

Extended Comprehension Training Reconsidered

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The assumptions underlying some of the more traditional aphasia treatment tasks are seldom questioned. Paramount among these is the popular "point to" paradigm which requires the aphasic client to identify stimuli (e.g. pictures, words, objects) whose names are spoken by the clinician. This task is intended to heighten aphasic clients' auditory comprehension for brief spoken messages (Marshall, 1981; Darley, 1976; LaPointe, 1978). Several clinical and experimental examples have been provided that show that training improves aphasic persons' performances on point-to tasks (Kushner and Winitz, 1977; Czvik, 1976; West, 1973; Holland and Sonderman, 1974; Liebergott and Holland, 1971).

It has further been suggested that the benefits of comprehension practice, as provided by the point-to task, will also result in gains for untreated tasks and modalities (Marshall, 1981; 1978; Darley, 1982; Duffy, 1981). Schuell, Carroll and Street (1955) indicated that strong, controlled, intensive auditory stimulation may prompt improvement in articulation, word-finding, reading, and writing. This assumption seems fundamental to stimulation approaches to aphasia therapy (Schuell, Jenkins, Jimenez-Pabon, 1984; Basso, Capitani, Vignolo, 1979) but, other than a 1977 case report by Kushner and Winitz, it lacks empirical support.

Kushner and Winitz (1977) provided a 47 year-old aphasic man extensive training in the comprehension of 19 lexical items for 21 half-hour sessions. Training began at one month post-onset and consisted of pointing to pictures named by the examiner. The client could not name any of the pictures when training began and production practice was not given during training. With training he improved (100%) on the comprehension task (pointing to pictures) and made systematic gains in naming. At the end of training he named all 19 items correctly. Results were interpreted as supportive of the contention that comprehension training facilitates production (naming) when production is not treated.

Scott (1977) reviewed the Kushner and Winitz paper and noted that the client was already performing at 80% success in comprehension when training began. She suggested that training alone might not have accounted for gains in naming. She also questioned if repeatedly pointing to pictures might constitute a form of auditory stimulation rather than a problem-solving comprehension task as indicated by the authors. This study sought to address Scott's concerns by (1) determining the effects of point-to comprehension practice on aphasic persons' labeling of words they could not understand before training and (2) to provide a larger data base relative to the effects of this type of training on an untreated production task.

METHOD

Subjects. Four aphasic adults (two males and two females) participated in the study. They were right-handed native speakers of English who had had

left-hemisphere cerebrovascular accidents at least six months previously. Subjects demonstrated moderate to mild aphasia as determined by overall percentile rankings on the Porch Index of Communicative Ability (Porch, 1967). On the expository speech subtests of the Boston Diagnostic Aphasia Exam (BDAE) (Goodglass and Kaplan, 1972) two subjects demonstrated fluent paraphasic speech, two had dysfluent speech. All subjects had Z scores of higher than +1 on the BDAE and were considered to have good auditory comprehension. Subjects are further described in Table 1.

Table 1. Description of aphasic subjects.

SUBJECT	AGE/SEX	MPO	PICA %	FLUENCY	EDUCATION	# UNKNOWN WORDS
CM	61 (F)	60	89	Dysfluent	12	25
MH	52 (F)	120	77	Dysfluent	16	23
DG	47 (M)	60	69	Fluent	16	25
ML	62 (M)	12	83	Fluent	14	25

Unknown Words. A set of unknown words was obtained for each subject as follows: (1) Forms L and M of the Peabody Picture Vocabulary Test (Dunn, 1981) were administered. (2) Items that were missed on the first presentation were presented a second time two or three days later. Those words missed on both administrations were designated as unknown words. The number of words for each subject is given in Table 1. Pages containing these words and three foils were copied from the PPVT test manual. Identifying numbers were removed and a single-word comprehension task was constructed for each subject, following the PPVT format.

Comprehension Training. Before beginning comprehension training, each subject was asked to repeat the words in his or her set. This was to insure that any effects (or their lack) of point-to-practice on the untreated verbal labeling task would not be due to motoric speech problems. All subjects were able to repeat the words.

Each subject received 12 comprehension trials (one to three days apart) and one followup session during which he was asked to point to the word spoken by the examiner. If the response was correct the reinforcer "Right" was provided. When the response was incorrect, the examiner repeated the item and simultaneously pointed to the correct choice. Location of the stimulus in the four-picture set and order of presentations were randomized from session to session. Responses were scored right or wrong. Each word was presented only once per session. In addition, the examiner noted whether the subject verbally rehearsed (repeated) during comprehension training.

Labeling Probes. After each comprehension trial the pictures that depicted the words, were presented singly and the subject was asked to give the correct label for the picture. Order of presentations were randomized for each probe. Responses were scored right or wrong but were transcribed for later qualitative analyses.

