RELATION BETWEEN SCORES ON THE AIA ELEMENTARY AND ADVANCED ACCOUNTING ACHIEVEMENT TESTS

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IN THE INSTITUTE'S College Accounting Testing Program,[1] the academic progress of accounting students is evaluated with the Level I Achievement Test at the end of the first year of study, and with the Level II Achievement Test at later stages of training. Results of these tests are compared in this article to show the extent to which accounting majors, both as individuals and as college groups, tend to rank similarly at the elementary and advanced levels. The findings indicate that the Level I test is useful as a predictor of success in advanced accounting study, as measured by the Level II test, but they also show that there are some substantial differences in the relative rankings on the two levels of the test of both individual students and college groups.

SOURCE OF DATA

The test results were taken from the project office's records of the college testing program for the nine-year period extending from 1946 to 1954. The scores that were selected for analysis were those of accounting majors who had taken the Level I test as first-year students, and the Level II test as seniors. Because of the variations in the courses of study followed by the students, however, the intervals between testing ranged from one to three years.

The first part of this study deals with the relation between the Level I and Level II test scores of individuals in a number of different colleges and universities, and the second part has to do with the correlations between the ranks of student groups from certain institutions on the two levels of the test.

INDIVIDUALS' SCORES

The correlations between scores on the Level I and Level II Achievement Tests of 2,192 accounting students in 203 colleges and universities are shown in Table I. In some instances, test results from as many as twenty-four institutions were pooled to combine data from small groups. It will be noted that correlations are given for

TABLE I

CORRELATIONS BETWEEN SCORES ON THE LEVEL I AND LEVEL II ACHIEVEMENT TESTS

Form of Achievement Test Used		*Number of Institutions*	*Number of Students*	*Correlation between Level I & Level II Scores*
First Year	*Senior Year*			
I-A	II-A	14	111	.48
I-A	II-B	18	178	.57
I-A	II-B	1	68	.57
I-A	II-C	20	244	.39
I-A	II-D	24	237	.65
I-A	II-D	1	56	.71
I-B	II-A	15	110	.64
I-B	II-A	1	74	.55
I-B	II-B	20	207	.49
I-B	II-C	23	177	.67
I-B	II-D	21	269	.52
I-B	II-D	1	87	.51
I-C	II-A	12	70	.53
I-C	II-B	6	97	.71
I-C	II-C	10	46	.66
I-C	II-D	15	112	.66
I-C	II-D	1	49	.67

[1] For a description of the general purposes and features of this testing program, see the article by Wood, Traxler, and Nissley, entitled "College Accounting Testing Program," THE ACCOUNTING REVIEW, January, 1948, pp. 63–83.

each of the various pairings of forms of the two tests. All three alternate forms—A, B, and C—of the Level I test are two-hour examinations, as are the C and D forms of the Level II test. Forms A and B of the Level II examination each require four hours of working time.

The correlations between the Level I and Level II test scores range from .39 to .71, with a median of .57. It may be of some interest to note that the median correlations of each of the test forms with all of the forms of the test at the other level are as follows: I-A, .57; I-B, .54; I-C, .66; II-A, .54; II-B, .57; II-C, .66; II-D, .66. Thus, Form C of the Level I test and Forms C and D of the Level II test yielded the highest median correlations. However, since there is a considerable overlap in the range of correlations obtained with each form, it is likely that factors other than the form alone, such as the number and type of students and institutions from which the correlation data were drawn, and the interval between testing, served to influence the size of the correlations to a considerable degree.

As a means of illustrating the extent of relationship between the Level I and Level II scores that is represented by the median correlation of .57, the quarter classifications on the two tests of a sample group of students are shown in Table II. This group, as designated by the entries in the second row of Table I, consists of 178 accounting majors from eighteen institutions.

The quarter classifications in Table II are based on the distribution of scores of norm groups consisting of 7,012 first-year accounting students for the Level I-A test and 2,946 senior accounting students for the Level II-B test. As an example of the way the table may be read, the entry in the first cell of the table denotes that only one of the 178 students in the sample ranked in the lowest 25 per cent on the Level I-A norms and in the highest 25 per cent on the Level II-B norms.

It will be noted from the table that the sample group of accounting majors was somewhat above average, in comparison with the Level II senior norms group, since 101 students in the sample, or 57 per cent, ranked in the upper half of the distribution. As first-year students, they were distinctly superior to the less selected group[2] upon which the Level I test norms are based, since 148 (83 per cent) of the students in the sample ranked above the norm median.

[2] The first-year group is "less selected" in the sense that it has not been subjected to as many years of college attrition as the senior group, and in that it includes students who do not intend to major in accounting.

