

THE INFLUENCE OF ILLITERACY ON
PREDICTING RECOVERY FROM APHASIA

Pat A. Holtzapple
Veterans Administration Hospital, New Orleans

New Orleans Veterans Administration Hospital draws patients primarily from Louisiana and Mississippi, the two states with the greatest amount of illiteracy in the nation. The amount of illiteracy in the aphasic population seen in the New Orleans VA Hospital, Speech Pathology program appears to agree with these national statistics. Of 32 patients who were receiving language therapy in our clinic from July through December, 1971, there was a mean educational level of grade 7.5. The age range was 21 through 70 years. Only seven of the 32 patients had completed high school, and none had enrolled in college.

The presence of illiteracy appears to be an important complicating factor in determining prognosis for recovery from aphasia. Over the past three years, we have learned to rely on the Recovery Curves computed from performance on the Porch Index of Communicative Ability (PICA) (Porch, 1967). PICA Recovery Curves are used to indicate when patients have received maximum benefit from treatment programs. These are typically accurate except when the aphasic patient is pre-morbidly illiterate.

PICA Recovery Curve

The PICA Recovery Curve is a graph representing the patient's course of recovery over time. The mean percentile of the nine highest subtest scores (nine highs), the mean percentile of the nine lowest subtest scores (nine lows), and the Overall percentile (OA) for each test are plotted to determine the dynamic range, difference between the highs and lows, and recovery potential for the patient. Our goal in therapy is to reduce the dynamic range, high - low gap, to zero. An effort is made to elevate the lows, poorest performance, the level of the highs, best performance. Thus, a patient's prognosis is based on his best performance early postonset (e.g., nine highs at one month postonset).

The function of treatment is to bring all performance, overall and lows, up to this level at some subsequent point in time.

This method is fairly accurate in predicting eventual recovery unless there are coexisting complicating factors. One complication is the presence of illiteracy. The influence of coexisting illiteracy on predicting recovery using PICA Recovery Curves is demonstrated in the following case report.

Case Report

A 48 year-old male veteran with a third grade education suffered a left hemisphere cerebral vascular accident on August 8, 1970. A PICA was administered one week postonset. His performance indicated severe aphasia, indicated by an overall score at the 13th percentile. Using Porch's High Overall Prediction method (HOAP), a recovery target was set at the 31st percentile. Testing at one month postonset showed an overall at the 30th percentile, highs at the 42nd percentile, and lows at the 26th percentile. The target percentile was revised, and the patient's predicted eventual recovery level was set at the 55th percentile. Treatment was initiated, and the patient was retested periodically.

Three additional PICAs were administered at three, seven, and 15 months postonset. Highs, overall, and lows are shown in Figure 1. The patient failed to reach his predicted target, and there was minimal change in performance over time. We pose the question, "Why, over a 15 month period, are the patient's recovery curves so consistent?" He does not reach his predicted target, and he does not close the high-how gap.

A review of the patient's data indicates obvious change between his overall percentile at one week postonset, 13th percentile, and his overall percentile at one month postonset, 30th percentile. Overall scores at three months, 34th percentile; seven months, 35th percentile; and 15 months, 37th percentile show minimal change. His nine high percentile scores--42nd at one month, 45th at three months, 45th at seven months, and 49th at 15 months--are approaching the 55th percentile prediction. Conversely, his nine low percentile performance--26th at one month, 25th at three months, 27th at seven months, and 28th at 15 months--shows minimal gains. Over a 15 month period, the patient improved on those things he did best at one week post onset but remained essentially the same on the tasks most difficult for him at one week postonset.

