Amer-Ind Sign as a Communicative Facilitator for Aphasic and Apraxic Patients

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As alternate means of communication have become more common, there has been increasing interest in the role of gestures in the rehabilitation of apraxic and aphasic adults. Much of the literature to date discusses gestures or pantomime as serving patients in two ways: as an alternative means of communication or as a facilitator for verbal expression. Several studies have examined the feasibility of teaching gestures as a compensatory communication strategy. Eagleson, Vaughn and Knudson (1970), Schlanger, Geffner and DiCarrado (1974) and Skelly et al. (1975) reported favorable results in training aphasic or apraxic adults to use gestures to express basic self-care and daily needs. The role of gestures as a verbal facilitator for apraxic adults had been described by Rosenbek, Collins and Wertz (1976) as a form of intersystemic reorganization. In 1974 Skelly, Schinsky, Smith and Fust reported increased verbal scores on the Porch Index of Communicative Abilities (PICA) for patients trained in the Amer-Ind Gestural Code. Rao and Horner (1978) described the use of gestures to "deblock" receptive and expressive skills in an aphasic adult.

The present study was designed as two case studies with repeated measures to answer three questions concerning the use of gestures by two severely aphasic-apraxic adults. Discussion of the findings for each question is reserved until the end of this paper.

Question 1: Can aphasic-apraxic adults learn to produce Amer-Ind gestures that are intelligible to untrained viewers?

On the basis of previous reports (Skelly et al., 1975; Eagleson, Vaughn, and Knudson, 1970; Schlanger, Geffner, and DiCarrado, 1974) we hypothesized that this question would be answered affirmatively. We also wanted to determine, however, whether patients would show a generalization effect and be able to produce intelligible gestures on vocabulary items on which they had received no training.

Subjects. WM was a 68 year old male with severe aphasia and apraxia of speech secondary to a thromboembolic CVA of the left middle cerebral artery. He exhibited relatively poor auditory comprehension, with essentially no meaningful spontaneous verbal communication. WM was hemiparetic but ambulatory, and lived at home with his wife. He received two years of treatment from "an educational therapist" immediately following his insult. A 16-year hiatus intervened between this treatment and referral to our clinic by his wife. The primary complaint was that WM had become so "upset with his inability to communicate" that he was "disrupting the home."

TM was a 43 year old man who suffered a left thromboembolic CVA 14 months before being referred to our clinic. He exhibited problems of moderate-to-severe aphasia and severe apraxia of speech. Auditory comprehension was

good but expression was limited to a few single words and characterized by struggle behaviors. TM was divorced and lived at home with his parents. He received approximately 10 months of speech and language therapy immediately after his CVA, but had received no treatment for four months before being seen in our clinic. TM was referred because funds for home care were no longer available, and he had plateaued in traditional therapy.

Procedures. Amer-Ind training was carried out in three stages: Pretraining, Training, and Maintenance. During Pretraining WM and TM attended six weekly sessions during which they were introduced to the use of nonverbal communication in general and to the structure and use of Amer-Ind code. Videotapes prepared by Skelly et al. (1972) were used in these sessions. WM and TM were taught to recognize Amer-Ind signs and signals but were not asked to produce the gestures.

During the Training period the patients attended eight two-hour weekly sessions in which they were taught to produce Amer-Ind gestures. For each session one or two topics were selected and vocabulary (signs) for the concepts related to the topics were taught.[1] Within each session the training was carried out by moving through the hierarchy of tasks shown in Table 1. Criterion levels for completion of each step of the hierarchy were 60% for WM and 90% for TM.[2] At the end of each training session, previously learned gestures were reviewed, and some practice in agglutination was provided. Following the training period, neither patient was seen for four weeks.

Table 1. Task hierarchy for Amer-Ind training sessions.

1. Proper object manipulation (when appropriate for the concept)
2. Imitation of gesture after being provided a simultaneous model and drawing depicting the concept
3. Imitation of a gesture after being provided a model and drawing following a delay
4. Gestural production stimulated by the drawing only
5. Gestural production cued by a choice of drawings and an auditory stimulus (e.g. Which one do you eat with?)
6. Gestural production following auditory stimulus only in structured tasks.
7. Gestural production following auditory stimulus in unstructured conversation

[1] Vocabulary items were primarily those provided by Skelly (1979). These included 52 verbs, 19 adjectives, 68 nouns, the numbers 1-100 and 15 miscellaneous items. Topics involved patient interests and activities of daily living.

