

WRITING AS A MODE OF EXPRESSION
IN APHASIA: A CASE REPORT

by

David E. Hartman
College of Saint Teresa

Mary Jane Noll
Ohio State University

ABSTRACT

A treatment program which utilized manuscript writing skills was developed for an aphasic patient with mixed apraxia. Quantitative and qualitative analysis revealed improvement in general communication skills, especially those which involved graphic abilities, during the treatment period.

INTRODUCTION

For many aphasic patients, writing may be one of the most difficult elements of language with which to deal (Keenan, 1975; Duffy and Ulrich, 1976). For patients with severe oral expression deficits following brain damage, however, it may be one of the best methods of re-establishing communication skills. The efficacy of retraining orthographic skills in cases of nonfluent aphasia has been supported through the research of Pizzamiglio and Roberts (1967) and Boone and Friedman (1976). The latter authors showed that the method of writing, cursive or manuscript, does not appear to be an influential factor in the patient's performance. Indeed, they stated that ". . . the choice of writing style in aphasia rehabilitation may well remain the individual patient's own preference or the writing style which gives him the most success" (1976, p. 528). This report presents the findings of a program used to re-develop communication skills through writing in an aphasic patient with mixed apraxia.

CASE PRESENTATION AND EVALUATION

Patient ES was a 69-year-old Caucasian male who experienced a cerebral vascular accident of the left hemisphere in January of 1975. Prior to the CVA, the patient had been retired for two years from a lockman's position on a dam; a job which he held for 38 years. His interests revolved around mechanics, woodworking and general handicraft. Although literate, his formal education had been only through the eighth grade.

At seven weeks post-onset, the patient's speech and language abilities were screened through portions of **Examining for Aphasia** (Eisenson, 1954). Results revealed a communication deficit, particularly in the expressive areas. The patient was seen for an intensive four week speech management program during the month of June, 1975, which was directed toward production of monosyllables and gesturing "yes/no". Volitional responses of either a verbal or gestural nature were not elicited during this period.

In September of 1975, nine months post-onset, ES was enrolled for formal speech rehabilitation. The **Porch Index of Communicative Ability (PICA)** (Porch, 1967) was administered to determine the patient's level of language functioning. The results of the

examination revealed impairment in all areas; particularly verbal and written expression. His speech was labored and unintelligible, and consisted of repetition of the syllables /ba/, /bo/, /po/, /mo/. Severe right side facial paralysis and dextral paralysis of the tongue and soft palate augmented the speech problem. The patient's wife reported that his speech had remained in this condition since the CVA. The speech deficit was judged to be characteristic of both severe apraxia and dysarthria. Although the patient could not write with his right (preferred) hand because of right side paralysis, he could spontaneously and imitatively print some upper case letters with his left hand.

One year from the initial evaluation, and in December of 1976, the PICA was re-administered for comparative purposes. Table 1 shows the mean Overall Response Levels, and the mean Gestural, Verbal and Graphic Modality scores for the three presentations.

TABLE 1

Date	Overall	Gestural	Verbal	Graphic
09/29/75	7.27	10.74	4.15	4.75
09/29/76	8.73	12.40	5.00	6.35
12/08/76	8.74	11.96	5.00	6.95

Table 1. Mean response levels and mean modality scores for three administrations of the PICA.

A t-Test for Related Measures (Bruning and Kintz, 1968) indicated a significant difference between the first and third mean scores for Overall Response Levels ($t=2.72$; $p < 0.05$) and the Gestural Modality ($t=5.30$; $p < 0.05$). The nonsignificant finding for the Verbal Modality ($t=1.70$; $p > 0.05$) was not unexpected since there had been no observable change in his speech since the CVA. It was surprising, however, that a significant difference was not revealed for the Graphic Modality ($t=1.69$; $p > 0.05$), since the actual difference between the first and third mean scores was the largest of all modalities, and the treatment program itself had emphasized this area. The progressive improvement in the Graphic Modality did have an effect on the final Overall Response Level value. This can be shown by comparing the difference between the first and third mean test scores of the Gestural and Verbal Modalities to that of the Graphic Modality. Since the largest difference exists for the last modality, it is this area which is the primary contributor to the increase in the Overall Response Level. The determination of nonsignificance for the Graphic Modality may be a reflection of either the limited degrees of freedom (five) or the greater variance of the Graphic Modality scores, both of which influenced the calculated t value.

