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THE AMERICAN INSTITUTE OF ACCOUNTANTS
COLLEGE ACCOUNTING TESTING PROGRAM

Bulletin No. 19

RESULTS OF THE
FALL, 1953, COLLEGE ACCOUNTING TESTING PROGRAM

*Including an Interim Report of
Correlations between Scores on Accounting Tests
and Grades on CPA Examinations*

Prepared by
Committee on Accounting Personnel
21 Audubon Avenue
New York 32, N. Y.

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INTRODUCTION

In the eighth fall accounting testing program, which took place during the fall of 1953, sixty-six colleges administered a total of 8,132 tests. These tests were scored and reports were issued by the project office to the participating institutions.

A brief resume of the fall accounting testing programs from the beginning may lend perspective to the 1953 program. The number of colleges taking part and the number of tests administered in each of the eight fall programs are summarized in Table I, together with certain other pertinent facts.

TABLE I
PARTICIPATION IN FALL COLLEGE ACCOUNTING TESTING PROGRAM
DURING AN EIGHT YEAR PERIOD

Year	Number of Colleges	Number of Tests	Cost of Materials and Scoring Per Student Per Test*	Project Office Scoring Required ?	Enrollment in Colleges
1946	26	12,482	None	No	Large
1947	50	18,487	Materials none; Scoring \$0.10	No	Large
1948	63	15,387	Materials \$0.15; Scoring \$0.10	No**	Large
1949	96	14,545	Materials \$0.15; Scoring \$0.10	No**	Large
1950	98	13,362	Materials \$0.15; Scoring \$0.10	No**	Slight Decline
1951	74	8,406	Materials and Scoring \$0.35	Yes***	Marked Decline
1952	67	7,511	Materials and Scoring \$0.35	Yes***	Comparative- ly Small
1953	66	8,132	Materials and Scoring \$0.35	Yes***	Slight Increase

*Except Strong blank where charge was \$1.80 per student for material and scoring with discount for quantity use.

**Except required Project Office scoring for Achievement Test, Level II, at \$0.25 per student.

***Except Strong blank for which Project Office scoring was voluntary.

It will be observed that the number of participating colleges rose from twenty-six in 1946 to ninety-eight in 1950, dropped off considerably in 1951, and remained fairly even during the last two years. The largest number of tests, more than 18,000, were administered in 1947, the second year of the fall program. There was a moderate decline in numbers in 1948, 1949, and 1950, and a rather marked drop

in 1951. The number went down somewhat further in 1952, but rose slightly this fall to a level almost up to that of 1951.

It seems probable that the variation in extent of participation can be attributed to several influences, including the expense involved, the degree to which Project Office scoring has been required, the enrollment in colleges, and the relationship between supply and demand at the point of employment. At the outset, in 1946, test materials and scoring services were provided through the Project Office without cost to the colleges. At the same time, enrollments were abnormally large because of the influx of veterans from World War II. Consequently, although the number of participating colleges in the first fall program was only twenty-six, the number of tests used was fairly substantial.

In the second fall testing program, held in 1947, a scoring charge of ten cents was made, but there was no charge for test materials, and colleges were permitted to score locally if they so desired. The number of participating colleges was almost double that of 1946, and the number of tests used was about 50 per cent larger. In each of the next three fall programs, those of 1948, 1949, and 1950, the charge per test was fifteen cents for materials and ten cents for scoring, but Project Office scoring was optional. At the same time, the enrollments in colleges remained large except for the fact that there was a slight decline in the fall of 1950, immediately after the beginning of the war in Korea. The number of participating colleges went upward, but perhaps because a charge for test materials had been added, the colleges tended to test on a more conservative basis, and the total number of tests used went downward slightly. A further reason for the decrease in number of tests is that certain large colleges which took part in the initial stages of the project did not continue participation while a good many smaller colleges joined in the program.

