

Response Elaboration Training for
Patient Initiated Utterances

Kevin P. Kearns
Veterans Administration Medical Center, New Orleans, Louisiana

INTRODUCTION

A philosophy of aphasia management which emphasizes communicative function over linguistic form has emerged in recent years (Holland, 1977; Davis and Wilcox, 1981). Consistent with this philosophy has been the development of training approaches which are based on pragmatic and interactive aspects of communication. The movement away from structural aspects of language and renewed interest in communication per se can be seen, in part, as a reaction to the use of overly structured training techniques. Often the content of aphasia therapy is didactic and unidirectional, with an emphasis on eliciting responses from the patient (Davis and Wilcox, 1981). Not only is there a tendency for therapy to be didactic, there may also be a stubborn insistence on the part of clinicians that there is only one acceptable response to treatment tasks - the one selected by the clinician.

Although language and communication are used creatively and with great flexibility in the natural environment, overly didactic training approaches may inhibit patients' creative use of language and communication by restricting patient responding. Clinicians may extinguish or even punish creative language use by ignoring or admonishing novel but appropriate patient responses which are not targeted for intervention. Furthermore, overly structured training techniques may also inhibit generalization by training clients to discriminate therapy conditions from other conditions in which generalization might be expected.

To overcome deleterious effects of overly structured training, Stokes and Baer (1977) suggest varying the stimulus, response and feedback conditions within therapy sessions. Consistent with these "loose training" suggestions, treatment techniques which emphasize patient-initiated responses and which reinforce creative language use instead of demanding specific target responses may facilitate generative responding for aphasic patients.

Although "loose training" programs are not available for the aphasic population, Hart (Hart, 1981; Hart and Risley, 1974) has developed such a program for remediation of language problems in preschool children. Her "incidental teaching" approach is carried out in the preschool environment rather than a treatment room. It was developed after she observed that overly structured, didactic language training did not effectively alter communication in the natural environment. One important element of this novel approach is that the clinician shapes and elaborates spontaneously produced client utterances rather than targeting preselected response. Of equal importance, the communicative success of patient-initiated responses are given priority over the specific linguistic structures or means of communicating when an incidental teaching approach is used.

Hart's incidental teaching approach demonstrates that a pragmatic philosophy of language training can be combined with intervention techniques such as modelling, prompting and social reinforcement to obtain generative responding in language delayed children. Needless to say, programs which translate a pragmatic philosophy of language intervention into practical training techniques are also needed for our aphasic patients.

PURPOSE

The purpose of this study was to evaluate the effectiveness and generality of a response elaboration training program for a patient with chronic Broca's aphasia. This "loose training" approach incorporated several principles of incidental teaching, including an emphasis on spontaneous, patient-initiated responses, and reinforcement of the content rather than the form of patient responses. The following questions were investigated: (1) Will response elaboration training facilitate an increase in the number of content words produced during a picture description task? (2) Will generalization of more elaborate responding occur to familiar untrained stimuli?

METHOD

Subject. The subject (M.H.) was a 50-year-old man who was approximately three years post onset of aphasia secondary to thrombosis of the left middle cerebral artery. He had a history of hypertension but his medical history was otherwise unremarkable. He had completed grade school and was premorbidly literate.

M.H. had received approximately two and one-half years of individual and group therapy and his performance on formal testing had plateaued for six months prior to his participation in this investigation. The results of the Porch Index of Communicative Ability (PICA; Porch, 1967) at six months prior to the study and immediately preceding the study were as follows:

	OVERALL	GESTURAL	VERBAL	GRAPHIC
Six mo. prior	10.52	12.73	9.93	7.93
Pre-study	10.65	13.38	9.58	7.75

The patient's clinical profile was consistent with a diagnosis of moderately severe Broca's aphasia and mild to moderate apraxia. He seldom initiated a communicative interaction and seldom provided additional information which would continue a communicative exchange.