MANAGEMENT PROCEDURES

A four month period of concentrated speech management directed toward modification and expansion of the four syllables in the patient's speech repertoire showed no improvement. Therefore, a treatment program was developed which utilized his residual writing skills as the primary means of expression. Initially, one inch individual upper case letters were printed on 4x6 index cards with black indelible ink. Each card was presented to the patient with the verbal instructions "Write the letter _____". His response was written with his left hand using a large felt-tipped marker, on an 8x11 sheet

of white paper. For reference purposes, a red line had been drawn medially and across the width of the paper. When necessary, ES was given manual help in writing the letter by one of the clinicians (MJN). Each unaided response was judged for accuracy according to the **PICA** multidimensional scoring system (Porch, 1967). Responses which received a score of 13 (accurate, responsive, complete but delayed, p.14) for three trials over two consecutive sessions were considered "learned". Criterion for writing all letters in the alphabet was met in 15 forty-five minute sessions.

The basic procedures used for writing individual letters were instituted for transcribing mono- and disyllabic words. To help insure relevance and interest, 25 words were selected which pertained to self-help skills, mechanics and handicraft (Appendix A). Eleven of the words were monosyllabic and 14 were disyllabic. Each stimulus item consisted of a printed word and a black and white or colored picture of the concept or object it represented. The clinician presented the stimulus for review, said the word and spelled it. The patient's initial response was again judged for accuracy according to the **PICA** system. An item which was scored less than 13 was traced by the patient while the clinician provided manual assistance and spelled the word aloud, verbally emphasizing those letters in error. Words that were scored as 13 or better for two trials in two consecutive sessions were incorporated into a four phase program.

Within the four phase program, the criterion for change within each of the phases was a score of 13 or better on the initial response for two trials over two consecutive sessions. Words that failed to meet criterion at a given phase were either practiced at that level until criterion was achieved, or were returned to the preceding phase for further training. Baserates were taken at three month intervals to insure maintenance of words at specified phases. The following procedures were utilized in each of the phases.

Phase 1. The pictorial portion of the stimulus was removed from presentation. The printed word was provided, and the clinician said the word and spelled it. The patient wrote his response following presentation of the entire stimulus.

Phase 2. The printed word was removed from presentation. The clinician said the word, and spelled it letter by letter. The patient wrote his response as each letter was presented.

Phase 3. The clinician said the word and spelled it. The patient wrote the word following spoken and spelled presentation of the stimulus.

Phase 4. The clinician said the word only. The patient wrote the word following spoken presentation of the stimulus.

A home program was developed for ES which utilized the same procedures used during the training sessions. To insure continuity, the patient's wife observed sessions and was provided with duplicate materials and written instructions of her husband's program.

RESULTS AND DISCUSSION

Following 19 forty-five minute sessions, ES had achieved criterion for all 25 words when the stimulus contained pictorial, orthographic and verbal components. Twelve words (four monosyllabic and eight disyllabic) had met criterion for Phase 1. In Phase 2, eight words (five monosyllabic and three disyllabic) had reached criterion. For Phase 3, two monosyllabic and three disyllabic words met criterion. As of this report, no words had yet met criterion for Phase 4 (Appendix B).

Although the entire program utilized upper case letters only, ES periodically wrote various lower case letters in different positions within words. Once the lower case form had been substituted, he used it consistently in each session. He also frequently wrote the letter E in script form. These instances were reinforced, and compared to the capital letters being presented. These findings appear to expand upon those indicated by Boone and Friedman (1976) regarding utilization of writing styles by an aphasic patient which render the most success. The patient in the present investigation had experienced considerable success writing upper case letters, yet without stimulation freely substituted lower case forms and one script form for many upper case letters. It seems plausible to assume that writing, like other defective language modalities in aphasia, is subject to stimulated recovery of forms frequently used premorbidly.

Figure 1 is presented for comparative purposes of ES's writing skills in the first, second and third **PICA** administrations. In the subtest from which these samples were derived (Graphic Test E), the patient is asked to copy printed words.

