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## College accounting testing program bulletin no. 12; Report of the spring, 1951, college accounting testing program

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THE AMERICAN INSTITUTE OF ACCOUNTANTS  
COLLEGE ACCOUNTING TESTING PROGRAM

Bulletin No. 12

REPORT OF THE SPRING, 1951,  
COLLEGE ACCOUNTING TESTING PROGRAM

Prepared by  
Committee on Selection of Personnel  
21 Audubon Avenue  
New York 32, N. Y.  
July, 1951

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Olympic Junior College  
University of Omaha  
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University of Tennessee  
University of Texas  
Agricultural and Mechanical College of Texas

Texas Christian University  
Tulane University of Louisiana  
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Villanova College

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Walla Walla College  
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Waynesburg College  
West Virginia State College

West Virginia University  
West Michigan College of Education  
Western Reserve University  
Wheaton College  
Wilkes College

College of William and Mary  
University of Wyoming, Northwest Center  
Xavier University  
Yuba College

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# I

## INTRODUCTION

This bulletin reports the results of tests administered by colleges participating in the fifth annual spring testing program sponsored by the Committee on Selection of Personnel for college students of accounting. It contains summary tables showing the combined distributions of scores for all participating colleges and more detailed tables in which the distributions of scores for the individual colleges are shown by means of code numbers.

The testing program consists of Orientation Tests, Achievement Tests, and an inventory of interests. All tests are made available for each program, although emphasis is placed on the Achievement Tests for spring use and on the Orientation Test for fall use.

The College Accounting Testing Program was begun in the fall of 1946, with participation by twenty-nine colleges. Up to the present program, participation has steadily increased, with each fall program including more colleges than the preceding one and each spring program showing a rise in number of cooperating colleges.

This spring the number of participating colleges was 185, as compared with 208 colleges in the spring, 1950, program. However, last spring's program included testing in March with the short form of the Level II Achievement Test for those colleges desiring to test seniors early for placement purposes. This year, in lieu of the March testing, a midyear testing program was held in January and early February. Fifty colleges took part in that program. The total number of different colleges participating in the 1951 midyear and spring programs was 195, a number a little smaller than the number of colleges in the spring, 1950, program, including those taking part in the early testing in March.

As was to be expected, in view of decreased college enrollments, there was a substantial decline in the number of tests used this spring as compared with last spring. Including early testing outside the dates of the spring program, but excluding the midyear program, the number of tests administered was as follows: Orientation Test, 4,734; Achievement Test, Level I, 6,916; Achievement Test, Level II, 3,502; Strong Vocational Interest Blank, 1,113; total, 16,265. Addition of the tests given in the midyear program brings the total number of tests administered since January, 1951, up to 18,448. The figure for the corresponding period in 1950 was 25,947.

Some colleges tested complete groups of accounting students, while others placed the tests on a voluntary basis. Where the testing was voluntary on the part of the students, there was a great deal of variation in the extent of participation. In certain colleges, most of the students voluntarily took the tests while in others only a small proportion of the student body participated. It is believed that the representativeness of the norms would be improved if a larger number of colleges would place the tests on a required basis.

Research on the reliability and validity of the tests carried on since the beginning of the project has given encouraging results, but continued research is needed and is being planned by the committee. In line with this need, a preliminary study of the relationship of scores on accounting tests taken in colleges with grades on CPA Examinations taken some years later is reported near the end of this bulletin. It is hoped that this report will be of interest to users of the accounting tests, even though a thorough appraisal of relationships between these tests and the CPA Examinations must await the accumulation of additional data.

## II

### SUMMARY OF RESULTS OF COLLEGE TESTING PROGRAM

Tables I through IV present distributions of the scores obtained by college students on the Achievement Tests and the Orientation Test administered in the spring, 1951, program. The figures at the bottom of each table show the medians, quartiles, tenth and ninetieth percentiles, and ranges of the scores. The vertical lines at the right of each distribution give a graphic indication of the interquartile ranges, with a short horizontal line showing the median.

Achievement Tests. A new form of the Achievement Test, Level I, was used this spring. Results on this form - Provisional Form C - are shown in Table I. Separate distributions for first-year, second-year, and third-year students are given. The possible scores on this test range from 0 to 135. The results for each of the three separate year-of-study groups cover almost the entire range of the test. The median score for second-year students is substantially higher than the first-year median - 60.5 as compared with 46.6. The difference between the second-year and third-year medians is much smaller, the median for third-year students being 65.4, only five score points above the second-year median.