Materials. The materials used for training consisted of 30 black and white line drawings which depicted transitive and intransitive verbs. The 5 x 4 inch action cards were taken from commercially available materials (Fokes, 1976) and each showed an unambiguous action such as "running" or "throwing." All printing was removed from the stimuli used in this study.

The thirty line drawings were divided into three sets of 10 items each. Two sets were designated as training items and the third set was used to probe generalization. M.H. had been previously exposed to the 10 generalization items during prior therapy.

Experimental Design

A multiple-baseline design across behaviors was used (McReynolds and Kearns, 1983). Following baseline testing, treatment was sequentially applied to the two sets of training items. Generalization items were never trained throughout the study. Clinical probes were administered throughout each phase of the investigation on days when treatment was not provided. These probes were conducted in the same manner as baseline testing and performance on the probes provided the data of interest. There were two primary experimental phases, Baseline (A) and Treatment (B).

Baseline. The thirty stimulus items were randomized and individually presented during each baseline session. The dependent measure of interest was the number of "content words" produced in response to each of the stimulus pictures. All appropriate content words per response were calculated for

baseline and clinical probes. Appropriate nouns, pronouns, main verbs, adjectives, adverbs, and prepositions were tallied as content words. Perseverative, stereotypic, unintelligible and reiterative responses were not tallied. Since the purpose of this study was to facilitate response elaboration and "creative language" use, content words did not have to be depicted on stimulus items to be tallied, as long as the information conveyed was clearly relevant to the stimulus picture.

Treatment. Treatment sessions were conducted three times weekly and all sessions were tape recorded for reliability purposes. During each session, training items were individually presented in random order and a six-step training sequence was administered twice for each stimulus presentation. Training continued for a given set of items until M.H. spontaneously produced five or more content words in response to at least eight of the ten items on clinical probes.

The thrust of training was to use a forward chaining technique to lengthen patient-initiated utterances. The clinician combined successive patient responses, modelled them for repetition by the patient, and then prompted him to provide additional information. Each novel elaboration was subsequently added to the chain until the patient's spontaneous responses were lengthened to preselected levels. Any patient-initiated response which was relevant for a given stimulus item was acceptable regardless of the form or content of the response. A unique aspect of this approach was that the patient directed the content of treatment. That is, his spontaneous utterances were used as building blocks for developing more elaborate responding. An example of the six-step training sequence is provided in Table 1.

Table 1. Elaboration of patient initiated responses.

Step	Clinician	Patient
1	Verbal instruction and stimulus presentation	Spontaneous Description e.g., 'Crying'
2	Expansion, model, reinforce, e.g., "A man is crying. Good."	N.R.
3	"Wh" Cue e.g., " <u>Why</u> is he crying?"	Elaboration e.g., "Hit head"
4	Combine patient responses, model reinforce e.g., "Great. The man is crying because he hit his head."	N.R.
5	Request repetition, model e.g., "Try and say the whole sentence after me. Say, the man is crying because he hit his head."	Imitation E.G., "Hit head-crying"
6	Reinforce model e.g., "Nice going! The man is crying because he hit his head."	

Reliability. Reliability was obtained for all baseline sessions and for probe sessions in which training criterion was met. Agreement between the clinician and an independent observer for the number of content words produced

in response to each item during these sessions ranged from 80% to 97%. The average agreement across sessions was 88%.

RESULTS

Treatment. Figure 1 depicts the number of responses produced which included ≥ 5 content words for training items. Prior to intervention, M.H. produced one or two responses of this length for both sets of stimuli. The top graph reveals that there was a gradual increase in the number of Set 1 responses which included 5 or more content words once training was introduced. After the twelfth probe session, M.H. consistently produced 5 or more content words on seven of ten Set 1 items. Training criterion was met during the seventeenth probe session, when eight of ten responses to Set 1 items included a minimum of five content words each. This high level of performance was maintained during followup probes (18-22) after Set 1 training was terminated and training began for the second set.