RESULTS

Figure 1 shows the number of correct responses on the comprehension trials and labeling probes for each subject. Followup data obtained one to two months after completion of training are also provided. All subjects attained perfect or near perfect scores on the point-to task, in six or fewer trials. Once a subject had maximized his performance on the comprehension task, this level of performance was maintained throughout training and at follow-up. Subject's scores for the labeling probes followed a different pattern. The two fluent subjects, DG and ML, made no change in labeling scores as a result of point-to practice. In contrast, the two dysfluent subjects, CM and MH, improved labeling scores as training progressed. Improvement was marked for subject CM. Both of these subjects showed slight decreases in labeling performance at follow-up.

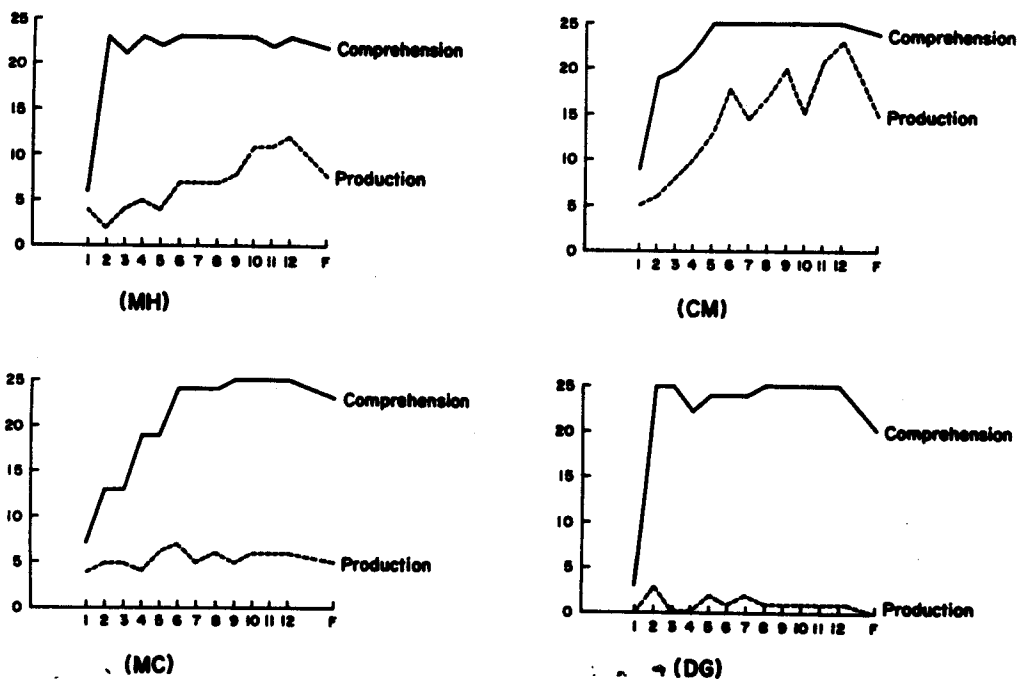


Figure 1. Number of correct responses on comprehension trials, labeling probes, and for follow-up session for each subject.

Subjects' responses on the labeling probes were classified into one of four categories. (1) Correct responses included accurate production of the word or minor articulatory deviations that did not interfere with intelligibility or meaning. (2) Semantic errors were defined as (a) word substitutions having associational linkages to the stimulus (e.g., lunar for solar) or (b) descriptions of the stimulus (e.g., "a skinny man" for emaciated). (3) Word substitutions involved instances where the subject gave another word in his set in place of the target word. (4) Minimal responses involved failure to respond, "I don't know," and general words such as "thing," "it" and "whatchamicallit."

A measurement of interobserver reliability for the classification process was obtained by having the two experimenters independently classify 50 randomly selected items. A measure of intraobserver reliability was derived

by having one experimenter reclassify 50 randomly selected items a second time, two months after the first classification. Percentages of interobserver and intraobserver agreement were above 90%.

Table 2 gives subjects' percentage of correct, semantic, word substitution, and minimal responses on the probes for the fluent subjects. Table 2 shows that subjects DG and ML, who did not improve labeling scores, produced primarily semantic and minimal responses, and essentially made no word substitutions. Distribution of response types across the four categories changed little for these subjects as training progressed. In contrast, the two subjects who improved labeling scores (CM and MH) tended to reduce their minimal and semantic responses as naming scores increased. Most noticeable was the fact that both made a number of word substitutions throughout training.

Table 2. Percentage of correct, semantic, word substitution, and minimal responses for the labeling probe by subjects DG, ML, CM, and MH.

