CAROLINA PICTURE VOCABULARY TEST: VALIDATION WITH HEARING-IMPAIRED STUDENTS

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Summary.—When mean Carolina Picture Vocabulary Test standard scores were compared with WISC—R Performance Scale IQs significant differences were observed. The Carolina test scores were also correlated with both Performance IQs and the Performance Scale subtest scores. Most correlations were minimal as the two tests were independent; only WISC—R Picture Arrangement scores correlated significantly with Carolina scores. These outcomes coupled with the technical limitations of the Carolina raise serious questions regarding its utility for hearing-impaired children.

The Carolina Picture Vocabulary Test (Layton & Holmes, 1985) was developed to measure the receptive sign vocabulary of hearing-impaired children whose primary mode of communication is manual signing. Administration was designed specifically for the hearing-impaired, since adaptation of other receptive language measures has not been successful for this population. The test was normed on a national standardization sample of 767 children between the ages of 2½ and 16 yr. Typical characteristics of the sample included prelanguage deafness, 80 dB hearing threshold in the better ear, an IQ of 80 to 100 points, parents with normal hearing, and manual signing as the primary means of communication (Layton & Holmes, 1985). The vocabulary items from which the Carolina test was developed evolved from vocabulary lists for deaf children (Silverman-Dresner & Guilfoyle, 1972) and lists of signed words in Signing Exact English (Gustason, Pfetzing, & Zawolkow, 1972).

The efforts of the test authors were laudatory as there have been few recent attempts to measure the receptive vocabulary of deaf children. In the studies that have been reported, Hedger (1977) indicated that performance on three different oral receptive vocabulary measures by orally trained deaf children was better when written words were included. Forde (1977) tested hearing-impaired students with Forms A and B of the Peabody Picture Vocabulary Test (PPVT) in an effort to develop norms for this group.

This study compared Carolina test scores with both WISC—R Performance Scale IQs and Performance Scale subtest scores. Since there is

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no published research for the Carolina other than that reported in the manual, a critical examination of the test is warranted, if it is to be used effectively with those who are hearing-impaired. Identifying relationships between receptive language and intelligence in hearing-impaired children may lead to the formulation of broader questions about the relationship between linguistic behavior and intellectual development.

**METHOD**

**Subjects**

Subjects were 26 students from a state residential home for the deaf. They were 10 boys and 16 girls, all of whom used total communication (manual signs, speech, gestures, speechreading, and writing) as the primary modes of communication. The subjects ranged in age from 8 yr. through 16 yr., with 85% of the students being 13 yr. of age or older.

**Instruments**

The Carolina Picture Vocabulary Test, packaged in a spiral-bound book, contains 130 test pages with four pictures per page. One picture is the sign presented, while the other three are distractors. The photographic stop-action pictures of manual signs on the opposite pages show the examiner how to produce the signs. A manual and individual record forms listing stimulus words and keys to correct responses are also included. Basal and ceiling procedures shorten administration time to an average of 10 to 15 min. The format of the Carolina test is similar to that of the Peabody PVT which measures receptive vocabulary of hearing subjects through oral presentation.

Five subtests of the WISC—R Performance Scale were also administered: Picture Completion, Picture Arrangement, Block Design, Object Assembly, and Coding.

**RESULTS AND DISCUSSION**

Carolina standard scores, WISC—R Performance Scale IQs, and Performance subtest scores were compared using Pearson correlations. Also, the difference between the means of the Carolina scores and the Performance IQs was compared, using a $t$ test for correlated measures.

Descriptive statistics for the group were $M_{\text{Carolina}} = 53.4$ (SD = 8.6), $M_{\text{Perf. IQ}} = 85.2$ (SD = 14.1). Subtest means and standard deviations were Picture Completion = 8.2 (SD = 2.5), Picture Arrangement = 8.5 (SD = 3.2), Block Design = 7.0 (SD = 2.2), Object Assembly = 8.0 (SD = 2.3), Coding = 8.0 (SD = 3.1). Pearson correlations were Carolina vs WISC—R IQs = .0005, Carolina vs Picture Completion = -.24, Carolina vs Picture Arrangement = .45, Carolina vs Block Design = -.10, Carolina vs Object Assembly = -.14, and Carolina vs Coding = .10. These comparisons indicated that the means
of the two scales were significantly different, and that most correlations were low as only one, that between Carolina scores and Picture Arrangement scores, was significantly different from zero \((p<.05)\). It is interesting to note that Picture Arrangement scores also correlated highest with Carolina scores in the original validation study \((r = .40)\). Picture Arrangement scores should correlate with measures of receptive language, since the subtest requires sequencing skills similar to those found in language mediating the comprehension and interpretation of social situations (Wilson, Rapin, Wilson, & Van Denburg, 1975). These outcomes suggest that the Carolina test measures some important aspect of linguistic behavior, not just visual-association skills (Walter, 1981). However, the magnitude of the correlations precludes any meaningful inferences about the relationship of linguistic behavior to intellectual development.

One technical problem with the Carolina is that it is based on a restricted normative group since relatively few children beyond 11½ yr. were tested. Also, the test does not contain enough items to discriminate skills beyond that particular ceiling. Further, the tendency for scores to aggregate at the upper end of the scale suggests that the test is too easy and that it lacks an adequate ceiling. The construction of the gestural component of many items produces a bias in scoring. The manual signs for these items clearly cue the subject since the distractors are quite different from the presented stimulus. These technical difficulties suggest that the test has a limited role in the assessment of language of hearing-impaired children.

REFERENCES


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