Systematic Analysis of Cuing Strategies in Aphasia: Taking Your "Cue" from the Patient

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Treatment for aphasia and apraxia of speech has been approached from many different theoretic perspectives. However, much of what actually transpires in the treatment process, regardless of the theoretic orientation of the clinician, can be broadly classified as cuing. Stimulation approaches to treatment consider the relative power of a particular cue in eliciting a high proportion of adequate responses (Duffy, 1981; Linebaugh and Lehner, 1977). Natural conversation (Davis and Wilcox, 1981) approaches encourage the patient to use all available cues to aid his or her comprehension of a message, and the clinician, as a sender of messages, provides additional information, or cues to the meaning, whenever a message is not understood by the patient. There are programmed hierarchies for cuing, particularly for word-retrieval and apraxia of speech, that move patients from a high degree of clinician-controlled cues to progressively less reliance on the clinician (Bollinger and Stout, 1977; Linebaugh and Lehner, 1976; Rosenbek, Lemme, Ahern, Harris and Wertz, 1973). Although the framework can vary, there is a common assumption underlying many approaches to treatment, and that is the notion that external events can be overlaid upon or integrated into the internal cognitive processes available to the patient as he or she manages the task of communicating. The clinician's task is to gain insight into what an individual patient is capable of doing, and then to see that these intrinsic abilities are used to their greatest capacity.

Long before many of the current methods for treatment were formally described, Berman and Peele (1967) pointed out that aphasic and apraxic persons often engage in self-generated cues. They observed that sometimes these cues help the patient and sometimes they don't. It is our feeling that paying attention to the patient's more facilitative self-generated cues will provide a greater understanding of what an individual can do, what his or her own hierarchies are, and what clinicians might like to encourage in the process of applying treatment whether or not therapy takes the form of stimulation, conversation, or programming.

PURPOSE

We are presenting two cases in which treatment largely centered around observations of the patient's own facilitative cues. Neither of these cases is extraordinary, in the sense that these patients had an unusual type of aphasia, or that the therapy was all that different from traditional treatment. Our purpose in presenting these cases is to demonstrate methods for systematic analysis of cuing strategies as a means for (1) establishing a focus for subsequent treatment goals and (2) evaluating the outcome of a treatment program directed toward increasing the patient's use of these strategies.

METHOD AND RESULTS

Case #1. The first treatment example involved a 63-year-old aphasic man who was approximately 2 months post CVA when he entered this phase of

his treatment. His OA PICA (Porch, 1971) mean score at that time was at the 48th percentile. One of the observations made during earlier treatment sessions was that this patient engaged in several types of self-generated cues in his word-retrieval efforts. To determine the efficacy of these cues, a naming task using 20 pictures of common objects randomly selected from a group of 50 was applied. The patient was asked to "tell us what you see on this picture" with stimuli presented in a PACE-type (Davis and Wilcox, 1981) format (in which the clinician could not see the picture). Responses were tape recorded for later review. Also at the time of presentation the clinician made a verbatim transcription of what the patient said and the gestural or graphic cues he used to convey or elicit the target message. After the patient had either named the item or indicated he had made his best effort, the clinician wrote down the name of the target word or what was guessed to be the target word. When the 20-item task was completed, the patient's cues and the clinician's guesses were compared against the actual target. The cues used by the patient were categorized into the cuing categories listed by LaPointe (1978). Any response too vague to be categorized within this format was left out of the data analysis. The patient's ability to name a picture and the clinician's guesses were scored for accuracy. Scores of "1" were given if the patient accurately named the item or if the clinician had accurately determined the target response, "1/2" if the clinician's guess was closely related to the target response, and "0" if the clinician was unable to even partially infer the target response.

Two baselines were obtained in this manner and the frequency of different cues compared to their success in eliciting the name or an accurate inference by the listener were computed. Figure 1 illustrates the frequency percentages of cues within categories taken from the first baseline. It appeared that this patient usually tried to say the name of the word and after a couple of efforts at saying the initial phoneme or word fragment he then made a gesture related to the picture. Occasionally, he attempted to say something about the picture in the form of a description or association cue. As an example of how these frequency percentages were determined, when the patient said, "/mI/, /mI/, no" and stopped after being shown a picture of a mailman, and the clinician inferred the target word to be "milk," he was scored as having two initial phonemes (or word fragments) which were unsuccessful. When he said "s..uh.., on my leg, on a shoe" in response to the picture of a sock, and the clinician inferred the target word to be "sock," then he was scored as having one initial phoneme, one delay, one description and one association each of which were counted as successful. The percentages within each category during the first baseline are provided in Figure 2.