	TRIALS											
	1	2	3	4	5	6	7	8	9	10	11	12
<u>Subject DG</u>												
Correct		12			8	4			4			4
Semantic	8	15	15	58	27	35			35			42
Word Sub.					4	8						
Minimal	92	73	85	42	61	54			61			54
<u>Subject ML</u>												
Correct	16	20	20	16	24	32	20	24	20	24	24	24
Semantic	60	64	44	56	60	56	68	68	64	64	64	64
Word Sub.												
Minimal	24	16	36	28	16	12	12	8	16	12	12	12
<u>Subject CM</u>												
Correct	20	25	32	36	52	72	60	68	80	64	84	92
Semantic	48	50	24	24	4		8		8	4	4	
Word Sub.	8	8	8	32	24	20	20	24	4	16	8	4
Minimal	24	17	36	8	20	8	12	8	8	16	4	4
<u>Subject MH</u>												
Correct	17	9	17	26	17	30	31	30	35	48	48	53
Semantic	57	57	40	30	53	35	26	22	43	17	13	13
Word Sub.	26	26	17	35	17	22	26	35	18	26	30	17
Minimal		9	26	9	13	13	17	13	4	9	9	17

DISCUSSION

Results indicate that, with training, aphasic subjects can rapidly improve their performance on a "point-to" comprehension task, even when this task involves stimuli not previously understood by the subjects. The ease with which subjects learned to point to unknown words such as "homonunculus" prompts us to question whether this endeavor is a comprehension task, or a form of auditory stimulation, as implied by Scott (1977). The distinction between stimulation and problem-solving comprehension tasks has been clearly delineated by Winitz, Reeds and Garcia (1975). The former involves listening whereas the latter implies a pairwise relationship between sound and meaning. The term problem-solving is used to describe the conceptual operations necessary for language comprehension. We do not know if our subjects needed to problem solve to master the point-to task, but Wepman and Van Pelt (1955) have indicated that aphasic patients can perform some metalinguistic tasks successfully (e.g., repetition, matching) using lower-level circuitry. The point-to task could involve problem-solving for some aphasic clients, but not others. Considering the frequency with which the task is used by clinicians, additional research is warranted.

Most importantly, the findings of this study indicate that comprehension practice, as provided by point-to training, does not cause gains on an untreated production task for all aphasic clients. Two of our subjects showed no improvement in labeling as a consequence of comprehension practice and two made gains in labeling. These differences are difficult to attribute to severity of aphasia, auditory comprehension, or motor speech performance. Subjects were in the moderate-to-mild range of severity, had good auditory comprehension on the BDAE, and could repeat the unknown words. We also cannot account for performance differences on the basis of subjects' verbal rehearsal behavior during comprehension practice. Subjects who improved or failed to improve in labeling showed both a preponderance and paucity of rehearsal behavior.

Why did two of our subjects fail to show improvement in labeling secondary to point-to practice? Rosenbek (1979) and others (Prins, Snow and Wagenaar, 1979; Gardner and Winner, 1978; Lesser, 1978) have suggested that comprehension and production may be dissociated in aphasia. In such cases auditory stimulation, as provided by the point-to task, would be unsuccessful in improving speech. The performance of subject DG (Figure 1) tends to support this claim. He mastered the point-to task in a single session. He performed very poorly on the labeling probes, eventually becoming so upset that all probes were not administered. Throughout the task he repeatedly stated "I know the word" but could not remember it. Possibly he may have been able to improve labeling scores had we provided him production practice instead of comprehension training. Conversely, for clients not having a dissociation of comprehension and production, point-to training would be expected to improve speech. Subject CM provides an example of this. She did not master the point-to task until the sixth trial, and she made steady and marked progress in labeling as training progressed. For this client comprehension training appeared to facilitate production.

The type of responses made by subjects on the labeling probes suggest that short-term retention deficits may in part be responsible for failure to profit from point-to training. Those who improved labeling scores (CM and MH) made word substitution errors, suggesting that they retained some of the words on their lists from trial to trial. The subjects who did not improve

made few word substitution errors indicating that they have difficulty retaining the stimulus between trials. This may prevent them from rehearsing between trials and explain their lack of progress on the labeling task.

It should be pointed out that the amount of point-to comprehension practice given to our subjects was limited, and much less than that given the Kushner and Winitz patient. Subjects DG and ML might have made further gains in labeling had they been given more practice. This also seemed to be the case for subject MH, a dysfluent client who made moderate progress. She was decreasing the proportion of her semantic errors and making more word substitution errors at the end of training. Perhaps with more practice on the point-to task she might have improved further.

Lastly, we wish to point out that the attitudes of our subjects toward the labeling task were quite different. Those who made progress seemed to realize that they were improving. They exhibited a greater variety of responses, showed increased enthusiasm as training progressed, and seemed aware that they were learning to comprehend and produce new words. Subjects that did not improve tended to show less variety in their responses and often became upset with their inability to label items that they could understand.

The ramifications for aphasia treatment planning are obvious. Traditional aphasia treatment activities such as the point-to task have advantages for some patients and limitations for others. Rosenbek (1979) has pointed out that perhaps we expect too much of auditory comprehension training and that some of the assumptions underlying the "auditory bombardment" notion are in need of revision. The findings of this study suggest that this may indeed be the case.

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