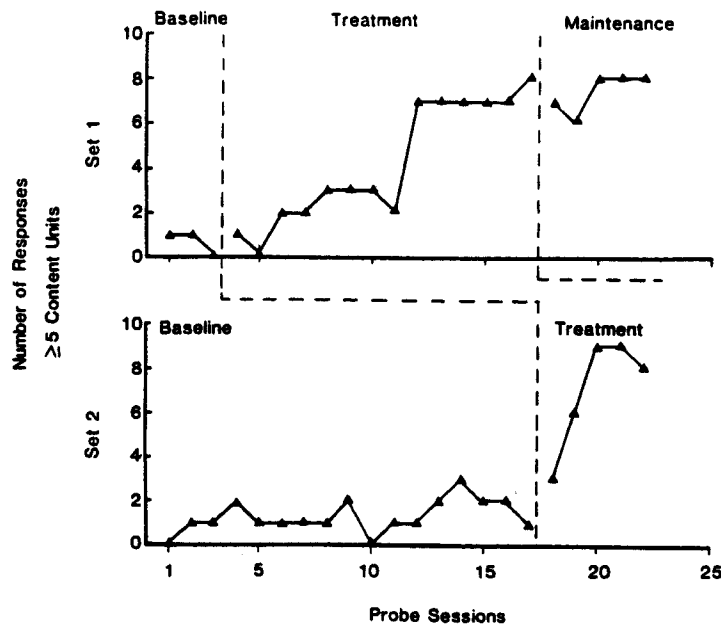


Figure 1. Number of responses having at least five content units for Set 1 (top) and Set 2 (bottom) training items during clinical probes. Baseline, Treatment, and Maintenance phases are represented.

Examination of the lower half of the figure reveals that there was a marked and rapid increase in the number of Set 2 responses containing five or more content words following the introduction of treatment on these items. By the twentieth probe session, M.H. was producing five or more content words in response to nine of ten Set 2 stimuli. The combined results of training for Sets 1 and 2 demonstrate that the program was effective in facilitating patient-initiated response elaboration.

The mean number of content words produced in response to the two sets of stimuli are depicted in Figure 2. This analysis also supports the conclusion that treatment was effective. The mean number of content words per utterance was 2.0 for Set 1 items (Top of Figure) and from 2.0 to 3.0 for Set 2 items during baseline. Following treatment, the mean number of content words was consistently 5 or more for both sets of items.

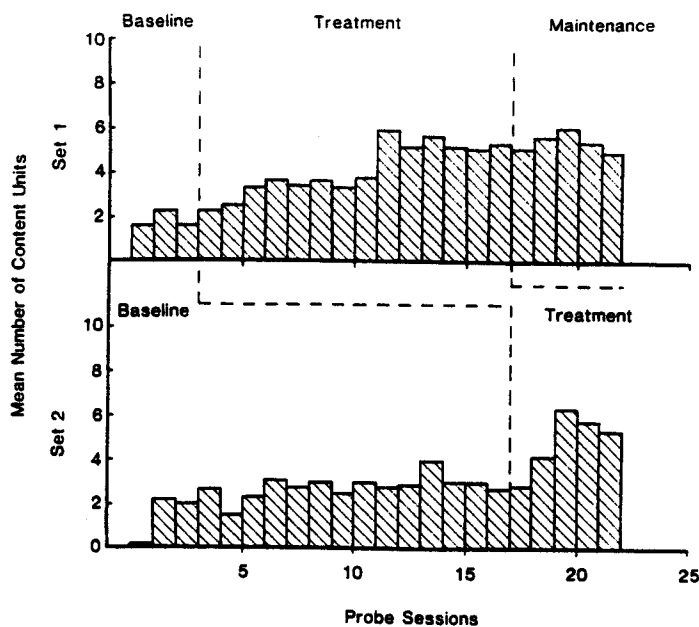


Figure 2. Mean number of content units produced for Set 1 (top) and Set 2 (bottom) training items during clinical probes. Baseline, Treatment, and Maintenance phases are represented.

