

Facilitation of Verbal Labeling in Adult Aphasia by
Gestural, Verbal or Verbal Plus Gestural Training
(Abstract)

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Gestural or pantomime training is frequently used as a clinical tool to enhance verbal responding in patients with aphasia or apraxia of speech. Research aimed at investigating the value of such training has typically supported its use (Skelly, Schinsky, Smith, and Fust, 1974; Rao and Horner, 1978; Rosenbek, Collins and Wertz, 1976). However, these investigators employed multimodality training while attributing treatment effects to gestural training alone.

In a recent study, Kearns, *et al.* (1982) reported negligible effects of training using gestures alone. However, when multimodality training was initiated (gestures paired with verbal training), the acquisition of verbal production was seen. These results suggested that multimodality training might be superior to unimodal training for some patients. However, the question of whether multimodality (gestural plus verbal) training is superior to unimodal (verbal) training remains unanswered. It is apparent that such information is needed to clarify the relationship between gestural training and verbal production.

The purpose of the present study was to investigate the effects of three treatment procedures on the acquisition and generalization of verbal labeling in two moderate to severe nonfluent aphasic subjects. The treatment procedures of interest included; (1) verbal training alone, (2) gestural training alone, and (3) verbal plus gestural training.

A single subject, alternating treatments design, as described by Barlow and Hayes (1979), was used to evaluate the effects of treatment. During the baseline phase, the dependent variable, percent correct production of selected nouns (three groups of training nouns, one group of generalization nouns, and control adjectives) was assessed on three separate occasions. Following a stable baseline, the experimental phase was implemented in which the three treatments of interest were applied simultaneously in alternation an equal number of times. The order of presentation of treatments was counterbalanced over sessions to control for order effects.

Three groups of nouns were randomly selected and assigned to one of the three treatment procedures in a counterbalanced fashion across subjects. Subjects were trained to produce; (1) verbal labels of specified nouns, (2) gestural representations of specified nouns, and (3) verbal labels plus gestural representations of specified nouns using modeling and response contingent feedback. Each subject received three sessions per day, one for each treatment method. Following each session, probes identical to those taken during the baseline phase were administered. Performance on these probes served as the dependent variable throughout the study. Treatment was discontinued when subjects reached a criterion of 80% correct responding on two consecutive probes associated with one of the treatments.

Analysis of the probe data and the training data showed that both Subject 1 and Subject 2 quickly acquired verbal plus gestural labeling behavior during training and that labeling ability of nouns associated with this treatment was readily observed on verbal probes. During verbal

training, acquisition of verbal labeling was also evident for both subjects during training. However, minimal change in labeling of nouns trained was noted for Subject 1 and no change was noted for Subject 2 on verbal probes. Finally, during gestural training, both subjects acquired signs. However, verbal labeling of nouns associated with gestural training was not observed during verbal probes. No change in the ability to produce untrained nouns (used to assess generalization effects) or control adjectives was noted on daily probes throughout the study.

These data permit four conclusions. (1) Verbal plus gestural training was superior to verbal or gestural training alone in facilitating verbal labeling in two nonfluent aphasic subjects. (2) Variability across subjects was noted with regard to the effects of verbal training alone. (3) Gestural training alone did not facilitate cross-modality verbal labeling for either subject. (4) Generalized labeling of untrained nouns was negligible regardless of treatment approach.

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DISCUSSION

Q: What were the gestures like? Were they defined?

A: Gestures were selected from American Sign Language and Amerind Sign based on iconicity and gesturability. All signs were easily gestured with one hand. Operational definitions were devised for each gesture. During treatment, the subject's responses were scored and consequated with reference to the operational definitions.

Q: Why was the verbal plus gestural condition best? Was it intersystemic reorganization?

A: I'm not sure why the verbal plus gestural condition was the most efficacious with both subjects. These data are consistent with the interpretation that intersystemic reorganization occurred. The fact that multimodality training was superior to unimodal training with respect to generalization to the spontaneous labeling condition supports the theoretical basis of intersystemic reorganization.

Q: What adjectives were used? How were they signed?

A: The adjectives included two color terms, red and green. These words were neither signed nor trained verbally. They served only for control purposes and then only as a second line of defense. Basically, experimental control was provided by the untrained nouns which were randomly selected for each subject. However, if baseline on these nouns would have been lost (because of within-class generalization), while the control adjectives remained at baseline, then the evidence would still have suggested that a training effect existed. Therefore, while the adjectives served as an insurance policy, they were not an essential component of the experiment.

Q: Was the observed variability because of the changing of procedures or because of individual differences?

A: The ATD design used in the study demonstrated the training effect and adequately controlled for sequence effects. However, interaction effects may not have been entirely apparent. That is, the influence of gestural training on the response to verbally trained responses was not directly measurable. Ideally, an application phase would have been included to investigate interactions. However, access to Subject 1 was lost at the end of the experimental phase. Subject 2 did continue in an application phase for a short time. During that phase, all of the training nouns were trained by using the most efficacious procedure--gestural plus verbal training. The subject maintained a high rate of response accuracy with tokens initially trained with verbal plus gestural training and began to acquire the ability to produce tokens previously assigned to the gestural procedure. However, those assigned to the verbal procedure during the experimental phases were resistant to treatment during the application phase. Unfortunately, the application phase was terminated prematurely for Subject 2 because of reasons unrelated to the experiment. Therefore, the interaction issue remains unresolved. During the short application phase, the subject appeared to adopt a strategy in which two words were selected for learning and the other two were apparently ignored. Eventually, the subject may have focused on the last pair of words.

Q: If the control adjectives would have been gesturable, would you have expected generalization to verbally labeling them?

A: Perhaps. However, we were not interested in assessing generalization across linguistic classes--only within linguistic classes. Specifically, we were interested in looking at generalization to untrained nouns which were similar to the training nouns.