The Achievement Tests used for senior students were Level II. Form A (the four-hour form) and Level II, Form D (the two-hour form). The results for both of these forms are shown in Table II. The median score on the long form for this program is just slightly below the median for the spring of 1949; the median on the short form is about five score points below the median for a year ago (spring 1950).

Orientation Test. Form B of the Orientation Test was used this spring. The results are shown in Tables III and IV. The dotted lines across the tables indicate the medians for the combined results of the 1947 and 1948 spring programs, in which the same form was used. The medians for this year are nearly all somewhat below the earlier results.

TABLE I

DISTRIBUTIONS OF TOTAL SCORES ON ACHIEVEMENT TEST,  
LEVEL I, PROVISIONAL FORM C

Score	First Year	Second Year	Third Year
135			
132			
129			
126			
123			
120			1
117	1	1	
114	5	2	
111	6	1	
108	8	8	2
105	14	6	2
102	17	14	1
99	28	13	4
96	22	13	1
93	43	20	6
90	55	30	7
87	57	21	5
84	56	27	2
81	66	27	6
78	100	34	3
75	108	37	10
70	103	42	15
69	121	33	10
66	138	46	6
63	155	42	13
60	144	36	15
57	200	41	11
54	190	44	5
51	196	36	6
48	210	54	8
45	220	45	6
42	206	32	3
39	231	34	6
36	216	35	3
33	226	24	1
30	215	22	2
27	190	24	3
24	168	15	
21	164	9	
18	119	12	3
15	96	6	
12	79	3	
9	43	5	1
6	38	1	
3	28		
0-2	15		
Total	4297	895	167
Q3	63.6	77.5	77.5
Md	46.6	60.5	65.4
Q1	31.9	45.1	53.9
Range	0-119	7-117	11-121
10 %ile	21.2	32.0	40.9
90 %ile	79.4	91.9	93.2

TABLE II

## DISTRIBUTIONS OF TOTAL SCORES ON ACHIEVEMENT TEST, LEVEL II

Form A (Long Form, Four-Hour Time Limit)		Form D (Short Form, Two-Hour Time Limit)	
Score	Seniors	Score	Seniors
150		100	1
147	1	98	4
144	1	96	5
141	3	94	2
138	6	92	9
135	6	90	18
132	13	88	12
129	17	86	19
126	18	84	18
123	11	82	16
120	21	80	20
117	24	78	29
114	30	76	34
111	25	74	36
108	32	72	40
105	32	70	33
102	38	68	31
99	33	66	43
96	42	64	42
93	42	62	44
90	46	60	55
87	28	58	51
84	28	56	46
81	29	54	46
78	30	52	28
75	28	50	53
72	33	48	57
69	31	46	39
66	27	44	38
63	28	42	38
60	25	40	33
57	20	38	32
54	18	36	37
51	14	34	42
48	15	32	25
45	8	30	39
42	8	28	32
39	9	26	25
36	11	24	32
33	7	22	20
30	4	20	24
27	3	18	18
24	3	16	14
21	1	14	11
18	3	12	17
15	1	10	8
12	1	8	7
9	1	6	7
6		4	7
3		2	
0-2		0-1	9
Total	855	Total	1346
Q3	107.5	Q3	67.6
Md	90.9	Md	52.6
Q1	69.7	Q1	36.0
Range	10-149	Range	0-100
10 %ile	53.3	10 %ile	23.3
90 %ile	121.6	90 %ile	79.3