[2] A 60% criterion level for WM represented a significant improvement from his normal performance. It was felt that setting higher levels of accuracy would be unduly frustrating and increase training time beyond practical limits.

The Maintenance stage consisted of a 4-session followup program during which WM and TM were seen individually for one hour each. These sessions stressed the use of previously trained Amer-Ind gestures in normal conversation.

Results. To determine each patient's ability to produce intelligible gestures a 50-item gestural test was administered following Pretraining, Training and Maintenance. Procedures for the test, described earlier by Pickett (1976), require the patient to gesture the function of an object or action depicted in a drawing. WM and TM were trained on 25 items; the other 25 items were concepts for which no training was provided. The gestural tests were videotaped and the tapes were shown to small groups of untrained viewers who were asked to write down the word or concept the patient was trying to illustrate. Viewers were allowed to see each gesture only once and different sets of viewers watched each tape. Viewers' responses were scored as correct or incorrect.

Figures 1 and 2 show the mean percentage of correctly identified trained and untrained gestures for WM and TM for the three test points. These data indicate that both patients substantially increased the intelligibility of their Amer-Ind gestures, but that these increases were greatest following the Maintenance period when they were encouraged to use gestures in normal communicative interactions. WM showed essentially no generalization from trained to untrained gestures; TM, a much less severe patient, improved as much on untrained as trained gestures following the Maintenance period.

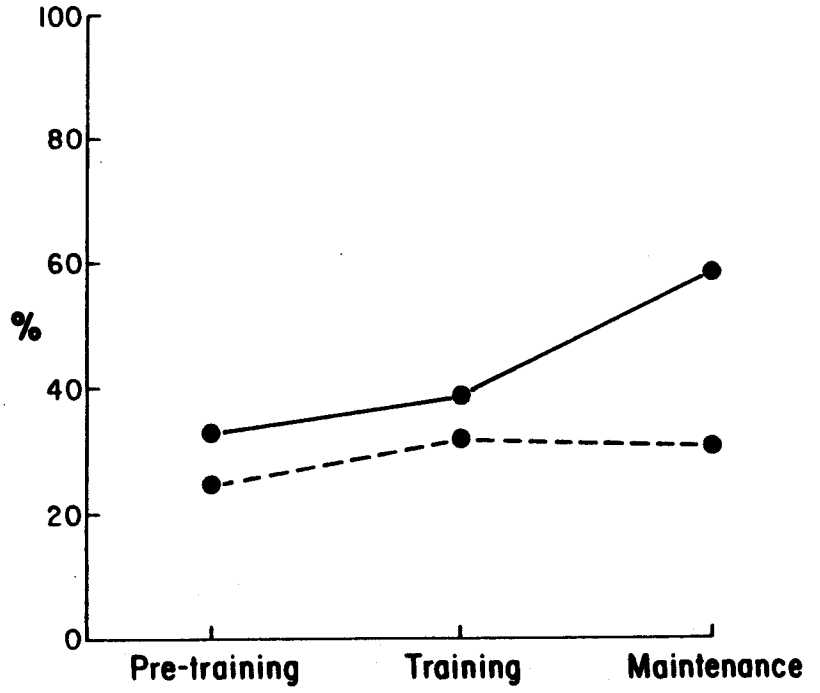

Figure 1. Mean percentage of correctly identified trained and untrained gestures for patient WM (●—● = Trained, ●--● = Untrained).