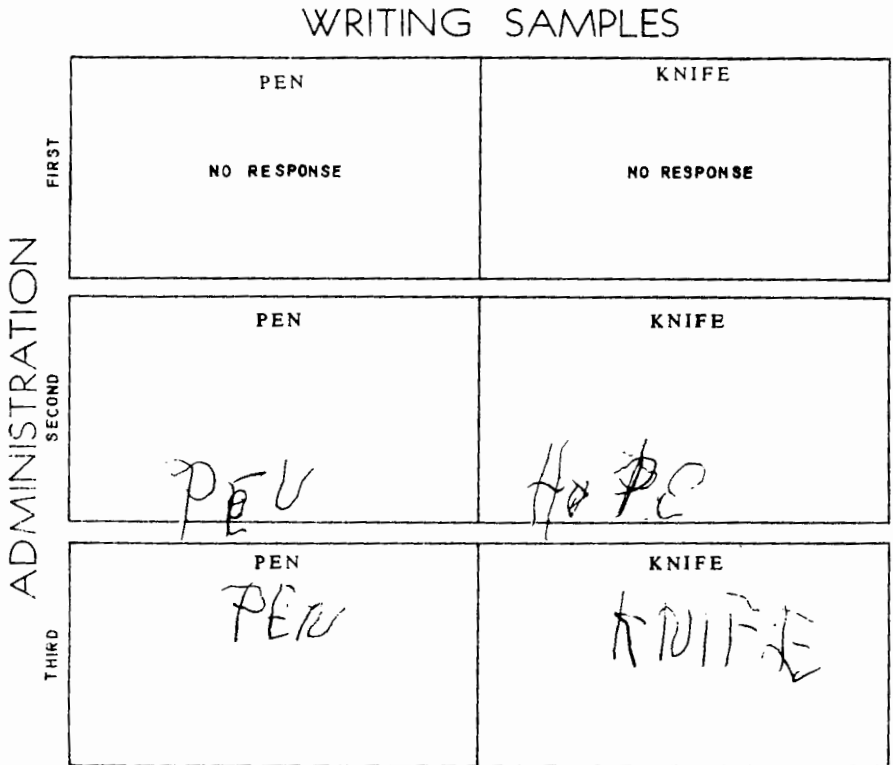


Figure 1. Chronological samples of ES's writing skills from Graphic Test E of the PICA.

Figure 1 shows that for the first administration of the **PICA**, ES did not make a written response for this portion of the subtest. Responses were elicited in the second and third administrations, and showed progressive improvement in legibility and word representation.

HARTMAN, NOLL: WRITING AS AN EXPRESSION IN APHASIA

Although not presently conclusive, the procedures described in this report have enhanced the communication abilities of one aphasic patient. The effectiveness of the program can be assessed only when and if the patient develops functional communication through writing. The procedures suggested herein may provide a useful management strategy for speech-language pathologists who work with severely speech handicapped patients.

ACKNOWLEDGMENT

This study was completed while the senior author was on the faculty of the Department of Communicative Disorders, College of Saint Teresa. Requests for reprints may be addressed to him in care of the Section of Speech Pathology, Department of Neurology, Mayo Clinic, Rochester, Minnesota 55901, U. S. A.

APPENDIXES

A. Selected words for training of writing skills.

table	toothpaste	oil
bed	phone	sparkplug
plate	coat	pliers
kitchen	hanger	filter
wash	paper	boat
fork	jacket	dinner
brush	wrench	tools
car	glass	hammer
ladder		

B. Words achieving criterion for the four training phases.

Phase 1

table	toothpaste	oil
bed	phone	sparkplug
plate	coat	pliers
kitchen	hanger	filter

Phase 2

wash	fork	brush
paper	jacket	wrench
boat	dinner	

Phase 3

tools
car
glass
hammer
ladder

Phase 4

none as of report

Requests for information should be directed to:
David E. Hartman, Ph.D.
College of Saint Teresa
Winona, Minnesota 55987 U.S.A.

REFERENCES

- Boone, D. R., and Friedman, H. M. 1976. Writing in aphasia rehabilitation: cursive vs manuscript. **Journal of Speech and Hearing Disorders**, 41: 523-529.
- Bruning, J. L., and Kintz, B. C. 1968. **Computational Handbook of Statistics**. Glenview: Scott, Foresman.
- Duffy, R. J., and Ulrich, S. 1976. A comparison of impairments in verbal comprehension, speech, reading, and writing in adult aphasics. **Journal of Speech and Hearing Disorders**, 41: 110-119.
- Eisenson, J. 1954. **Examining for Aphasia**. New York: The Psychological Corporation.
- Keenan, J. S. 1975. **A Procedural Manual in Speech Pathology with Brain-damaged Adults**. Danville: Interstate Printers and Publishers.
- Pizzamiglio, L. R., and Roberts, M. N. 1967. Writing in aphasia: A learning study. **Cortex**, 3: 250-257.
- Porch, B. E. 1967. **Porch Index of Communicative Ability**. Palo Alto: Consulting Psychologists Press.