TABLE II

CLASSIFICATION BY QUARTERS ON THE LEVEL I-A AND LEVEL II-B ACHIEVEMENT TESTS OF 178 STUDENTS FROM EIGHTEEN COLLEGES

(Correlation between scores on the two levels of the test is .57. Percentage entries are based on the number of students in each quarter on the Level I test)

Quarter on Level II-B Test	*Quarter on Level I-A Test*				
	(*Lowest*) 4	3	2	(*Highest*) 1	*Total*
(Highest) 1	1 (9%)	2 (11%)	5 (12%)	43 (40%)	51
2	2 (18%)	2 (11%)	12 (30%)	34 (31%)	50
3	1 (9%)	1 (5%)	12 (30%)	22 (20%)	36
(Lowest) 4	7 (64%)	14 (74%)	11 (28%)	9 (8%)	41
Total	11	19	40	108	178

It is of special interest to note that only eleven students, or 6 per cent of the sample, ranked in the lowest quarter on the accounting achievement test as first-year students. This strongly indicates that most of the less able students are effectively eliminated through guidance or selective processes before they reach their senior year of accounting study.

That there is a substantial relation between ranks on the two levels of the accounting achievement tests is pointed up by the fact that 71 per cent of the students who scored in the top quarter on the Level I test ranked in the top half of the Level II distribution, while only 27 per cent of those who were in the lowest quarter on the Level I test obtained ratings in the upper half on the Level II test. To the extent that generalizations can be made from these results, it may be inferred that there are about seven chances in ten that a student who scores above the 75th percentile on the Level I test will rank above average in Level II test performance, but there are only about three chances in ten that a student who falls below the 25th percentile on the Level I test will score above average on the Level II test.

Forty-two per cent of the students in the third quarter on the Level I test and 22 per cent of those in the second quarter ranked above the median on the Level II test. It appears, then, that a student who ranks between the 50th and the 75th percentiles on the Achievement Test as a first-year student has about twice as good a chance of rating above average on the Level II test in his senior year as does the first-year student who scores between the 25th and the 50th percentiles on the Level I test.

Looking at the lowest quarter of the Level II distribution, it will be seen that scores this low were obtained by eight per cent of the top quarter students of the Level I distribution, 28 per cent of the second quarter students, and 74 per cent and 64 per cent, respectively, of the third and fourth quarter students. In other words, less than one out of ten of the students who ranked in the top quarter on the Level I test fell in the lowest quarter on the Level II test, while more than six out of ten of the students in the lower half of the Level I distribution had Level II scores in the lowest quarter.

In general, the degree of relation between the Level I and Level II test scores that is represented by a median correlation of .57, although far from perfect, seems to be sufficiently high to warrant using the Level I test to estimate the probability that a first-year student will reach a satisfactory level of achievement in accounting as measured by the Level II test. The relative standing on the Level II test that is to be considered as satisfactory will, of course, vary among different colleges.

For guidance purposes, colleges may find it worth while to construct expectancy tables on the style of Table I to show the relation between the Level I and Level II test scores of their own students. Such a table may enable the instructor or counselor to give useful information to students about their chances of succeeding in advanced accounting study.

COMPARISON OF LEVEL I AND LEVEL II RANKS OF COLLEGE GROUPS

Do groups of accounting students from various colleges tend to rank similarly on the Level I and Level II Achievement Tests? Presumably they would if the instructional programs in advanced accounting courses were similar from one institution to another, and if these programs were relatively comparable in effectiveness. This, of course, is not likely to be the case. The extent of some of the differences may be reflected in the following data.

TABLE III

MEDIAN PERCENTILES AND RELATIVE RANKS OF STUDENT GROUPS OF VARIOUS INSTITUTIONS ON THE LEVEL I AND LEVEL II ACHIEVEMENT TESTS

College Code No.	*Number of Students*	*Median Percentile Level I, Spring First Year*	*Median Percentile Level II, Spring Senior Year*	*Rank in Group*	
				Level I	*Level II*
(one-year interval between Level I and Level II testing)					
1A	24	97	83	1	2.5
1B	23	95	83	2	2.5
1C	24	94	72	3	5
2A	11	88	61	4	6
3	39	87	48	5	7
2B	18	85	84	6	1
4A	29	82	42	7	8.5
4B	28	79	42	8	8.5
1D	26	78	78	9.5	4
5	18	78	33	9.5	10
6A	12	73	21	11.5	11
6B	12	73	20	11.5	12
(two-year interval between Level I and Level II testing)					
7A	11	93	79	1	2
8A	16	92	61	2	5
9A	50	86	30	3	10
10	16	82	61	4	5
8B	16	78	73	5	3
7B	15	75	61	6	5
11	13	73	83	7.5	1
12	13	73	53	7.5	9
13	20	71	58	9	7
14	19	66	56	10	8
15	37	47	18	11	11
(three-year interval between Level I and Level II testing)					
16	58	84	44	1	6
9B	31	82	36	2	7
17	14	81	82	3	1
18A	18	80	54	4	3
18B	11	78	60	5	2
19A	15	77	52	6	4
19B	18	71	45	7	5
19C	17	56	33	8	9
19D	11	41	35	9	8

