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SOME RELATIONSHIPS BETWEEN PLACEMENT SCORES AND SCHOLASTIC RATING

PAUL C. GREENE

PURPOSE

This paper reports obtained correlations between scores on entrance tests, and between entrance scores and scholastic rating during the first semester of college work, for students entering Coe College in September, 1940.

METHOD

1. *The Testing Program.*

The test-battery included: the (Thurstone & Thurstone) "American Council on Education Psychological Examination for College Freshmen," 1940 machine-scoring edition; the "Nelson-Denny Reading Test for Colleges and Senior High Schools," Form A; the "Minnesota Speed of Reading Test for College Students," Form A; the 1940 edition of the (Derby *et al.*) "English Placement Test for Iowa Universities and Colleges" (supplemented by an original hour-essay written by the students and graded by members of the English Department), and the Series A "Pitch" and "Rhythm" discrimination tests from the Seashore "Measures of Musical Talent" (1939 edition, revised by Seashore, Lewis and Saetveit). Each music test was administered twice in succession. *Table 1* indicates the content or subdivisions of the individual members of the test battery.

Table 1. 1940 Battery of Entrance Tests.

1. ACE Psychological Examination.
Linguistic (L) Tests: Completion, Same-Opposites, Verbal Analogies. Quantitative (Q) Tests: Arithmetic, Figure Analogies, Number Series.
2. Nelson-Denny Reading Test for Colleges and Senior High Schools Vocabulary Test, Paragraph Reading Test.
3. Minnesota Speed of Reading Test: 38 paragraphs, irrelevant phrases to be crossed out.
4. English Placement Test for Iowa Universities and Colleges: Spelling, Word Usage, Punctuation, Grammar, Sentence Usage, Word Meaning, Paragraph Comprehension.
5. Original Hour-Essay (graded by members of the English Dept.).

6. Seashore Measures of Musical Talent (Revised): Pitch Discrimination, Rhythm Discrimination.

Decile ranks on total scores and (or) sub-scores of these tests were used (a) as evidences of general college ability, (b) as aids to counselling in regard to the selection of courses, (c) as bases for sectioning (particularly in the first-year English courses), and (or) (d) in the case of the music tests, to assist the Department of Music in the early identification of students who might possess unrecognized abilities for musical appreciation or performance.

2. *The Index of Scholastic Rating.*

The Grade Point Ratio is the ratio of the number of hours of course-work carried to the number of grade points earned, where: A = 3, B = 2, C = 1, D = 0, and F = -1. The following procedures were followed in determining the grade point ratio:

(a) The courses in Physical Education, Military Science and Practical Music were not considered in computing the ratio.

(b) Standing in the remedial course in "English Fundamentals," required of freshmen scoring below a critical point in the English Placement and English Essay Tests, was not considered. This is a non-credit course for which a mark of either "O.K." or "F" is assigned.

(c) A grade of "X" was credited with zero honor points. This grade may be assigned at the conclusion of the first semester of a year-course when the student is near the borderline between passing work and failure. At the end of the year the instructor reports, on the basis of the student's work during the second semester, whether the "X" is to be recorded as a "D" or as an "F". Should the student fail to continue with the course during the second semester, the "X" automatically becomes an "F". The procedure followed in computing the G. P. R. was equivalent to giving grade "X" the honor point rating of grade "D", namely 0 points.

(d) Standing in courses in which the semester grade was recorded as "incomplete" was omitted from consideration in computing the G. P. R. In the exceptional instances in which a student's record consisted primarily of "incompletes," the entire record was eliminated from consideration.

(e) The records of those students for whom scores were lacking on one or more of the placement tests were discarded except in ten instances in which scores on the "Measures of Musical Talent" were not available.

3. The Correlational Analyses.

Pearson's r s were obtained between the various entrance tests, using raw scores except in the case of the Nelson-Denny Reading Test, where percentiles were used. Results of the English Essay Test are not considered in this report.

Scores on the several entrance tests also were correlated against the G. P. R. for the first semester of college work. An r was obtained between the G. P. R. and percentiles based on (unweighted) summated total scores on the A. C. E., English Placement, Nelson-Denny, and Minnesota Speed of Reading Tests. A multiple (R) also was obtained between the G. P. R. and (weighted) total scores on the same combination of tests.

N equals 210 cases for correlations involving scores on the tests of pitch discrimination and rhythm discrimination. N is 220 for all other correlations.

RESULTS

1. Relationships Between G. P. R. and Entrance Scores.

Table 2 presents the obtained r s between total or sub-scores on the various tests and the grade-point ratio. Statements here are grouped according to related tests or sub-tests. In Table 3 the relationships are indicated in rank order (high to low) according to size of the "Index of Forecasting Efficiency" (I_p), where I_p is defined as $= 1 - \sqrt{1 - r^2}$. This index indicates the improvement over chance in prediction from a regression equation by a given score.

