FORECASTING TOTAL PERCENTILE SCORE ON THE FLORIDA STATE-WIDE TWELFTH-GRADE TESTING PROGRAM

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In our high schools today we have a wide variety of ability and ambition. Some of our students plan to go on to college. Will they be admitted? Will they do satisfactory work if they are admitted? What about the student who isn't planning to attend college? Should he revise his plans? Should he be guided into vocational education or technical education? These questions are foremost in the minds of counselors today. Parents ask and deserve an answer.

In our county, an achievement battery and intelligence test are given county-wide in grades 1-9. Even with these test results there was a quandary for the large school which was attempting to group its students. For this purpose a composite prognostic score was computed. The prognostic score is a logically derived combination of test scores (expressed as local stanines) with varying weights according to our judgment of the importance of each factor. The sum of the weights is ten so that prognostic scores range from ten to ninety.

In 1959 a study was made of the stability of prognostic scores. William L. Burr (1), at that time Coordinator of Group Testing, found a pearson product-moment correlation coefficient of .92 between prognostic scores of 1956-57 and 1957-58 for 250 students picked at random in grade 8. It was concluded that "these scores are quite reliable and provide a stable basis on which to predict future achievement."

Purpose

In this study the predictive value of the ninth grade prognostic score in determining standing on the Twelfth Grade Placement Tests is being investigated. The students who were in ninth grade in 1957-58 took the Twelfth Grade Placement Tests in February, 1961. Many of them were planning to go to college. How well could their standing have been predicted three years before so that they would have had more time to choose the proper courses--either for college or other endeavors?

The Twelfth Grade Placement Battery consisted of five tests: A.C.E. Psychological 1953 ed., Cooperative English Form YB_2, Cooperative Social Studies Form YZ, Cooperative Natural Science YZ, and Cooperative Mathematics Form YZ. State-wide percentile ranks are assigned to each test score. The sum of the five percentile ranks is the student's total standing.

Procedure

In 1957-58 the Pintner General Ability Test, Intermediate Form A or B, was used to obtain a measure of aptitude. Standard score stanine was used as a measure of power rather than I.Q. which is a measure of brightness. The Achievement test used was Stanford Intermediate Form Jm together with Stanford Science Test and Study Skills Test. Two prognostic scores were computed by weighting the test stanines as follows:

Math-Science		Verbal	
Test	Weight	Test	Weight
Intelligence	3	Intelligence	3
Paragraph Meaning	2	Paragraph Meaning	2
Word Meaning	1	Word Meaning	1
Arithmetic Reasoning	1	Language	2
Arithmetic Computation	1	Spelling	1
Science	1	Study Skills	1
Study Skills	1		10
	10		

The 1957-58 test cards for grade 9 were reproduced for 1,649 students who took the Twelfth Grade Placement Tests in February, 1961. The results of the placement tests were added to these cards. In recent years there has been an upsurge in interest in the relationship between achievement and sex differences, consequently data were analyzed separately by sex.

Results

When the correlations were computed there was very little or no difference between the sexes; the means and standard deviations were

also practically the same for boys and girls. Only in total standing was there an appreciable difference; girls averaged 267 and boys averaged 314.

County Battery 1957-58	Correlation with Total Standing on Placement Tests February 1961		
	Boys	Girls	Total
Math-Science Prognostic	.831	.826	.827
Verbal Prognostic	.819	.801	.789
Pintner Stanine	---	---	.711

Of the three predictor measures, the math-science prognostic had the highest correlation (.83) with the criterion. Pintner intelligence was lowest with a correlation of .71. This seems logical since the prognostic score takes into consideration more than intelligence. The achievement stanines included would reflect the effect of motivation, habits of work, etc.

Table 1 shows the bivariate distribution of the math-science prognostic score stanine and total standing. In the bottom line are shown the expectancies of obtaining a total standing of 350 for each prognostic stanine. A total standing of 350 was chosen because that is approximately the average score of students who do "C" work at the universities. (2) The expectancies were computed by taking into account the correlation between the two variables and the standard errors of estimate. A ninth-grade student with a prognostic stanine of 8 or 9 is practically certain to have a total standing of 350 or more. One with a 7 has almost 2 chances out of 3; one with a 6, less than 1 out of 3. A student with a prognostic score less than 5 has practically no chance of achieving 350.