Generalization. The results of generalization of more elaborate responding to the ten untrained items are shown in Figure 3. Examination of the top of the figure reveals that a moderate degree of carryover was exhibited. M.H. produced one or zero responses having ≥ 5 content words during baseline. Following completion of Set 1 training, six of the ten generalization items were produced with five or more content words. Approximately the same level of performance was maintained during Set 2 training. These results indicate that generalization of more elaborate responding was apparent for approximately fifty percent of the untrained items.

The bottom half of the figure reveals that the mean number of content words produced in response to untrained items increased from approximately 2.0 during baseline to nearly 5.0 at the termination of Set 2 treatment. This analysis confirmed the impression that a moderate degree of generalization occurred to untrained, familiar items.

Formal Test Results. Although M.H. had plateaued on the PICA for six months prior to the study, the PICA was readministered at the end of the study to determine if any change in performance could be documented. The results of pre and post study performance on the PICA were as follows:

	OVERALL	GESTURAL	VERBAL	GRAPHIC
Prestudy	10.65	13.38	9.58	7.75
Poststudy	10.87	13.09	10.83	7.95

Examination of these results reveals a slight overall improvement in poststudy performance. This overall change appears to reflect improved performance on verbal subtests, where a score of 9.58 was obtained before the study and a score of 10.83 was obtained after elaboration training.

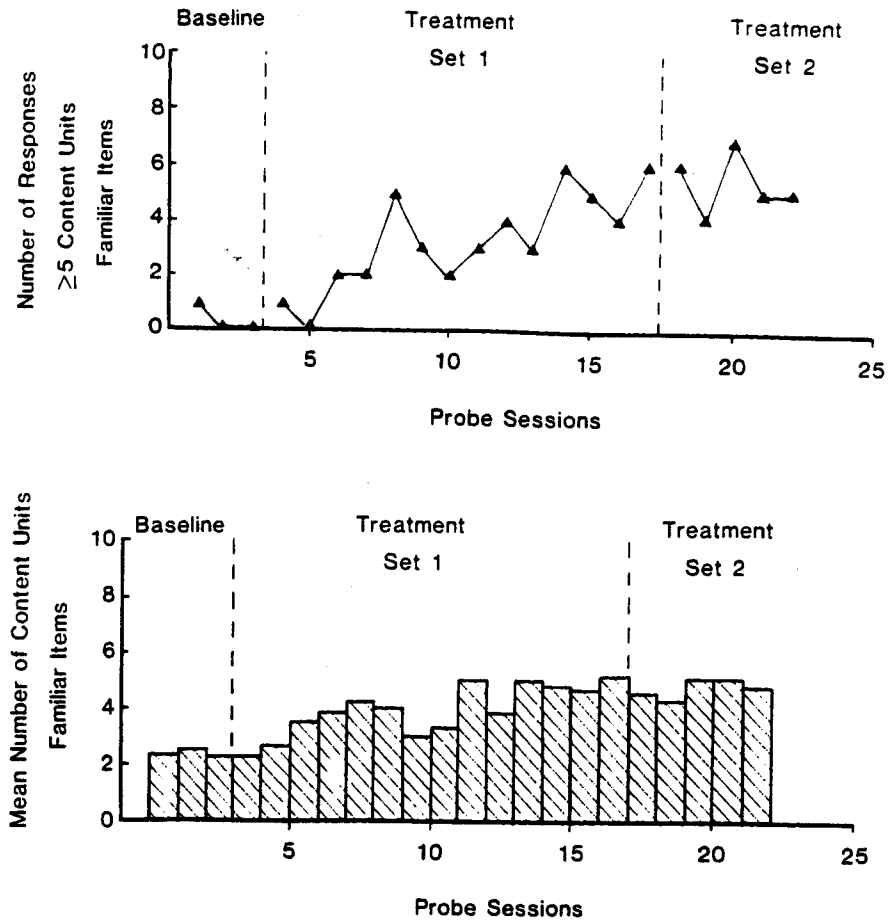


Figure 3. Generalization to untrained familiar items. Number of responses having at least five content units are shown in the top figure. Mean number of content units produced are shown in the bottom figure.