By the fall of 1951, the needs of the Armed Services had brought about a noteworthy decrease in number of young men enrolled in college. This, in itself, would have caused a considerable decrease in the number of tests administered in the accounting testing program. This decrease was, in all probability, accentuated by the fact that the charge for materials and scoring services was raised from twenty-five cents to thirty-five cents a test and that Project Office scoring was made a requirement for all tests in the program except the Strong Vocational Interest Blank. A further factor tending to lower participation was that the supply of available accounting personnel was scarcely large enough to meet employment needs, and thus employers of necessity became less selective and paid less attention to test scores in their hiring procedures, with the result that there was less motivation for colleges to administer the tests. Hence, there was a drop of some 40 per cent in the number of tests given, although the number of colleges taking part in the program was larger than in any of the earlier years, except 1949 and 1950.

The picture was much the same in 1952 and 1953. The number of tests used reached a low point in 1952. The figures for 1953, as compared with 1952, suggest that with the upturn in college enrollments, brought about by the return of veterans from Korea, the number of tests administered in the program is beginning to move upward again, while the number of colleges taking part is virtually unchanged. Thus, a careful analysis of the table suggests that the fall College Accounting Testing Program is continuing to meet a need in a considerable number of colleges.

Table II shows for each test used in the fall program the number of students who took it and the per cent that this number is of the total number of tests

administered. It will be observed that more than 84 per cent of the tests taken in the fall program were Orientation Tests. This agrees almost precisely with the proportion of Orientation Tests used in the fall, 1952, program. The Orientation Test is always stressed in the fall, while emphasis is placed on the Achievement Tests in the spring program. The Strong blank is suitable for use at any time during the year, although there is some tendency for college guidance officers to favor its use in the fall so that the results will be available for counseling during the year.

TABLE II
USE OF THE DIFFERENT TESTS IN FALL, 1953, PROGRAM

Test	Number	Per Cent
Orientation Test	6,840	84.11
Achievement Test, Level I	411	5.05
Achievement Test, Level II	159	1.96
Strong blank	722	8.88
Total	8,132	100.00

Of the sixty-six institutions taking part in the fall, 1953, program, eight were new participants, while fifty-eight had taken part in one or more previous programs. Thirty-four colleges, or 50 per cent, participated in the last three fall programs.

Six colleges have taken part every fall since the accounting testing program was begun. These colleges are Marquette University, University of Pennsylvania, Rutgers University, Texas Christian University, Washington and Lee University, and Wayne University.

Six other colleges have participated in all fall programs except the first one. These are Drake University, Emory University, Iona College, Mississippi State College, New Haven College, and Virginia Polytechnic Institute. Two others, Lehigh University and Miami University, missed only one of the eight fall programs.

The consistent participation of these institutions indicates that the accounting testing program can be integrated into the fall testing procedures of both large and small colleges.

Special Note: Any participating college may obtain on request a specially marked copy of this bulletin showing where the median scores of its classes fall within the distributions of class medians presented in the summary tables in Section II.

II

SUMMARY OF TEST RESULTS

The results of the forms of the Orientation Test and the Achievement Test, Level I, that were recommended for use in the fall, 1953, College Accounting Testing Program, are shown in Tables III, IV, and V. There was also some use of Achievement Test, Level II, and of other forms of the Orientation Test and the Level I Achievement Test, but the number of students taking those tests was not large enough to warrant the preparation of summary tables.

Distributions of the verbal, quantitative, and total scores of more than 6,000 first year accounting students among forty-four colleges who took the Orientation Test, Form B, are shown in Table III. Distributions of the medians for the various colleges are likewise shown. All these students were in classes where the test was required or where 90 per cent or more of the students took it voluntarily.

The medians for the 1953 fall program, as indicated by the short horizontal lines to the right of the distribution columns, may be compared with the medians resulting from the use of the same form of the test in the fall of 1952. It will be observed that there is very close agreement between the medians for the two years. Comparison with the results reported in the bulletin for the 1952 fall program shows that the quartiles and the ranges of the scores are also closely similar. Apparently there is a great deal of stability in the results of the Orientation Test from year to year at the college level.

As always when the results of this test are summarized, there is an impressive fact in the extremely wide range of the verbal and quantitative scores of individuals entering upon the study of accounting. In the quantitative part of the test particularly, the most able students were able to answer all thirty questions correctly, while those at the bottom of the distribution did not register even one point. The middle 50 per cent of the cases, however, are grouped within a fairly small range on each part of the test.