In Table III are shown the median percentiles and relative rankings on the two levels of the test of thirty-two groups of students from nineteen different colleges, most of which are regular participants in the College Accounting Testing Program. Where a college is listed more than once, its student groups are differentiated by the letter following the institutional code number. For example, the code designations 1A and 1B are used to identify two student groups from the same college. The medians are based on the scores of only those students who took both the Level I and Level II Achievement Tests.

The data are divided into three classifications, according to the number of years that lapsed between the two test administrations, and the groups are listed within these classifications in the order of their Level I test medians. These rankings within the classifications provide a better basis for evaluating the relative performance of the groups on the two levels of the

test than do the percentile ranks, since the latter are affected by variations in the caliber of the norm populations of the two levels. It will be observed that most of the group have lower median percentile ranks on the Level II test than on the Level I test, and this is principally because the Level II test results are being evaluated in terms of a more select norm group—one from which the less able students have been eliminated by the process of college attrition.

For the twelve groups that took the Level II test only one year after the Level I test, the rank difference correlation is quite high, amounting to .75. The average difference between the ranks on the two tests of the fifteen groups is only 1.8. Among the groups that were tested at two-year and three-year intervals, the rank difference correlations are considerably lower: .47 and .38, respectively. The average change in rank for the two-year-interval group is 2.5; for the three-year-interval group, it is 2.4.

The lower correlations that were found between the ranks of the groups that were tested with the Level II test two or three years after the Level I test are in line with the usual finding that the longer the interval between successive testings with similar measures, the lower the correlation tends to be. The correlation is especially likely to decrease when some variable is exerting a significant influence on the measured characteristic during the interval. Thus, the fact that a greater variety of accounting courses might have been taken by the students over the longer intervals may help to explain the differences among the correlations reported above. It is not likely that the forms of the tests used affected the correlations to any important extent, since there was a wide variety of form combinations within each of the interval clssifications.

The largest changes in ranks were registered by two groups in the two-year-interval classification. Group 9A dropped from a rank of 3 on the Level I test to a rank of 10 on the Level II test, while group 11 went from a Level I rank of 7.5 up to a Level II rank of 1.

Relatively large changes in ranks also occurred in the instance of groups 1D and 2B, which showed substantial gains between their Level I and Level II rankings within the one-year-interval classification, and by groups 16 and 9B, which dropped significantly in their rankings within the three-year-interval classification.

In the absence of any extensive information about the characteristics of the accounting courses offered by the various institutions whose test results were used in this study, no definite reasons can be given for the differences in relative rankings on the two levels of the accounting achievement tests. The groups were small in size, and the test results are not necessarily typical of each of the represented colleges. Then, too, one of the levels of the test may be more suitable than the other for the accounting curriculum at a particular institution. Also, instructors within a given college may differ markedly in their effectiveness. We find, for example, that group 2A dropped from a rank of 4 on the Level I test to a rank of 6 on the Level II test, while another student group from the same institution, 2B, went from a Level I rank of 6 up to a Level II rank of 1. Both of these groups were in the one-year-interval classification.

CONCLUSIONS

The data reported in this article indicate that there is a substantial correlation, in general, between the scores obtained by individual students on the Level I and Level II Accounting Achievement Tests. The relation is high enough to justify the use of the Level I test results as a guide for estimating a student's probability of suc-

ceeding in advanced accounting study, as evaluated by the Level II Test.

When student groups from a number of different colleges and universities are ranked in terms of their median scores on the Level I and Level II tests, it is found that there is a relatively high correlation (.75) between the ranks of the groups on the two tests when there is only a one-year interval between the test administrations. When the interval is two or three years, the correlation between the ranks of the groups on the two measures is considerably lower.

While the samples were small and not necessarily representative of each of the institutions from which they were taken, the fact that there were relatively large differences in the rankings of some of the groups on the two levels of the test, even when there was only a one-year interval between the test administrations, suggests that there may be some significant variations in the effectiveness of accounting training among various instructors and colleges, or in the degree of relevance of the tests for the particular curricula being taught. A more detailed study would be necessary to give a specific account of the reasons for the variations in rankings of the various groups on the two levels of the Accounting Achievement Test.