Interestingly, improvement was apparent across all four verbal subtests. The pre and poststudy PICA verbal scores were as follows:

	I	IV	IX	XII
Subtest	Description	Naming	Sent. Comp.	Repetition
Prestudy	8.2	9.3	8.6	12.2
Poststudy	9.7	10.2	10.3	13.1

There was an increase in accuracy and responsiveness on the post test, particularly on PICA subtests 1 (description of function) and IX (sentence completion).

DISCUSSION

The results of this study provide convincing evidence that a loose training approach facilitated M.H.'s response elaboration. In addition, a moderate degree of generalization of more elaborate responding was apparent for untrained familiar items. Somewhat surprisingly, his performance on PICA verbal subtests also improved, despite the fact that he had plateaued on this

measure prior to beginning elaboration training. This reinforces the belief that formal testing may be necessary but not sufficient for monitoring progress in therapy.

The verbal elaboration training program examined in this study evolved from several related considerations. First, it was felt that the highly structured approaches which had previously been used in M.H.'s treatment may have inhibited his verbal output. That is, his tendency to avoid communicative interactions and his refusal to provide additional information which would continue a communicative exchange may, in part, have been conditioned during prior therapy. Much of the previous work in treatment was on convergent tasks such as developing strategies for verbal labelling or producing predetermined simple declarative sentences. It was decided, therefore, that a more divergent semantic approach (Chapey, 1981) which loosened response requirements might be beneficial.

Thompson and Byrne (1984) also employed a loose training procedure. The purpose of their study was to facilitate the use of social greetings by aphasic patients. Whereas these authors trained preselected target items, a unique aspect of the present study was that the training of specific target language responses was avoided. In this regard, the response elaboration program is similar to the incidental teaching approach employed by Hart (1981; Hart and Risley, 1974) and her colleagues. Both incidental teaching and verbal elaboration training rely on shaping the patient's spontaneous utterances while avoiding targeting specific responses. This approach gives the patient maximum response flexibility by allowing him to respond in ways he deems appropriate. This aspect of verbal elaboration training places the burden of communication on the patient rather than the clinician. The clinician's role is that of a therapeutic navigator who guides the patient in the proper direction by ensuring that responses are relevant and that appropriate elaborations are provided. It is the patient, however, who sets the course of elaboration training. This aspect of the program is similar to the philosophy underlying McCrae-Cochrane and Miltons (1984) conversational prompting technique.

Efforts are currently underway to replicate the results of this study with additional subjects. Further exploration is needed for this and other programs which shift the burden of communication from the clinician to the patient. We must continue to investigate ways to loosen the structure of therapy and maintain a functional perspective, but we must be cautious not to loosen intervention to the point that we violate therapeutic integrity.

REFERENCES

- Chapey, R. Divergent semantic intervention. In R. Chapey (Ed.), Language Intervention Strategies in Adult Aphasia. Baltimore, MD: William and Wilkins, 1981.
- Davis, G.A. and Wilcox, M.J. Incorporating parameters of natural conversation in aphasia treatment. In R. Chapey (Ed.), Language Intervention Strategies in Adult Aphasia. Baltimore, MD: William and Wilkins, 1981.
- Fokes, J. Fokes Sentence Builder. New York: Teaching Resources, 1976.
- Hart, B. Pragmatics: How language is used. Analysis and Intervention in Developmental Disabilities, 1, 299-313, 1981.
- Hart, B. and Risley, T.R. Using preschool materials to modify the language of disadvantaged children. Journal of Applied Behavior Analysis, 7(2), 243-256, 1974.