It is evident from the distributions in Table III that this form of the Orientation Test, like the other two forms, is fairly difficult for first year students. The median total raw score is approximately 55 out of a possible 160 points. No student approaches a perfect score, the highest one being 145.

A small group of 142 first year accounting students distributed among six colleges took the test on a voluntary basis in classes where less than 90 per cent of the students participated. These results are shown in Table IV. As one would expect, the median verbal, quantitative, and total scores for this small voluntary group are higher than the medians for the "required" group, although the differences are not very large.

As shown in Table V, Form A of Achievement Test, Level I, was taken by 216 first year students in nine colleges. The achievement of this group was rather high in comparison with that of a similar although larger group tested in the fall of 1950 with the same form of the test. The median obtained this fall was more than ten raw score points above the median for the fall of 1950. As was true of the results of the Orientation Test, the scores of the individual students are distributed over nearly the entire possible range.

TABLE III

DISTRIBUTIONS OF SCORES OF INDIVIDUAL STUDENTS AND MEDIAN SCORES OF INDIVIDUAL COLLEGES ON ORIENTATION TEST, FORM B, IN CLASSES WHERE THE TEST WAS REQUIRED OR WHERE 90 PER CENT OF THE STUDENTS OR MORE TOOK IT ON A VOLUNTARY BASIS, FALL, 1953

F I R S T Y E A R								
VERBAL			QUANTITATIVE			TOTAL		
Score	Scores of Individual Students	Medians of Individual Colleges	Score	Scores of Individual Students	Medians of Individual Colleges	Score	Scores of Individual Students	Medians of Individual Colleges
99-100								
96						160		
93						155		
90			60	4		150		
87			58	11		145	1	
84	11		56	3		140	1	
81	4		54	26		135	3	
78	8		52	45		130	8	
75	14		50	55		125	9	
72	17		48	84		120	19	
69	44		46	59		115	37	
66	50		44	127		110	53	
63	78		42	150		105	65	
60	94		40	141		100	96	
57	114		38	199		95	129	
54	154		36	204		90	170	
51	177		34	251	3	85	189	
48	190		32	284	2	80	266	
45	276	1	30	336	2	75	296	3
42	293	3	28	386	5	70	340	6
39	354	7	26	376	5	65	402	4
36	383	3	24	409	8	60	444	3
33	431	3	22	431	8	55	501	4
30	448	3	20	413	4	50	541	7
27	473	6	18	386	4	45	522	7
24	490	7	16	394	2	40	475	3
21	408	5	14	324		35	400	4
18	380	1	12	293	1	30	372	
15	358	2	10	197		25	270	
12	288	1	8	161		20	195	1
9	197	1	6	109		15	117	
6	148	1	4	80		10	70	
3	97		2	47		5	28	
0-2	52		0-1	46		0-4	12	
Total	6031	44	Total	6031	44	Total	6031	44
Q3	42.2	39.0	Q3	33.0	28.4	Q3	72.6	67.5
Md	30.8	29.0	Md	24.7	24.8	Md	55.1	53.6
Q1	20.9	24.0	Q1	17.3	22.0	Q1	40.5	45.7
Range	0-85	8.0-47.1	Range	0-60	12.6-35.6	Range	2-145	21.6-79.7
10%ile	13.1		10%ile	11.6		10%ile	28.4	
90%ile	53.7		90%ile	41.4		90%ile	89.7	

-----Medians, Fall, 1952

TABLE IV

DISTRIBUTIONS OF SCORES OF INDIVIDUAL STUDENTS AND MEDIAN SCORES OF INDIVIDUAL COLLEGES ON ORIENTATION TEST, FORM B, IN CLASSES WHERE LESS THAN 90 PER CENT OF THE STUDENTS TOOK THE TEST ON A VOLUNTARY BASIS, FALL, 1953