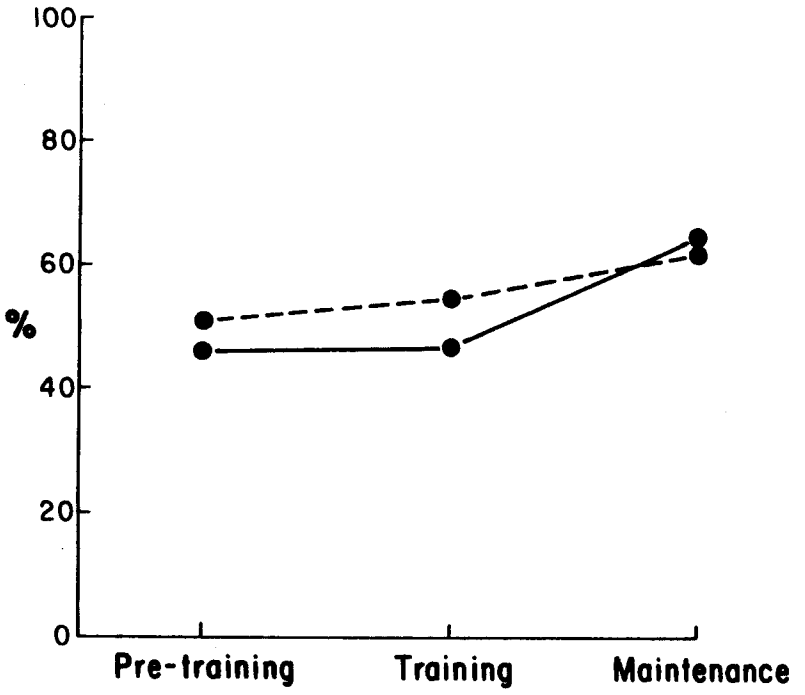

Figure 2. Mean percentage of correctly identified trained and untrained gestures for patient TM (•—• = Trained, •---• = Untrained).

Question 2: Does training in Amer-Ind Gestural Code facilitate aphasic-apraxic patients' verbal communication?

The findings and theories discussed above (Skelly, Schinsky, Smith and Fust, 1974; Rao and Horner, 1978; Rosenbek, Collins and Wertz, 1976) suggest that pairing gestural signals with speech will improve verbal expression as measured by the PICA. Acceptance of this claim, however, is predicated on establishing the stability of subjects' verbal scores prior to gestural training. Unless this is done, changes in verbal scores could be attributed to normal recovery, a placebo effect, or other factors.

Procedures. The PICA was administered to WM and TM prior to beginning gestural training until base line levels for the overall and verbal PICA means were established for each patient. We defined a stable baseline as a variation of less than 5% for two consecutive tests. To determine whether gestural training influenced overall and verbal PICA scores, the PICA was administered after Training and Maintenance.

Results. Figures 3 and 4 show the overall PICA and verbal percentiles for WM and TM for the baseline period (completed during Pretraining), following Training, and after Maintenance. Neither patient made measurable changes from baseline in PICA overall or verbal percentiles following Training or Maintenance. Our findings fail to replicate the results of Skelly et al. (1974).

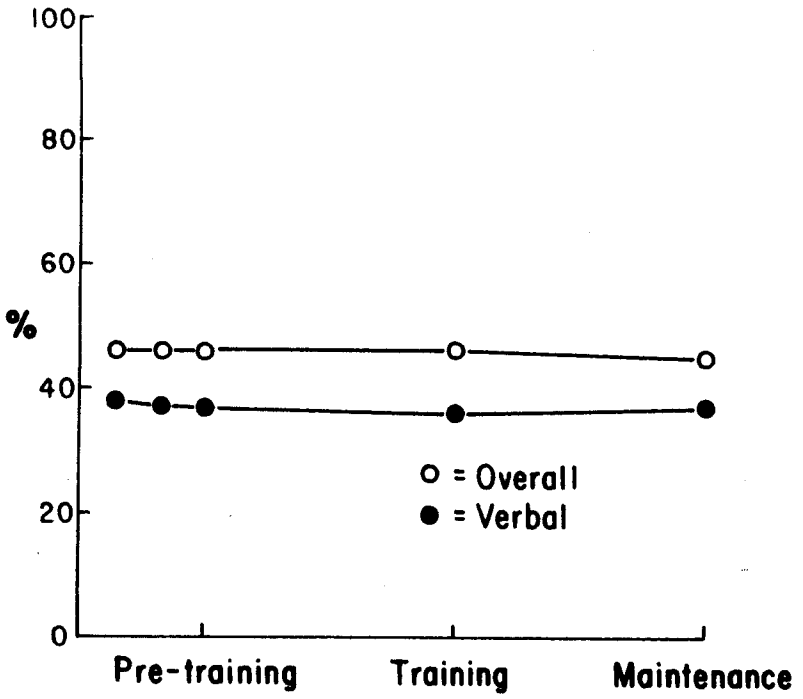

Figure 3. Overall PICA and verbal percentiles for patient WM during the Pretraining (baseline) period, and following the Training and Maintenance periods.