- Holland, A.D. Some practical considerations in aphasia rehabilitation. In M. Sullivan and M.S. Kommers (Eds.), Rationale for Adult Aphasia Therapy. Omaha, Nebraska: University of Nebraska Medical Center Print Shop, 1977.
- McCrae-Cochran, R. and Milton, S.B. Conversational prompting: a sentence building technique for severe aphasia. Journal of Neurological Communication Disorders, 1, 4-23, 1984.
- Porch, B.E. Porch Index of Communicative Ability (Volume 2). Palo Alto, CA: Consulting Psychologists Press, 1967.
- Stokes, T.F. and Baer, D.M. An implicit technology of generalization. Journal of Applied Behavior Analysis, 10, 349-367, 1977.
- Thompson, C.K. and Byrne, M.E. Across setting generalization of social conventions in aphasia: An experimental analysis of "loose training." In R.H. Brookshire (Ed.), Clinical Aphasiology: Conference Proceedings, 1984. Minneapolis, MN: BRK Publishers, 1984.

DISCUSSION

- Q: I am not surprised that the patient changed with the therapy you designed. What I am surprised about is his failure to change in response to a variety of previous treatments. Could you elaborate on the differences in what you did from what had been done?
- A: I think the primary difference was that this study was motivated out of the belief that the previous therapy for this patient was didactic. The patient had received a lot of syntactic and verbal training that was very structured and we felt that he was not producing as much as he was capable of producing. Our study was based on work by Hart and her colleagues in the child language literature as well as a belief in some of the principles of Chapey's Divergent Semantic Training. We felt that by giving the patient a chance to use his language skills to respond in ways which he felt appropriate, as opposed to our directing the form and content of his responses, we might get a change in behavior. Indeed this is what we saw. One of the primary differences, then, between this and previous therapy was that he was allowed to respond in any way that he felt appropriate. Given this "loosened" response requirement, he developed themes for these very simple pictures. Stokes and Baer and others have suggested that if you reinforce generalization as a behavior, in and of itself, that you might expect this. So, for example, for stimuli like "running," in traditional therapy he might have come up with the response "The boy is running" - but other responses would have been either punished or ignored. In the present approach, he was allowed to elaborate and produce responses which weren't actually depicted. He was allowed to say "man, running, bus, work, late, home," etc. Over time he did elaborate and maintain themes and he got away from an attempt to fill in the syntactic slots. That would be the biggest difference -- we allowed him to vary the way he wanted to respond and we did so in a fairly controlled manner.
- Q: Do you have any sense of whether this person changed outside the clinic and what he was saying?
- A: The people who run my treatment group informed me that he has done considerably better. He has been observed to initiate interactions which he never did before. Previously, when asked to elaborate he would say, "I don't know, I don't know," now he is a risk-taker. He will attempt to initiate and continue interactions. I have also gotten positive comments from his son. He indicated that there were some significant changes.

- Q: Do you have any thoughts about how we might go about establishing the ecological validity of some of these behavior changes, because your changes are still confined to the clinic?
- A: I think that this study is obviously a very small first step. We have talked about going into a group setting where we can maintain some structure while investigating controlled but "loose" training. We have considered training in a group setting and systematically probing other settings within the hospital and the home. Early studies by Goodkin, Siller and Shah showed that if you go into the home, you can get some pretty interesting data on verbal performance, if you use appropriate recording techniques.
- Q: Why do you feel that the client did not get any better on the untreated pictures?
- A: I think he did get better, but he did not do as well on these generalization stimuli as he did on the training stimuli.
- Q: Your data look kind of flat.
- A: On viewing the slides again, we see the mean number of content words produced. In baseline he was at about 2.0 without any training on these stimuli. By the end of Set 1 treatment he was clearly producing above 4 content words in response to each stimulus produced. Furthermore, by the end of Set 2 training he was consistently producing about 5 content words per response. We were really pleased with that. If you take it and look at it differently in terms of how many responses were produced having 5 or more content words, he went from 1 or 0 "elaborate" responses in baseline to a consistent improvement with treatment. He produced 6 of 10 of the familiar, untreated items with 5 or more content words after the study, as compared to baseline, when he was producing, at most, one "elaborate" response. We felt that he showed a moderate degree of generalization.