The association and description cues were less frequent but most often paired with an accurate inference by the listener. These types of cues were most likely to lead to the patient's accurate naming of the picture. Furthermore, as Tompkins and Marshall (1982) have suggested, these cues were the most informative in eliciting an accurate inference from the listener. In our analysis we were interested in identifying which cuing strategies were available to the patient and most facilitative for successful communication of content items. Tangential support for Tompkins and Marshall's (1982) findings with other aphasic patients was also provided.

Results of a second baseline assessment are displayed in Figures 3 and 4. There were essentially no differences in the overall frequencies of various cues or their success relationships within the total.

After examining the results of these analyses, a treatment program emphasizing the use of associations and descriptions during conversational

Figure 1. Frequencies of Cues across Categories: Baseline 1

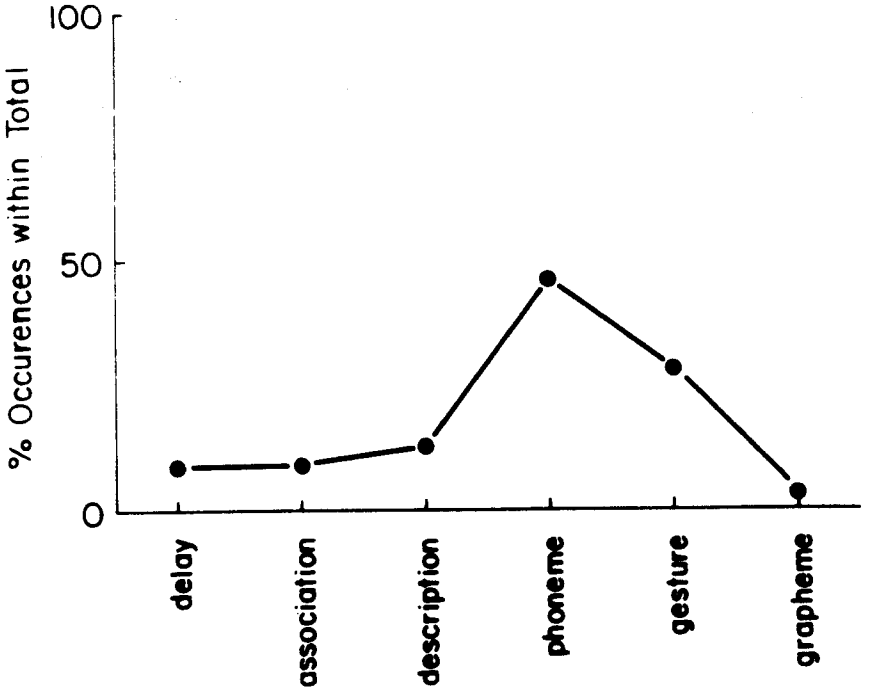


Figure 2. Success Percentages across Categories: Baseline 1

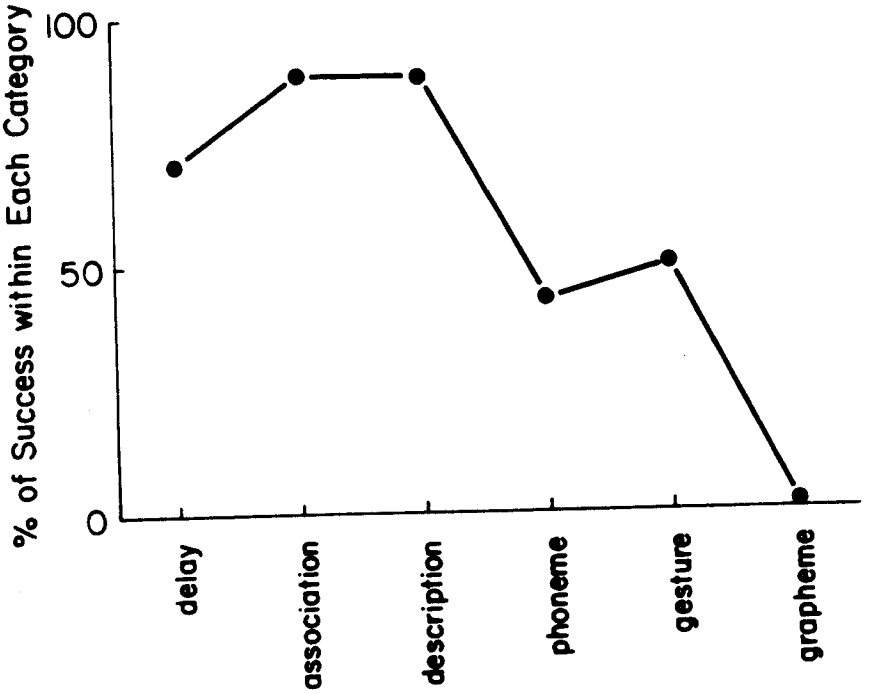


Figure 3. Frequencies of Cues across Categories: Baseline 2

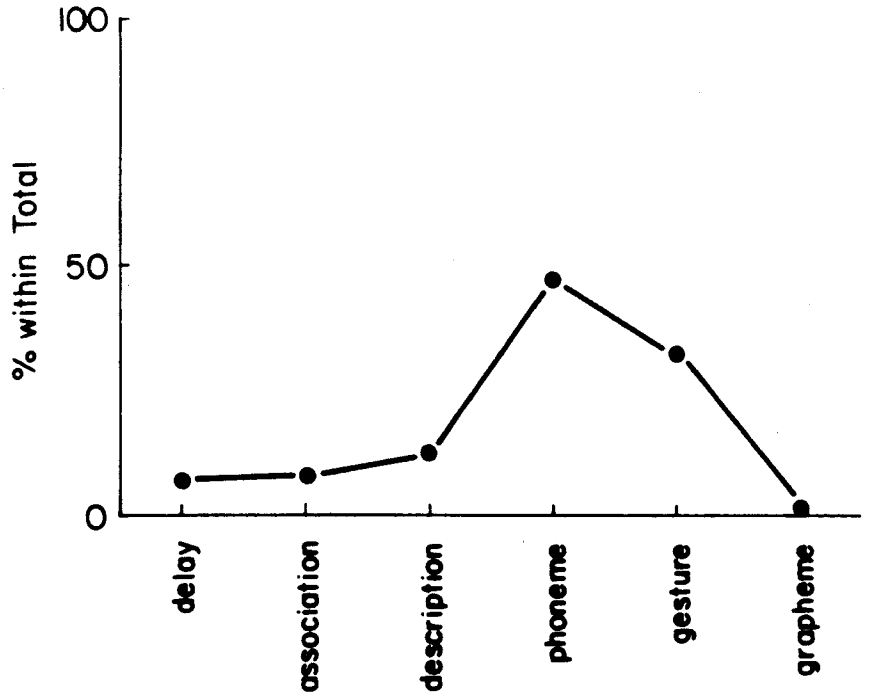
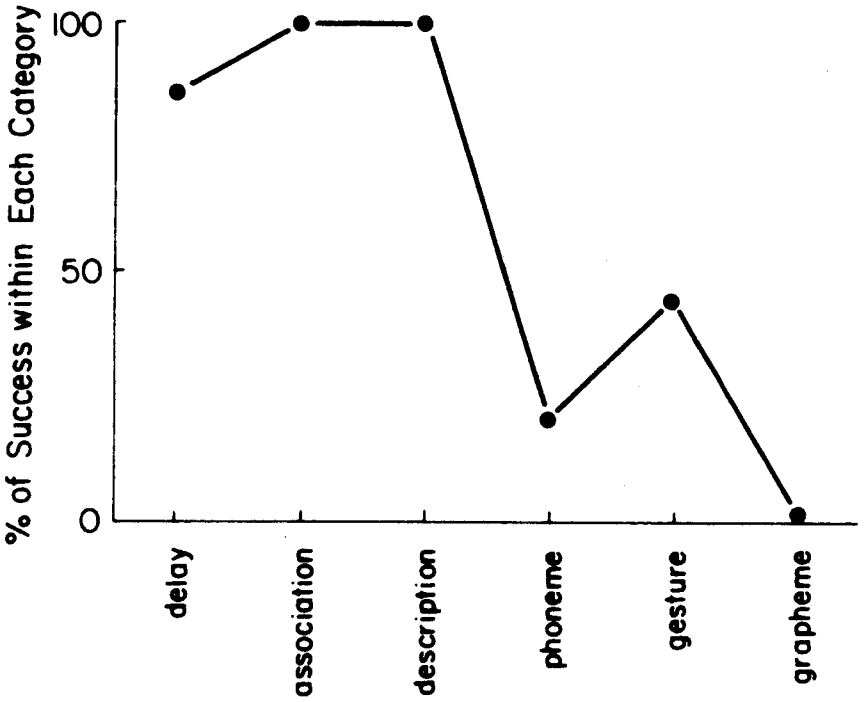