Porch Index of Communicative Ability

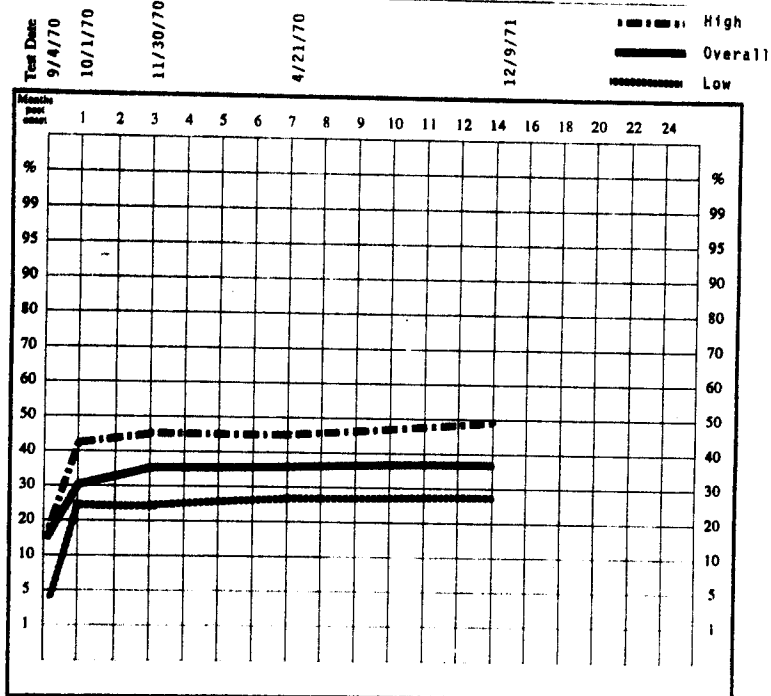
APHASIA RECOVERY CURVE

(Percentiles)

Name G. W. Case No. _____

Birthdate 12/2/22 Race _____ Onset 8/27/70

DX. Type CVA - thrombosis Site L. Mid Cerebral Artery



Published by
CONSULTING PSYCHOLOGISTS PRESS
 577 Collins Avenue
 Palo Alto, California

FIGURE 1. Aphasia Recovery Curve showing High, Overall, and Low scores at one week, one month, three months, seven months, and 15 months postonset.

The lack of change appears to be influenced by illiteracy coexisting with aphasia. This is demonstrated in Figure 2, the patient's Modality Response Summary showing performance on all PICA subtests. Tests most resistant to change are subtests V and VII, reading tasks, and subtests A, B, C, and D, writing. Reading and writing are those things one learns in school, and an inability to read and write indicate illiteracy.

Characteristic dips on subtests V and VII and depressed performance on writing tasks yield what Porch calls a "WJ" profile (Porch, 1967), aphasia complicated by illiteracy. Our patient (Figure 2) demonstrates this type of profile. In addition, he displays severe involvement of verbal output, poor performance on subtests I, IV, IX, and XII, characteristic of severe apraxia of speech. The patient obtained mean scores of "5" on subtests V, VII, A, B, C, and D resulting from rejection of all reading tasks and the most difficult writing tasks. He shows improvement on subtests VI and X, auditory comprehension, and subtests E and F, copying tasks. None of these four tests require literacy for successful performance.

Figure 3 shows the patient's performance on the Ranked Response Summary. Again, one can see the influence of illiteracy represented by depressions on the reading and writing tasks and the influence of apraxia of speech represented by depressions on the verbal tasks. Peaks are prominent on visual, auditory, and copying tasks, abilities not dependent on education or intact motor speech.

Discussion

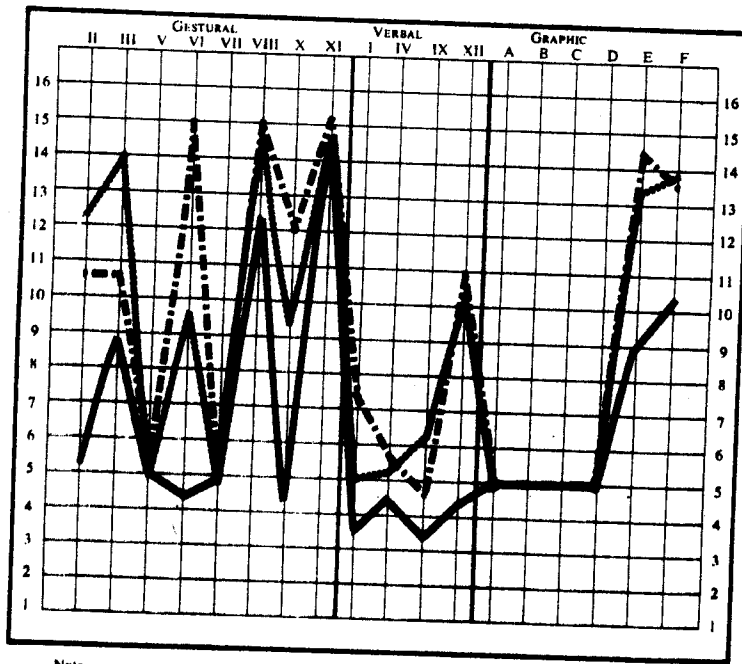
The case reported above is representative of other illiterate patients we have treated. These patients do not reach the target recovery level predicted using one month postonset PICA scores and the HOAP method. Their premorbid illiteracy creates a failure to close the high-low gap.

