■ Control

Self-Cue Categories

Figure 2. Percentage of correct predictions for individual observers for each category of self-cues.

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self-cues. Although observers provided with context had higher percent-
ages of accurate predictions for most categories, the pattern of success-
ful predictions across the various categories was similar for both
individuals (Figure 2) and groups (Figure 1). Visual inspection of
Figures 1 and 2 shows that functional description, both gestural categories,
and combined cues resulted in a higher percentage of correct observer pre-
dictions.

<u>Self-cue Efficiency</u>. Figure 3 shows the percentages of communicative
efficiency for each aphasic patient. These data show that when the correct
predictions of observers are added to the successful word retrieval
efforts of the patient, dramatic improvements are seen for three patients
(2, 4 and 7), modest improvements for five patients (1, 5, 6, 9, and 10),
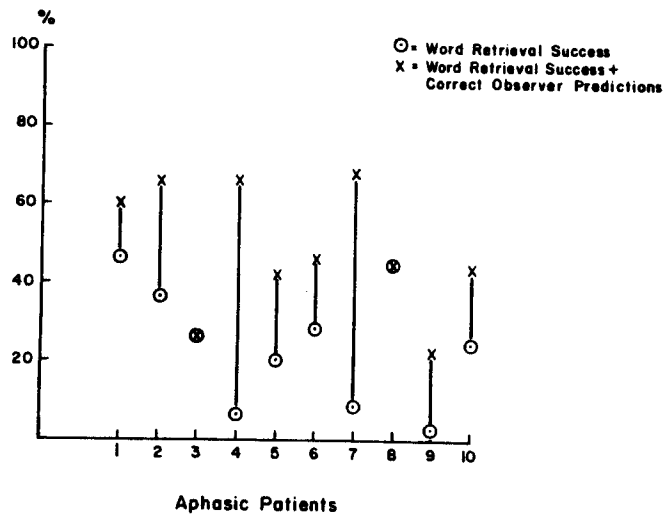and no improvement in two patients (3 and 8).

Figure 3. Percentages of communicative efficiency for aphasic
patients.

DISCUSSION

While the absence of statistical analyses suggests a cautious inter-
pretation of the findings of this study, our data suggest that observers
can glean intended meaning from self-cues, even in an artificial situation
which allows no hypothesis testing or interaction regarding the aphasic
person's desired response. A small amount of description and context given
to observers seems to help them to interpret self-cues. This finding has
implications for training family members to communicate more effectively,
even when a patient's word-retrieval success may be inconsistent.

Certain types of cues may be more effective than others for message
transmission. Support for this conclusion comes from the performance of
individual patients and the fact that the overall pattern held for three
patients whose communicative efficiency levels increased the most when the
information in the total cuing process was considered. For example,

subject 4 was an anomic aphasic patient, approximately five months post-onset, who rarely produced target words. Half his self-cuing attempts were combined cues; the other half were verbal descriptions of action or function. Subject 7 was 8 years post-onset and exhibited moderate nonfluent aphasia and apraxia of speech. He tended to self-cue by combining gestures with phonemic approximations of words within a verbal description. All successful identifications for patient 2 were on combined cues; of his cues which did not successfully communicate the target word, three-fourths were verbal associations. The two patients who showed no increase in communicative level used verbal associations in 75% of their self-cuing efforts. In attempting to predict the target utterances of these subjects, observers tended to be literal when single word associates were given, recording the association itself as the intended response. The ordering of cuing effectiveness with regard to information transfer does not correspond to that reported by Pease and Goodglass (1978) in a study of word-retrieval success. They found that cues denoting action, location, and superordinate were least effective in cuing word production for all aphasic patients. While our investigation showed that verbal associations (including superordinate) cues were ineffective and occasionally misleading for our observers, both verbal and pantomimic indications of action resulted in some of the most accurate observer judgments. Location cues were also effective when gestured, or in combination with verbal associations.

The most relevant result of this experiment indicated that aphasic persons for the most part may "communicate better than they talk" (Holland, 1977). Self-cuing behaviors should be regarded as potentially useful ways of transferring information, because a patient's success at retrieving a specific target bore no apparent relationship to successful observer identification. Certainly, a therapy focus which encourages the use of clear self-cues regardless of eventual word production should be considered for many aphasic persons.

ACKNOWLEDGMENTS

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DISCUSSION

A: In this and previous work, your group has demonstrated that the most frequent word retrieval strategy is association, but that delay is most effective. Yet in this study you said that verbal plus pantomime was the most effective combination. What about when delay, the most effective, is used? Do you see your patients pantomime during that period, or is it just a silent delay?

A: Delay could take either form, although most frequently the gestures seemed to be used as supplemental verbal cues.

Q: Would you still contend, then, that silent delay is the most effective, and then possibly pantomime plus verbal, then association? Are you seeing a hierarchy there?

A: You are referring to a study Bob did about 5 years ago--In that instance we were looking at spontaneous productions. In this particular study we were focusing on the value of the information in the self-cue itself, and the major concern was not whether the guy eventually got the word-- This order of effectiveness was for the observers, showing with what degree of accuracy they could predict the target word.

Q: In this study a semantically associated word was an error, right? If one were to look at this same behavior in daily life conversational context, do you think you might see some of those patients who used a lot of word associations showed better communicative effectiveness?

A: I think we might, depending on how well the person they were talking with dealt with those types of cues. That's why I think there could be some interesting uses of a tape like this for training a wife or a significant other person and giving them some hints as to, when he said

that, maybe he doesn't mean exactly that; but to zero in around that area and see what else you can ask him about it. I think you're right-- this was an artificial situation because there was no interchange or conversational context available.

Q: In daily life, context carries a lot of meaning so the listener can fill in. Then associations might narrow it enough.

A: I agree with that. I also have seen the opposite, though, when a person is not very adept at going beyond the literal in communicating with the aphasic patient. This may be especially frustrating when the patient is more severe. But you're right; the context was lacking.

Q: There's an old study by Schuell, Shaw and Brewer in which they looked at narrative productions of aphasic patients and computed what they called a "Semantic Specificity Index." I think your paradigm would be nice to apply to their concept of semantic specificity. What they were saying was that people were better able to predict a missed target word where the context led to a more specified word choice. I think your design would be a good one to use with a longer sample to see what is the real world interaction between the context, association cues, etc.

Q: If you look at delays you may find almost a Catch-22 situation. A lot of it would depend on the length of the delay, and what the patient is doing nonverbally and coverbally to keep the listener from jumping in. If the delay gets too long, the normal interviewing literature suggests a "magic cutoff" when after about seven seconds of silence the listener will jump in. I think you'll also find different behaviors across interactants, with some who are more impulsive about jumping in.

A: The Catch-22 could be evident in some other ways too. It seems that the self-cuing approach isn't resulting in getting the words we want. I'm not saying to throw out self-cuing strategies; but also to consider how well a patient's spouse can get information from a particular type of cue, and to let him go on working on it if it's effective in that way.

Q: You contrasted your finding about the value of associations with the finding of Pease and Goodglass, but Pease and Goodglass were studying how well the aphasic patient performed, not how well the listener performed.

A: Right. The point I wanted to make was that there's not necessarily a coincidence between what the aphasic person can best use and what the listener can best use.