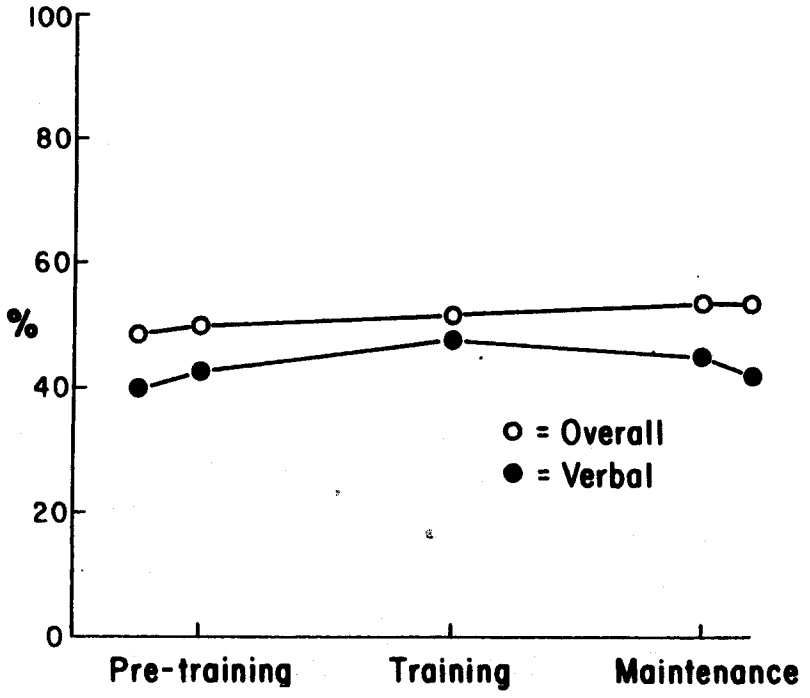

Figure 4. Overall PICA and verbal percentiles for patient TM during the Pretraining (baseline) period, and following the Training and Maintenance periods.

Question 3: Does Amer-Ind gestural training alter the extent to which a patient uses gestures in functional communicative situations?

The hallmark of success of any specialized treatment program is the degree to which the patient applies program techniques in real life situations. A patient who is not a successful verbal communicator should, after gestural training, increase the number of gestures he uses in communicative interactions.

Procedures. To determine if WM and TM would alter the extent to which they used gestures in communicative interactions each patient was administered the Communicative Abilities in Daily Living Measure (CADL), (Holland, 1979) after Pretraining, Training, and Maintenance. CADL tests were videotaped and all successful responses (Scores of 2) were judged by the author as being verbal, nonverbal, or combined (verbal plus nonverbal).[3] Proportions for the number of successful responses for each mode (verbal, nonverbal, or combined) were computed for the three test points.

Results. Figures 5 and 6 show the proportions of successful CADL responses in each response mode for WM and TM after Pretraining, Training, and Maintenance. WM exhibits essentially the same distribution of responses for the three tests. TM, on the other hand, demonstrates a sharp decrease in the proportion of verbal responses, and a marked increase in the proportion of nonverbal and combined responses following Maintenance.

Discussion. These results suggest that gestures may serve as an alternate means of communication for some aphasic and apraxic patients in the expression of basic concrete concepts. In addition, the findings suggest that direct structured training must be supplemented by training in a natural communicative context, a conclusion which is not unlike the general trend in our field in recent years. The results also suggest that gestures may have greater significance as an alternate means of communication than as a facilitator of verbal expression, at least for these types of patients, at this level of training, using the PICA as a measure of verbal expression.

The assumptions we have made in this study, as well as the results we obtained, suggest that there are many questions which must be addressed in future studies. Some of these are:

(1) Is generalization of training for such patients significantly better given longer or more intensive training, or earlier involvement of the patient's family?
(2) What type of patients can best benefit from gestures as a means of communication?
(3) Would brief gesture recognition training for hospital staff increase their comprehension of patient's gestures?
(4) If gestures can be verbal facilitators, for which patients or types of patients are they effective?
(5) Is the PICA an adequate measure of verbal facilitation?