FIRST YEAR								
VERBAL			QUANTITATIVE			TOTAL		
Score	Scores of Individual Students	Medians of Individual Colleges	Score	Scores of Individual Students	Medians of Individual Colleges	Score	Scores of Individual Students	Medians of Individual Colleges
99-100								
96						160		
93						155		
90			60			150		
87			58	1		145		
84	1		56			140		
81			54	1		135	1	
78	1		52	3		130		
75			50	2		125		
72			48	4		120	1	
69	1		46	3		115	1	
66	2		44	4		110	2	
63			42	3		105	3	
60	6		40	4		100	4	
57	5		38	6		95	4	
54	6		36	7	1	90	4	
51	9	2	34	5		85	5	
48	7		32	8		80	9	1
45	5		30	15	2	75	12	1
42	7		28	7		70	12	
39	4		26	6		65	13	1
36	12	1	24	8	2	60	11	2
33	9		22	5		55	6	
30	10	2	20	8		50	6	
27	8		18	8		45	9	
24	11		16	12	1	40	11	
21	6		14	8		35	7	
18	8		12	2		30	5	1
15	6	1	10	3		25	5	
12	4		8	2		20	4	
9	5		6			15	4	
6	5		4	2		10	1	
3	1		2	3		5	1	
0-2	3		0-1	2		0-4	1	
Total	142	6	Total	142	6	Total	142	6
Q3	49.1		Q3	36.7		Q3	79.4	
Md	34.3	34.5	Md	28.6	28.0	Md	65.0	65.0
Q1	22.8		Q1	18.4		Q1	43.4	
Range	1-85	16.5-52.5	Range	0-58	17.5-36.5	Range	2-137	32.5-82.5
10%ile	12.2		10%ile	14.1		10%ile	28.2	
90%ile	58.1		90%ile	45.9		90%ile	97.3	

---Medians, Fall, 1952

TABLE V

DISTRIBUTIONS OF SCORES OF INDIVIDUAL STUDENTS AND MEDIAN SCORES
OF INDIVIDUAL COLLEGES ON ACHIEVEMENT TEST, LEVEL I, FORM A, IN
CLASSES WHERE THE TEST WAS REQUIRED OF ALL STUDENTS, FALL, 1953

F I R S T Y E A R		
Score	Scores of Individual Students	Medians of Individual Colleges
120		
117		
114		
111	1	
108		
105	1	
102	1	
99	3	
96	1	
93		
90	4	
87	11	
84	13	
81	7	1
78	10	
75	8	
72	13	1
69	8	
66	13	2
63	12	
60	9	
57	13	1
54	12	1
51	6	
48	13	1
45	9	
42	9	
39	6	1
36	3	
33	8	
30	5	
27	3	1
24	3	
21	6	
18	2	
15	1	
12	1	
9		
6		
3		
0-2	1	
Total	216	9
Q3	77.3	
Md	62.3	58.5
Q1	47.0	
Range	1-113	28.5-
10%ile	32.8	81.6
90%ile	87.1	

----Median, Fall, 1950

CORRELATIONS BETWEEN ORIENTATION AND ACHIEVEMENT TEST
SCORES AND GRADES IN CPA EXAMINATIONS -- INTERIM REPORT

by Robert Jacobs and Robert L. Kane, Jr.

A report of relationships between objective tests in accounting and CPA examinations was made by Kane and Traxler in the spring of 1951 based on a rather limited amount of data available at that time.¹ Although the results were encouraging, the authors concluded that additional studies based on larger groups would be necessary before generalizations could be made. The number of individuals taking the CPA examinations who have also taken the tests used in the College Accounting Testing Program has gradually increased, and a study of the accumulated data is now under way. The results of the follow-up study probably will be published as a second report in the 1954 spring bulletin. In the meantime, the results of a special study on the relationships between the two sets of tests are now available and can be published as an interim report. This special study is the subject of this short article.

Arrangements were made in the spring of 1953 with two CPA examining boards to administer the Orientation Test, Form A, and the Achievement Test, Level II, Short Form C, to the candidates reporting to these boards for examination in May. The two objective tests were given a short time after the administration of the CPA examinations which included the usual sections on auditing, law, accounting theory, and accounting practice. The two groups cooperating in this testing were drawn from the same general geographical area. Although the combined population of the two groups is of moderate size, the results are of particular interest in that the data were obtained under considerably more uniform conditions than could be established in the piecemeal gathering of the data which is necessary when college examinees are followed through to the point of sitting for the CPA examinations.