Rather than forgo predicting recovery targets for the illiterate patient, it may be possible to modify the HOAP method. For example, eliminating subtests V, VII, A, B, C, and D and computing overall, six high, and six low scores would avoid contaminating predicted recovery level with the influence of premorbid illiteracy. Existing HOAP slope data would probably be inappropriate for prediction using this revised method, since existing data are based on all 18 subtests.

Porch Index of Communicative Ability

MODALITY RESPONSE SUMMARY

Name C.G. Case No. _____
 Age 48 Birthdate 12/2/22 Sex M Race _____ Handedness R L Used
 Diagnosis CVA; thrombosis, Lt. Mio. Cer. ATC Onset 8/27/70
 Date 12/9/71 Overall 9.18 Gestural 11.05 Verbal 7.18 Graphic 8.02
 Date 10/1/70 Overall 8.29 Gestural 9.43 Verbal 6.68 Graphic 7.87
 Date 9/4/70 Overall 6.35 Gestural 7.40 Verbal 3.93 Graphic 6.57



Note: _____



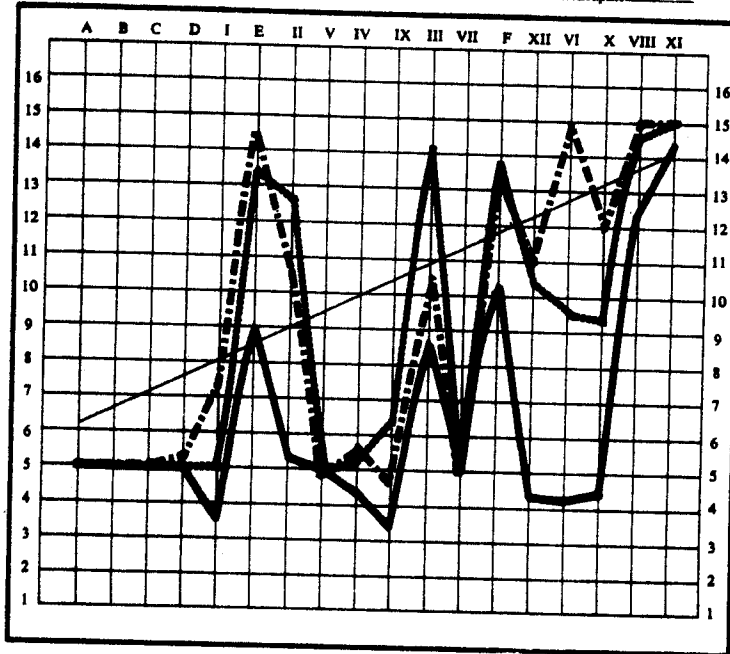
Published by
CONSULTING PSYCHOLOGISTS PRESS
 577 College Avenue
 Palo Alto, California

FIGURE 2. Modality Response Summary showing performance at one week, one month, and 15 months postonset.

Porch Index of Communicative Ability

RANKED RESPONSE SUMMARY

Name C.G. Case No. _____
 Age 48 Birthdate 12/2/22 Sex M Race _____ Handedness R L Used
 Diagnosis CVA; thrombosis, Lt. Mid Cer. Ar Onset 8/27/70
 Date 12/9/71 Overall 9.18 Gestural 11.03 Verbal 7.18 Graphic 8.02
 Date 10/1/70 Overall 8.29 Gestural 9.43 Verbal 6.68 Graphic 7.87
 Date 9/4/70 Overall 6.35 Gestural 7.40 Verbal 3.93 Graphic 6.57



Note _____



Published by
CONSULTING PSYCHOLOGISTS PRESS
 577 College Avenue Palo Alto, California

FIGURE 3. Ranked Response Summary showing performance at one week, one month, and 15 months postonset.

However, HOAP slops could be generated for illiterate patients from the norming sample by recomputation after eliminating the two reading tests and the first four graphic tests.

Reading and writing skills do not improve following a left hemisphere lesion that results in aphasia. If a patient is premorbidly illiterate, one can wager he will be postmorbidly illiterate. Illiteracy prevents accurate prediction using existing measures, therefore it is necessary to find new methods for predicting recovery for the illiterate patient.

REFERENCES

Porch, B.E. Porch Index of Communicative Ability. Palo Alto, California: Consulting Psychology Press, 1967.