Figure 4. Success Percentages across Categories: Baseline 2



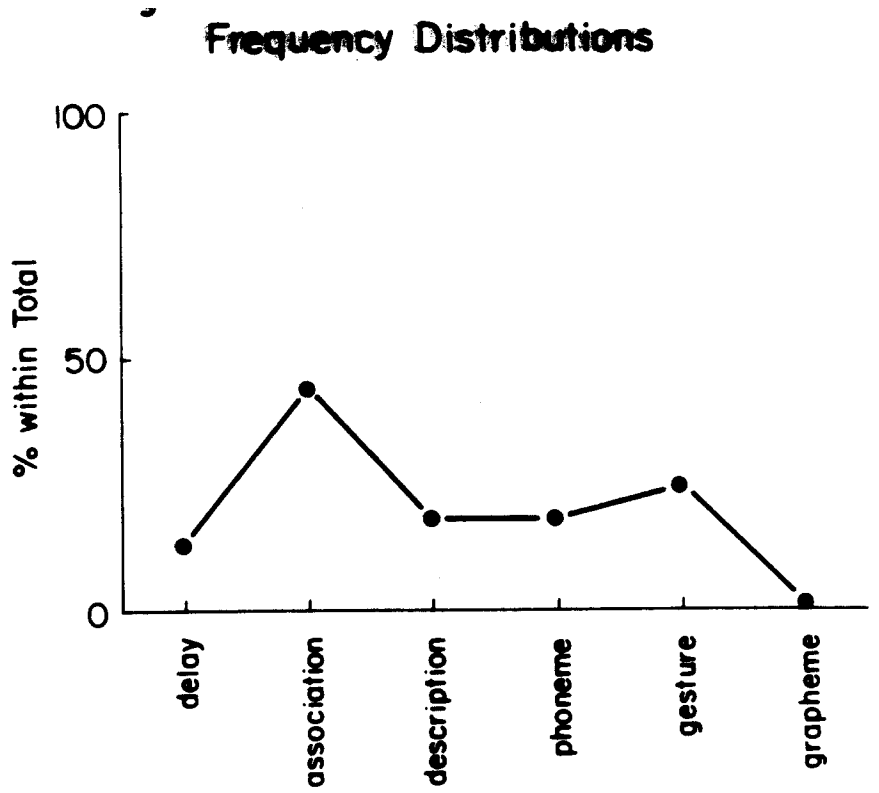
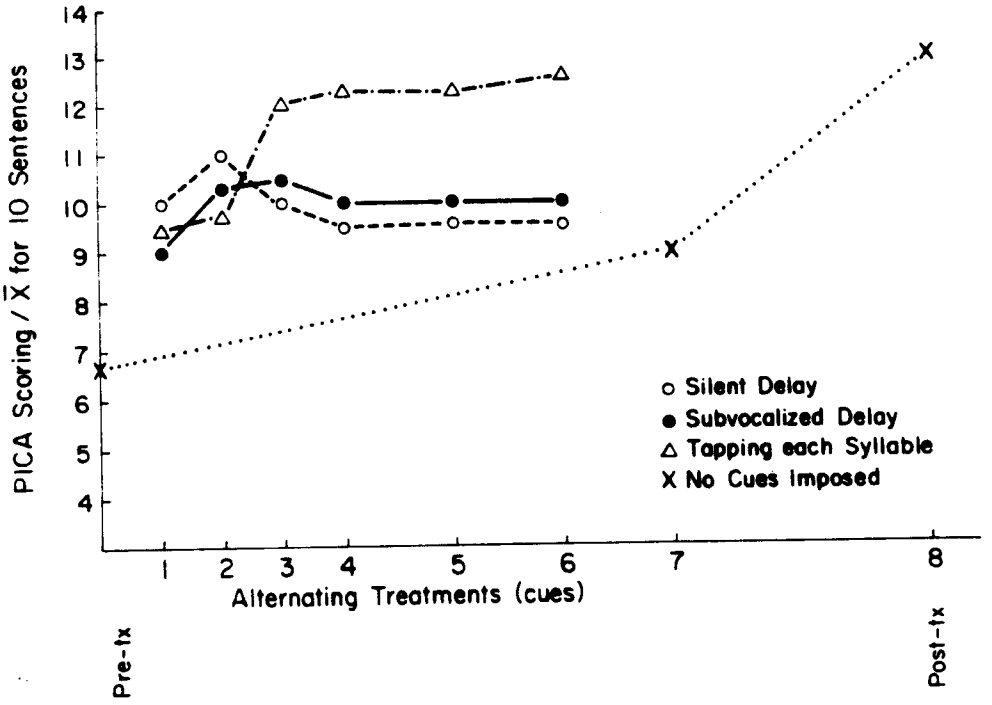