Table 2. G. P. R. vs. Entrance Scores

Tests	r	PEr	I_p	N
1. ACE-T	.43	.04	.10	220
2. ACE-T (m)	.40	.05	.08	118
3. ACE-T (f)	.55	.05	.16	102
4. ACE-L	.44	.04	.10	220
5. ACE-Q	.27	.04	.04	220
6. Eng. Pl.	.56	.03	.17	220
7. N-D R. T. (P)	.47	.04	.12	220
8. Minn. Sp. R.	.50	.03	.14	220
9. Rhythm D.	.22	.04	.03	210
10. Pitch D.	.14	.06	.01	210

The r between G. P. R. and (unweighted) summated total scores on the ACE totals, English Placement, Nelson-Denny (P) and Minnesota Speed of Reading Test = $.49 \pm .03$ ($I_p = .13$). The multiple R for the same data = $.59 \pm .03$. ($I_p = .20$).

Table 3. G. P. R. vs. Entrance Scores

Test	r	PEr	Ip	N
Eng. Pl.	.56	.03	.17	220
Minn. R. S.	.50	.03	.14	220
N-D R. T. (P)	.47	.04	.12	220
ACE-L	.44	.04	.10	220
ACE-T	.43	.04	.10	220
ACE-Q	.27	.04	.04	220
Rhythm D.	.22	.04	.03	210
Pitch D.	.14	.06	.01	210

2. Relationships Between Scores on Tests and Sub-Tests.

Table 4 presents the obtained rs between scores on entrance tests or sub-tests, grouped according to content. In Table 5 the relationships are indicated in rank order (high to low) according to size of Ip.

Table 4. Inter-rs, Entrance Scores

Tests	r	PEr	Ip	N	
ACE-T vs. Eng. Pl.	.76	.02	.35	220	
	R. C. (P)	.78	.02	.37	220
	R. S.	.64	.03	.23	220
ACE-L vs. Eng. Pl.	.80	.02	.40	220	
	R. C. (P)	.85	.01	.47	220
	R. S.	.63	.03	.22	220
Eng. Pl. vs. ACE-Q	.61	.03	.21	220	
	ACE-T	.76	.02	.35	220
	ACE-L	.80	.02	.40	220
R. C. (P) vs. R. C. (P)	.78	.02	.37	220	
	R. S.	.64	.03	.23	220
	ACE-T	.78	.02	.37	220
R. S. vs. R. S.	.66	.03	.25	220	
	ACE-T	.64	.03	.23	220
	ACE-L	.63	.03	.22	220
Eng. Pl. vs. Eng. Pl.	.64	.03	.23	220	
	R. C. (P)	.66	.03	.25	220
	R. D.	.30	.04	.05	210
P. D. vs. R. D.	.24	.04	.03	210	
R. D. vs. ACE-T	.28	.04	.04	210	

Table 5. Inter-rs, Entrance Scores (Arranged According to Size of Ip)

Tests	r	PEr	Ip	N
R. C. (P) vs. ACE-L	.85	.01	.47	220
ENG. Pl. ACE-L	.80	.02	.40	220
ENG. Pl. R. C. (P)	.78	.02	.37	220
R. C. (P) ACE-T	.78	.02	.37	220
Eng. Pl. ACE-T	.76	.02	.35	220
R. C. (P) R. S.	.66	.03	.25	220
Eng. Pl. R. S.	.64	.03	.23	220
ACE-L R. S.	.63	.03	.22	220
ACE-L ACE-Q	.61	.03	.21	220
P. D. R. D.	.30	.04	.05	210
R. D. ACE-T	.28	.04	.04	210
P. D. ACE-T	.24	.04	.03	210

DISCUSSION

1. The obtained r s between G. P. R. for the first semester of college work and scores on the scholastic entrance tests are within the range of those usually obtained.¹ These relationships are of limited utility in the prediction of scholastic rating of a given individual from a knowledge of test-scores.

2. The degree of relationship between G. P. R. and weighted scores on the scholastic entrance tests shows little advantage for prediction as compared with the unweighted scores for the same tests.

3. Ranks based on weighted scores on the combined scholastic entrance tests would appear to offer little advantage, for individual prediction of scholastic rating, as compared with rank on the individual placement tests for which the zero-order r s with G. P. R. are largest.

4. Of the individual measures used, rank on the English Placement Test is most highly related to G. P. R. It should be noted that G. P. R. for most of the students took account of grade received in a three-credit course in Constructive English.

5. At least for the purposes for which the tests were used in the local situation, it would seem that the American Council test is useful mainly for the following purposes: (a) Comparison of the performance of the local group with an extensive national sample on which norms usually are available near the close of the academic year during which the tests may be given; and (b) as giving some estimate of the student's relative rating in verbal and numerical facility.

6. This study reports no evidence concerning the factors accounting for the order of the relationships found. Factors limiting the relationships might include: (a) Characteristics intrinsic to the tests or (and) the test-situation; (b) the number, selection and grading systems of the various instructors contributing to the scholastic rating of the students; and (c) factors operating within the student when tested (novelty of the situation, physical factors, cooperation and motivation) or while engaged in college work (physical and motivational factors, extra-curricular activities, adequacy of work habits).

¹ For a contemporary review of the recent literature on this point, see Harris, D., "Factors Affecting College Grades: A Review of the Literature, 1930-1937," *Psychol. Bull.*, 1940, 37, 125-166. See pp. 125-127.

7. It appears that for individual prediction of scholastic accomplishment, the criteria reported in this study should be supplemented by other indices.

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