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[3] Any test item for which the response modality was predetermined by the test instruction (e.g. "point to the ...") was eliminated for this modality scoring.

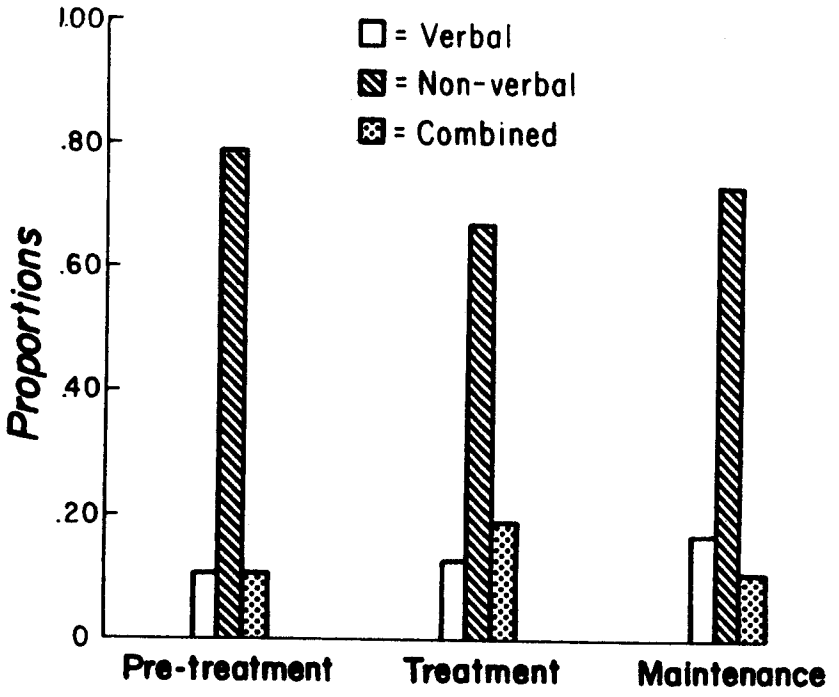

Figure 5. Proportions of verbal, non-verbal, and combined successful CADL responses for patient WM following Pretreatment, Treatment, and Maintenance.

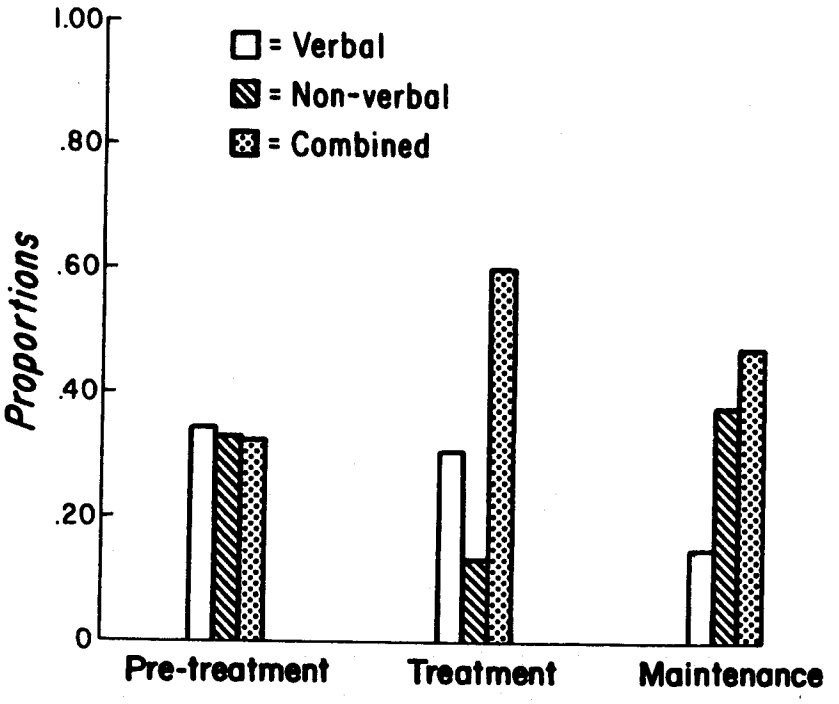

Figure 6. Proportions of verbal, non-verbal, and combined successful CADL responses for patient TM following Pretreatment, Treatment, and Maintenance.

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