Figure 6. Application of Alternating Treatment Design to compare Cuing Conditions, Pretreatment, and Post-treatment Effects



interactions was initiated. The clinician used modeling and requests to demonstrate and elicit associations or descriptions from the patient in his attempts at conveying specific names. He was encouraged to tell us about the people, places or things discussed in treatment, rather than trying to say a specific name or stopping the flow of information after he had failed to say a name. At the end of this phase of treatment the initial probe procedures were repeated. There appeared to be an increase in this patient's use of association and description cues (Figure 5). Associations became the most frequently occurring cue. His accuracy scores went from 6 and 6.5 in the baseline measures to 16 in the subsequent probe. He increased his use of association and description cues and less frequently attempted to say only part of a word. This change led to more successful communication of content. His higher accuracy scores indicated that he not only said the word he wanted to say more often, but he became more successful by providing meaningful information to the listener, leading to a greater number of accurate inferences from the listener.

Case #2. The second case involved another 63-year-old man with nonfluent aphasia. His overall PICA mean score at approximately 3 months post onset was at the 55th percentile. His reading and auditory subtests were at the 99th percentile at this point in his treatment. He was mildly aphasic and moderately apraxic.

A videotape recording of this patient's spontaneous speech in an interview format and in response to the "Cookie Theft" picture (Goodglass and Kaplan, 1972) was reviewed and it was noted that he tended to use three types of cues preceding more fluent verbal expression. These cues were: silent pauses/delays, delays with subvocalized rehearsals, and a pacing, hand-waving gesture occurring at the beginning of a word or phrase. A treatment experiment was designed to analyze these three conditions as facilitators of fluency. Cuing efficacy was examined with an adaptation of the "alternating treatments designs" described by McReynolds and Kearns (1982).

Figure 6 summarizes the data from the analysis of these cuing conditions. A pre-treatment measure was taken in which the patient was asked to read ten sentences of 5 to 7 syllables in length and no particular cue was requested. Over successive sessions the three cuing conditions were then imposed in an alternating fashion. Responses were scored from audiotapes using PICA (Porch, 1971) scoring. The tapes were scored without knowledge of the order or type of cuing condition imposed.

After taking these measures over six sessions it appeared that the saliency of the three conditions differed, in that the pacing (syllable-by-syllable tapping) condition was most likely to reduce articulatory errors and promote more fluent speech. Following a two-week break from treatment, the initial (pre-treatment) procedures were repeated in which no particular cue was imposed. Performance appreciably dropped compared with that found during the conditions in which specific cues were requested, but the mean score was slightly better than during the initial probe. These data suggested that emphasis should be placed on the syllable-by-syllable tapping procedure during treatment. Having prepared a graphic summary of the data, we were able to illustrate to the patient why we had selected to emphasize this type of cue.

Subsequent treatment in expressive tasks encouraged the use of syllable-by-syllable then later word-by-word, and finally stress-point pacing within phrases and sentences. Tasks designed for home practice were similar to the conversational and drill practice within the treatment sessions. Language Master stimuli were used and the patient did such things as

read the newspaper headlines to his wife with the pacing cues. At the end of six weeks (eight more sessions) of treatment the initial probe conditions were again repeated. The patient was given the ten test sentences to read without instructions as to the types of cues he was to use. It was found that he read the test sentences with little difficulty. It was observed that he used head nod pacing at stress junctures within phrases, rather than using hand tapping. The treatment demonstrated a positive effect by increasing fluency and reducing articulatory errors. Monthly "Cookie Theft" samples supported this finding, with a 29% increase in syllable rates during the last two months of treatment.

DISCUSSION

A systematic analysis of facilitative cues within the repertoire of strategies available to these patients was made to (1) establish a focus for subsequent procedures and (2) measure the outcome of those procedures. An application of multiple baseline and alternating treatment designs provided a means for answering treatment questions. In both cases treatment hypotheses were tested. Each patient was observed to be capable of generating ways to improve his communication. It was hypothesized that (1) cuing strategies would differ in their facilitating effects and (2) treatment could effectively expand the patient's spontaneous use of certain cues. The data supported both hypotheses.