----- Median, College Seniors, Spring 1949

----- Median, College Seniors, Spring 1950

TABLE III

## DISTRIBUTIONS OF PART SCORES ON ORIENTATION TEST, FORM B

Score	VERBAL				Score	QUANTITATIVE			
	1st Yr.	2nd Yr.	3rd Yr.	Senior		1st Yr.	2nd Yr.	3rd Yr.	Senior
99-100					30	3	1		5
96				1	29	6	1	4	17
93	1			2	28	10	1	5	22
90	1		2	2	27	10		2	7
87	3	1	3	10	26	32	6	7	46
84	8		1	9	25	35	7	8	36
81	7		1	24	24	52	8	4	41
78	18	2	1	16	23	51	14	8	55
75	15		1	27	22	45	3	5	35
72	25	5	7	43	21	76	8	6	49
69	41	5	9	42	20	85	7	8	51
66	42	3	8	58	19	104	10	8	54
63	57	7	6	52	18	113	13	5	47
60	60	8	3	46	17	104	7	5	52
57	76	6	4	62	16	125	8	5	50
54	93	5	7	58	15	131	7	9	49
51	90	8	8	47	14	148	19	5	41
48	100	16	5	71	13	135	5	5	31
45	130	10	8	54	12	128	11	2	27
42	125	14	10	52	11	133	7		27
39	149	10	7	36	10	120	2	4	17
36	161	10	5	34	9	111	5	1	16
33	157	18	3	26	8	111	2	2	11
30	157	6	4	14	7	76	2	3	8
27	103	7	1	10	6	78		1	3
24	124	8	2	3	5	30			4
21	102	2	2	3	4	26			4
18	84	2	2	2	3	17	1		
15	70	1	1	1	2	7			
12	50	1	1		1	6			
9	37				0	6			
6	15								
3	8								
0-2	5								
Total	2114	155	112	805	Total	2114	155	112	805
Q3	51.3	56.0	67.9	67.7	Q3	18.8	22.8	24.5	23.5
Md	38.7	44.7	52.9	56.6	Md	14.5	18.1	20.1	19.3
Q1	28.0	35.0	42.0	46.1	Q1	10.5	14.2	15.6	15.3
Range	0-93	12-87	13-92	17-96	Range	0-30	3-30	6-29	4-30
10%ile	18.9	27.6	31.7	37.9	10%ile	7.5	11.5	12.1	11.6
90%ile	63.3	66.5	74.1	76.2	90%ile	22.7	25.1	27.0	26.4

----Medians, combined spring programs, 1947 and 1948

TABLE IV

## DISTRIBUTIONS OF TOTAL SCORES ON ORIENTATION TEST, FORM B

Score	First Year	Second Year	Third Year	Seniors
128-130				2
124				1
120			1	4
116	3	1	1	4
112	2		5	15
108	6			24
104	13	1		27
100	11	1	2	38
96	21	3	4	37
92	32	3	11	55
88	38	5	6	61
84	50	10	4	56
80	69	10	7	56
76	67	7	5	66
72	108	8	11	67
68	118	8	9	67
64	115	8	6	70
60	138	22	10	51
56	127	12	7	32
52	161	14	3	29
48	170	11	6	18
44	183	9	2	10
40	160	8	5	10
36	126	6	4	2
32	117	5		1
28	95	1	1	2
24	69		2	
20	56	1		
16	27	1		
12	24			
8	8			
4				
0-3				
Total	2114	155	112	805
Q3	68.3	77.3	89.3	88.4
Md	52.5	61.7	72.4	74.6
Q1	40.2	50.8	58.9	62.6
Range	8-118	18-116	24-120	24-125
10%ile	29.2	40.8	43.4	53.1
90%ile	81.9	87.4	97.8	99.6

-----Medians, combined spring programs, 1947, 1948.

### III

#### RESULTS OF ACHIEVEMENT TESTS AND ORIENTATION TESTS IN INDIVIDUAL COLLEGES

The distributions of the total scores of the students in the participating colleges on the Achievement Tests and the Orientation Test are shown in Tables V through XIII. Distributions are identified by code numbers at the top of each distribution. Each college has been informed of its own code number. The same code number applies to a given college throughout the tables in the bulletin. In some cases, separate distributions of students in evening classes are given in these tables; such groups are designated by the letter E following the code number.

The raw score scale is given at the left and right of each table. The three broken lines running horizontally across the table indicate the seventy-fifth, fiftieth, and twenty-fifth percentiles for the distribution of scores for the total group.

The figures at the bottom of each column show the total number of students in the group, and the Q3, median, Q1, and range of the scores in that particular college. The median and the interquartile range are also shown graphically beside each distribution.

Results for groups consisting of fewer than five students have been excluded from these tables.













TABLE VII

DISTRIBUTIONS OF SCORES MADE ON ACHIEVEMENT TEST, LEVEL I, PROVISIONAL FORM C,  
BY THIRD-YEAR STUDENTS OF ACCOUNTING IN THIRTEEN COLLEGES

