Proceedings of the Iowa Academy of Science

Volume 61 | Annual Issue Article 44

1954

Wonderlic, Wesman P.C.T., and A.C.E.: A Comparison of Three Group Intelligence Tests

Charles F. Haner
Grinnell College

Wonderlic, Wesman P.C.T., and A.C.E.: A Comparison of Three Group Intelligence Tests

By Charles F. Haner

There are many tests on the market purporting to measure general intelligence. They are used for a variety of purposes with many differing groups. Examination of them reveals so much diversity in the sorts of items they contain that one wonders how the tests can be measuring the same thing, i.e. general intelligence.

Several tests have purported to break general intelligence into a verbal and a numerical factor. The ACE has long yielded such scores. More recently the Wesman PCT has found use in industry as a short intelligence test giving both a verbal and numerical score. Gerken (3), noting frequent disparity of PCT and ACE scores in a group of male college students, undertook a study which showed the relationship between these two tests to be, in fact, fairly low despite the similar nature of the scores claimed by the authors.

The author noted a frequent lack of correspondence between PCT and Wonderlic scores when both were administered to a group of sales applicants. The present study in part replicates Gerken's investigation with a different group of subjects and extends the comparison by the inclusion of the Wonderlic Personnel Test, a commonly used single-score test of general intelligence.

The subjects in this study consisted of a group of 23 males, recently graduated from college, who were applying for sales positions in an industrial organization and 120 college students enrolled in various psychology courses at Grinnell College. Classes from sophomore through senior and both sexes were represented. All the students took the Wonderlic and had taken the ACE as part of their entrance tests and 97 were given the PCT. Administration of all tests followed standard procedures.

Correlations were run for all combinations of tests and subtests. These are presented in Table I. The table also includes reliability coefficients reported by the test authors.

Certain of the correlations would be expected to be high if the tests are measuring similar functions (the correlations of the total scores, of the verbal scores and of the numerical scores on the ACE

Table 1

Intercorrelations of the Sub-Tests and Total Tests of the 1947 *American Council on Education Psychological Examination for College Freshmen, The Wesman Personnel Classification Test,* Form A, and *The Wonderlic Personnel Test, Form A.*

	Wonderlic	PCT (V)	PCT (N)	PCT (T)	ACE (L)	ACE (Q)	ACE (T)
Wonderlic	.90*	.560	.491	.623	.624	.557	.653
PCT (V)		.76**	.451	.930	.516	.362	.538
PCT (N)			.83**	.801	.278	.499	.419
PCT (T)				.82**	.419	.482	.565
ACE (L)					.95***	.57	.921
ACE (Q)						.87***	.754
ACE (T)							.95***

*Corrected split-half reliability coefficients for the Wonderlic. Reported in (4).

**Corrected split-half reliability coefficients for the PCT. Based on scores for 436 college sophomores. Reported in (2).

***Corrected odd-even reliability coefficients for a previous comparable form of the ACE. Based on scores for college freshmen. Reported in (1).

and PCT). Other correlations would be expected to be low if the sub-sections represent independent abilities (the intercorrelations of the verbal and numerical sections of the ACE and of the PCT tests). These expectations are not borne out. The ACE total-PCT total correlation is only .57, the ACE quantitative and PCT numerical correlation is .50 and the ACE linguistic and PCT verbal is .52. Those correlations expected to be low appear to be as high as those expected to be high. The PCT numerical and PCT verbal correlated .45 and the ACE quantitative and ACE linguistic correlated .57.

Wonderlic, a 12 minute single score test correlates as well with the ACE total (.65) as does the 28 minute PCT (.62) which is supposedly making the same distinction between verbal and numerical ability that the ACE makes. In fact the Wonderlic correlates as well or better with each of the sub-parts of the PCT and ACE (.62, .56, .56, .49) than the corresponding sub-parts of the PCT and ACE correlate with each other (.52, .50, .52, .50).

That the sub-parts of the ACE and PCT are not equally related to the total score would seem indicated by the correlations of .92

and .93 between the verbal and total scores on the ACE and PCT respectively while the correlations of the numerical and total scores are .75 and .80.

Those correlations which are comparable are very similar to the ones reported by Williams.

Examination of the PCT reveals that the verbal part appears to be relatively "pure" i.e. all of the items are analogies. The ACE and Wonderlic however contain various kinds of items. It is possible that the rather low correlation of the other two tests with the PCT verbal may be due to this factor. Correlation of the PCT verbal with some of the PMA tests would be desirable. Factor analysis would be expected to reveal the purity of the PCT verbal.

In this study three tests of "general intelligence" did not correlate well and cannot be considered equivalent. The sub-parts of the PCT and ACE show a considerable correlation and seemingly cannot be considered as independent abilities. It thus appears that the cautious examiner is not justified in using the three tests interchangeably. The tests appear to be measuring different abilities, or to be measuring with different degrees of precision or to be distinguishing among different classes of subjects.

Findings such as these and those of Williams suggest that these tests of general intelligence must be tried out locally to determine their usefulness and that great caution must be exercised in generalizing from one such test to another.

Bibliography

1. Seder, Margaret. Bulletin Number 26, Educational Records Bureau, N.Y. 1938, pp. 51-58.
2. Wesman, A. G. Manual for the Personnel Classification Test. N. Y. 1951, pp. 15.
3. Williams, J. E. and Gerken, C. d'A. "Verbal Factor" and "Number Factor"—A Study of Two Tests. Proc. Iowa Academy of Science. 1952, 59, 397-401.
4. Wonderlic, E. F. Manual for the Wonderlic Personnel Test. Glencoe, Ill. 1945, pp. 7.

DEPARTMENT OF PSYCHOLOGY
GRINNELL COLLEGE
GRINNELL, IOWA