In a continuation of the same study there were 1,933 students who took the ninth-grade achievement tests in November, 1958, and the Placement Tests in February, 1962. The achievement battery used was the standardization edition of the Metropolitan. A prognostic score was computed similar to the one in 1957. The Twelfth Grade Tests were the same as those given in 1961.

Table 1

Relation of Math-Science Prognostic Stanine in Ninth Grade in 1957 to Total Standing on the Twelfth Grade Placement Tests taken in February, 1961, Pinellas County, Florida

Total Standing	Math-Science Prognostic Stanine									Total
	9	8	7	6	5	4	3	2	1	
0- 24	---	---	---	---	---	---	2	4	5	11
25- 49	---	---	---	1	---	4	7	12	6	30
50- 74	---	---	---	---	1	4	12	11	2	30
75- 99	---	---	---	---	---	12	26	10	2	50
100-124	---	---	---	---	7	18	17	17	1	60
125-149	---	---	---	2	13	27	21	4	3	70
150-174	---	---	1	3	21	28	28	5	2	88
175-199	---	1	2	9	25	35	21	4	---	97
200-224	---	---	1	10	29	29	12	1	1	83
225-249	---	---	4	14	37	25	8	---	---	88
250-274	1	---	6	22	47	23	2	1	---	102
275-299	---	1	11	34	43	18	4	---	---	111
300-324	---	1	19	31	52	13	2	---	1	119
325-349	---	3	23	52	36	9	---	---	---	123
350-374	3	9	25	42	24	7	2	---	---	112
375-399	3	20	45	26	12	3	---	---	---	109
400-424	6	25	44	24	12	---	---	1	---	112
425-449	27	31	36	10	9	---	---	---	---	113
450-474	30	35	16	2	1	---	---	---	---	84
475-499	35	15	6	1	---	---	---	---	---	57
Total	105	141	239	283	369	255	164	70	23	1649
Expected percent over 350	97	87	63	32	11	2	0	0	0	

County Battery 1958-59	Correlation with Total Standing on Placement Tests February 1962		
	Boys	Girls	Total
Math-Science Prognostic	.839	.850	.840
Verbal Prognostic	.831	.830	.805

Again the correlation between prognostic score and total standing on the Placement Tests was just about the same for boys and girls (.839 and .850) on the math-science and (.831 and .830) on the verbal measure. The correlations were slightly higher than in the previous study. Again, the math-science prognostic score showed a slightly higher relationship with the criterion than did the verbal prognostic score. Based on this correlation and the standard error of estimate the percentages over 350 were computed for each math-science stanine. For stanines 6, 7, 8, and 9 the percentages were slightly higher than those reported for the previous data. For stanines 1-5 the percentages were identical.

Summary

A prognostic score based on a combination of ability and achievement measures has a higher correlation with achievement on the Twelfth Grade Placement Tests than does the ability measure alone. The differences in achievement between sexes were negligible. The prognostic score utilizing achievement in arithmetic and science as part of its components had a higher relationship (.83 and .84) than did the one emphasizing the language components (.79 and .80). Expectancy tables were set up showing the percentage of pupils that could expect to achieve a total standing of 350 or more on the Twelfth Grade Placement Tests for each prognostic score stanine. These data were consistent for two groups of students; 1,649 students who took the Ninth Grade Tests in 1957 and the Twelfth Grade Tests in 1961 and 1,933 students who took the tests in 1958 and 1962, respectively.

References

1. Burr, William L. "The stability of composite prognostic scores." Florida Journal of Educational Research, 1 (1958), 21-24.

2. Stoker, H. W. "Predicting success from scores on the Florida State-wide Ninth Grade Testing Program." Florida Education, 39 (1961), 12-13.