The correlations obtained between the various CPA examination grades and the various objective test scores are shown in Table VI.

Although the correlations vary considerably in magnitude, all of the r 's are positive. All of the correlations for Achievement Test, Level II-C are statistically significant when judged by the traditional criterion of being four times the probable error. Two of the correlations, accounting practice vs. II-C and average of the four CPA examination grades vs. II-C, are as large as frequently found with test re-test relationships using the same instrument. The lowest correlation for the Achievement Test is found with the law section of the CPA examination. This would be expected logically, since the content of the Level II test does not cover items of commercial law.

One will observe also that the Orientation Test part and total score correlations with the average CPA examination grade are statistically significant, even though only three of the twelve correlations for the separate sections are more than four times the probable error. This trend toward higher correlations for the average than for separate parts was to be observed in the initial study and was explained by the fact that the average CPA examination grade represents a broad measure of achievement rather than knowledge of some one aspect of the accounting field, thus relating more closely to the general measurement of mental ability in business situations provided by the Orientation Test.

¹Robert L. Kane, Jr. and Arthur E. Traxler, "Correlations Between Objective Tests in Accounting and CPA Examinations--A First Report," Results of the Spring, 1951 College Accounting Testing Program, pp. 27-33. The American Institute of Accountants College Accounting Testing Program. Bulletin No. 12. New York: Committee on Selection of Personnel, July, 1951.

TABLE VI

CORRELATIONS OF ORIENTATION AND ACHIEVEMENT TEST SCORES WITH GRADES
ON CPA EXAMINATIONS TAKEN BY TWO GROUPS OF CPA EXAMINATION CANDIDATES

CPA Examination	N	Achievement Test Level II, Form C		Orientation Test, Form A					
				Verbal		Quantitative		Total	
		<u>r</u>	P.E.	<u>r</u>	P.E.	<u>r</u>	P.E.	<u>r</u>	P.E.
Auditing	26	.59	± .086	.41	± .110	.27	± .123	.36	± .115
Law	27	.45	± .103	.52	± .095	.34	± .115	.50	± .098
Theory	28	.58	± .085	.21	± .122	.33	± .114	.24	± .121
Practice	28	.72	± .061	.29	± .117	.48	± .098	.41	± .106
Average of Auditing, Theory, and Practice	23	.67	± .078	.43	± .115	.39	± .120	.42	± .117
Average of Auditing, Law, Theory, and Practice	23	.72	± .068	.53	± .102	.47	± .111	.53	± .101

The separate CPA examination section correlations with Orientation Test scores seem to follow a somewhat different pattern from that which has been observed in other studies of the relationships between CPA examination grades and Orientation Test scores. In the Kane-Traxler study, as well as in follow-up studies as yet unpublished, the theory and practice sections of the examination show considerably more relationship with Orientation Test scores than does the law section. Correlations reported in Table VI reverse this pattern, with the present r's (except for practice vs. quantitative score) tending to run higher for the law section. This different pattern of relationships may be due partly to sampling variations, but probably it is also explained partly by differences in the CPA examination from year to year. Although the sections of the CPA examination are constructed with the same objectives in mind from year to year and although there is an attempt to incorporate uniformity and comparability into the make up of the test from year to year, the content of the test may vary from time to time so that the skills measured by the Orientation Test may be required in less degree with one examination than with another.

In general, these data are quite encouraging. They tend to support the favorable trends which could be drawn from the preliminary report, although the two sets of data were gathered in different ways. Evidence of significant relationship between scores on two separate tests administered at the same time tends to suggest that performance on one test could be predicted from performance on the other. If the correlations are high enough, the two separate tests might be used interchangeably. Actually, the degree of relationship found in this study between Level II-C scores and average CPA examination grades is high enough to indicate that for this particular group overall performance on the CPA examination could be predicted with some degree of accuracy from the Level II-C score.

The question of particular importance to colleges is, of course, the one dealt with in the first report; namely, can performance on the CPA examination be predicted with any degree of accuracy from the scores received on the objective tests taken in college? Further information relative to this question will be presented in the second report this spring. Other studies along the line of this brief report are planned.