	40	73	26	110	99	72	84	9	63	92	111	109	67	
135														135
132														132
129														129
126														126
123														123
120					1									120
117														117
114														114
111														111
108														108
105	1				1									105
102		1												102
99	1									1				99
96											1			96
93	1				1	1	1	1						93
90	1	2	1	1							1			90
87			1	1	3									87
84				1										84
81	1			1	1					1	1			81
78								3				1		78
75	1	1	1	2				1	1		2			75
72	1	2		3	3		1		1		2			72
69	1		1		2	1		3	2					69
66			1	1			1	1					1	66
63				2	2	1	1	5			1			63
60			1	1	2			4	2	1	3	1		60
57		1		2	1	1		3	1		1	1		57
54			1	2	1				1					54
51					1	1			1		2		1	51
48					1		1	2			1		1	48
45					1			1			2			45
42					1						2	1		42
39				1	1					2	1			39
36											3	1		36
33									1					33
30											1	1	1	30
27					1		2							27
24														24
21														21
18				1	1								1	18
15														15
12														12
9														9
6														6
3														3
0-2														0-2
Total	8	7	7	19	25	5	7	24	9	5	24	6	5	Total
Q3				76.9	83.3			71.0			73.5			Q3
Md	87.0	76.5	70.5	67.5	65.3	64.5	64.5	64.2	62.3	61.5	55.5	51.0	49.5	Md
Q1				58.1	51.8			60.0			43.5			Q1
Range	70-106	59-104	56-90	18-92	20-121	51-93	27-93	46-94	35-75	40-100	31-96	30-79	19-66	Range













TABLE X  
DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM B, BY FIRST-YEAR STUDENTS OF ACCOUNTING IN FORTY-TWO COLLEGES

		149	129	32	5	52	150	40	151	31	117	100	94	29	152	3	11	98	102	85	23	51	137	153	16	77	34	84	107	75	108	154	66	54	68	79	120	30	105	64	86	71	81										
128-130																																												128-130									
124																																												124									
120																																												120									
116		1																																									1	116									
112																																												112									
108																																												108									
104		1																																									1	104									
100		1	1																																							1	1	100									
96				2																																						3	5	96									
92		5		2	1																																					5	4	92									
88		1		2		3	1																																				10	1	88								
84		1		3		1	1																																				14	1	84								
80		1	1	2	1	2	1																																			12	1	1	80								
76		1	1	3	1	4	1																																			8	1	1	76								
72		1	1	3	1	4	1																																			17	1	1	72								
68		1	1	3	1	4	1																																			17	1	1	68								
64		1	1	3	1	4	1																																			17	1	1	64								
60		1	1	3	1	4	1																																			17	1	1	60								
56		3	1	3		6	1																																			17	1	1	56								
52		2	2	3	1	6	1																																			13	1	1	52								
48				3		6	1																																			13	1	1	48								
44				3		6	1																																			13	1	1	44								
40				3		6	1																																			13	1	1	40								
36		1	1	5	1	4	1																																			8	1	1	36								
32		1	1	5	1	4	1																																			8	1	1	32								
28		1	1	5	1	4	1																																			8	1	1	28								
24				5		4																																				8			24								
20				5		4																																				8			20								
16				5		4																																				8			16								
12				5		4																																				8			12								
8				5		4																																				8			8								
4				5		4																																				8			4								
0-3				5		4																																				8			0-3								
Total	18	11	54	10	75	33	76	203	5	26	30	305	12	6	13	72	70	22	38	37	24	11	28	169	16	18	22	124	48	50	50	55	70	9	80	82	8	50	5	58	15	19	Total										
Q3	94.8		74.0		72.3		73.0	72.8		73.2		85.0	75.0		72.0		69.3	70.5		68.5		67.3		63.5	58.7		62.7	69.9		68.0		61.0		63.0	56.0		52.0		61.2	55.5		64.3	55.6	53.0		53.0		47.7	53.0		45.0	35.0	Q3
Md	88.0	74.0	64.7	64.0	62.4	62.0	61.4	61.0	61.0	60.0	60.0	58.8	58.0	58.0	58.0	57.0	56.0	54.0	54.0	54.0	54.0	54.0	53.7	52.9	52.0	46.7	46.0	45.5	45.0	44.0	43.2	42.0	42.0	42.0	42.0	42.0	41.8	41.1	40.0	39.6	38.0	36.6	34.0	25.5	Md								
Q1	66.0	53.0	53.0	49.2	53.3	48.8	49.1	43.0	43.0	49.5	46.2	48.0	44.4	45.2	45.0	37.0	48.0	44.4	45.2	45.0	37.0	48.0	46.0	41.2	45.3	38.0	23.0	35.1	33.1	33.5	32.9	31.8	32.4	31.2	29.6	31.2	29.6	32.5	32.5	26.8	23.5	21.8	Q1										
Range	37-118	39-102	17-94	35-92	24-105	30-108	14-101	24-106	44-93	24-117	23-107	12-109	35-87	36-70	10-84	28-98	18-98	25-80	29-92	22-97	27-94	30-93	33-82	11-111	31-86	18-75	10-83	15-91	14-96	15-89	13-89	13-105	10-74	18-77	8-86	10-99	25-114	15-86	27-59	13-89	12-56	16-57	Range										