Arriving at a focus for treatment and measuring outcome are basically hypothesis-testing, clinical experiments. Each patient presents unique problems and questions to answer. Treatment has all of the characteristics of any other form of clinical research. There are timelines and expected outcomes. Clinical records are our experimental data. The strength of our conclusions rests with the reliability of our measurements. And when providing aphasia treatment the clinician-experimenter has to satisfy perhaps the most important "human studies committee" of all--the patients and the families we treat.

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DISCUSSION

Q: In the ATD experiment, how did you select the particular nouns that you used and how did you assign them to treatments?

A: We randomly selected twenty words out of 50 stimulus cards, and had no plan to control for the content of the cards or the difficulty of the task. What we wanted to do was to test our informal observations. We thought he was using some association/description cues, but usually tended to attack word-retrieval with phonemic starters, and we wanted to analyze these observations in a more controlled manner. With the second patient we used the same 10 sentences in all conditions.

Q: Could you relate cuing power with something such as cuing strengths?

A: With the second patient we found that manual activity, pacing, rather than delays, seemed to benefit him. We know that, when people talk, hand movements occur in close association to speech junctures. We normally pace ourselves with our hands. I think his hand movements turned out to be facilitative of fluency. We may have found support for the idea that increasing spontaneous manual activity might have increased his ability to put out words. This patient had the idea that if he stopped and thought about what he was saying, that is, when we asked him what worked, he said "I just say it" or "I stop and think about it and then say it." We thought the power of cuing conditions could best be determined by testing his own and our observations. By conducting an experiment we found that manual activity cues seemed to work best.

Q: Did you assess the efficacy of strategies in the post treatment or did you simply generalize from Bob and Connie's data? (Tompkins and Marshall, 1982)

A: The findings with the first patient did support that study in terms of the words we could guess. We couldn't test him beyond this phase of treatment because he became too sick to continue treatment. If you are asking if we took some kind of outside measure during this phase, like content fluency or something, no, we didn't.

Q: The basis of the question is, are trained self-cuing strategies as effective as the one's the patient's generating spontaneously?

A: He was generating these cues spontaneously. The theory is that if patients could use more associations or semantically-related words then the listener could understand where they are going and then ask the right questions. But, for this individual, we had to find out how often he used these cues, and how effective they were at putting the listener in the ball park. It turned out to be a strategy available to him, so we then encouraged him by saying don't just tell us the first part of the word, tell us about it. We had to determine how accessible that strategy was to this patient and if his association cues were good enough to get a message across.

Q: I see a lot of patients with naming difficulties, and they use circumlocutions and cues, pretty much the same ones you described as self-generated cues, but I've not had much success after therapy stops. What about your success rates?

A: I think the first patient became a better communicator and the change was not one that could be measured on a right/wrong basis with a naming task. One of the comments made about him when he was transferred back to the neurology ward after having this treatment was how much better the ward staff understood what he wanted. I'm not sure if he named things better, but he communicated better.

A: I think it interesting to know what kinds of cuing strategies are effective for patients on tasks like yours, especially naming. Do these strategies work in terms of generating verbs or spontaneous speech in other contexts? What I'd like to encourage you to do is think more longitudinally about self-cuing, because it demonstrates that in one context certain kinds of cues are more effective in generating an appropriate response, but we can't make generalizations to the person <u>in toto</u>.

A: One of the points I've most enjoyed hearing in the past few days has been the repeated statement that we have to think of the individual and the individual's own hierarchies, what works best for that person and what the circumstances are that make communication better. Of course, these judgments are always limited to where and how we observe that individual.

Q: I understand at least in the first case you measured success in terms of listener success in guessing what the patient was talking about.

A: Right.

Q: We always have a problem in measuring things like that, in terms of controlling for what the listener was simply guessing, with prior knowledge of what's in the stack of cards. How did you control for that?

A: Well, the distinction of accuracy was to a degree subjective and even with randomized and different cards the information the listener had to guess would vary. We took the listener's best guess on the patient's first attempt. If the listener was in the ballpark, like with a guess like "juice" for milk, we felt that, given one more question, the

patient could have conveyed the target. We were looking for responses that were either right on target or enough in the ballpark to lead to the right message had there been some follow-up questions. Your point is a good one. What the listener might know already makes it a pretty big ballpark.