**TABLE XI**  
**DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM B,**  
**BY SECOND-YEAR STUDENTS OF ACCOUNTING IN TEN COLLEGES**

	103	129	102	40	32	99	94	101	30	97	
128-130											128-130
124											124
120											120
116								1			116
112											112
108											108
104	1										104
100		1									100
96					1			1			96
92		1		1							92
88	1		1	2				1			88
84	1		3	2	1	1	1				84
80	1	2	1	1	2		1	1	1		80
76	-----	-----	-----	3	1	1	-----	1	-----	-----	76
72	1	1		3				1	1		72
68			2	2	2			2			68
64				2	1	2		1	1		64
60	-----	1	1	5	3	3	2	6	-----	-----	60
56	1		1	3		1		4		1	56
52	-----	-----	-----	2	1	1	2	4	1	2	52
48	-----	-----	2	1	2		1	1	2	1	48
44			1	1	1	1		3			44
40	1		1	1				3	1	1	40
36				1	2	1		1			36
32					2						32
28										1	28
24											24
20											20
16											16
12											12
8											8
0-3											0-3
<b>Total</b>	7	6	13	30	19	11	7	31	7	6	<b>Total</b>
<b>Q3</b>				78.0	77.0			68.5			<b>Q3</b>
<b>Md</b>	82.0	82.0	69.0	66.0	62.0	62.0	61.0	59.5	54.0	52.0	<b>Md</b>
<b>Q1</b>				58.0	47.0			51.0			<b>Q1</b>
<b>Range</b>	42-106	63-102	42-88	36-93	33-96	38-84	49-84	38-116	41-83	30-57	<b>Range</b>



TABLE XII

DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM B, BY THIRD-YEAR STUDENTS OF ACCOUNTING IN NINE COLLEGES

	155	94	103	40	61	51	30	99	111	
128-130										128-130
124										124
120								1		120
116										116
112		1			1			1		112
108										108
104										104
100	1		1							100
96				1	1					96
92	4	2	2				1	2		92
88	-----									88
84		1		1				1		84
80		2	1					3		80
76	1			2						76
72	-----									72
68		1	1	1		1	2	2		68
64	1		1			1	1	2		64
60			1	1	2			1	2	60
56	-----									56
52	2	1				1		2		52
48			1				1	2	1	48
44								1		44
40				1		1		1	1	40
36		1					1	2		36
32										32
28								1		28
24										24
20										20
16										16
12										12
8										8
4										4
0-3										0-3
Total	9	9	8	9	5	8	5	26	5	Total
Q3								82.0		Q3
Md	92.5	83.0	76.0	75.0	74.0	72.0	66.0	64.0	61.0	Md
Q1								50.0		Q1
Range	57-102	39-113	48-103	41-99	60-113	41-93	36-70	29-120	42-75	Range





TABLE XIII  
DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM B, BY SENIORS IN ACCOUNTING IN THIRTY-NINE COLLEGES

	117	101	69	40	129	32	114	156	120	27	118	142B	122	68	136	16	130	99	75	155	58	84	61	28	107	142	124	126	139	123	125	10	30	34	83	108	147	143	148											
128-130							1											1																												128-130				
124																											1																					124		
120																																																	120	
116			1								1				1				1																														116	
112											1				1				1												1																		112	
108	2	1			1			1		1					3				1		1				1		1																					108		
104	1					1	2	1	1	1					1		1				1					1		1																				104		
100		1	1			1	1	2		1	1	1			1	2	1				1																											100		
96	2		1		1		1		1	1				1	4		1				1					1				4																	96			
92														1						1																													92	
88						2	2	2	1		4	3	2	1	7	2	1	2	2	2				2	1		5				3																	88		
84		1	1			1	2	2	1	3	1	3	1	2	7	2	1	2	2	2				2	1		5				4																	84		
80				1		4	5	3	1	3	6	4	4		6	2	1	1		1																													80	
76		1	1	1		1	1	5	1	1	2	4	1		7	2	1	2	2	1																														76
72	1					1		2		4	4	2	1		4	2	2	4	2	2							3																						72	
68					2	6	1	3	1	2	3	1		2	6	2	1	2	4	1	1																													68
64				1		3	2	1	2	1	4	3	1		6	2	4	4	3	3																														64
60						2	1		2	4	3	3	1		5	1	2	3	3	1	1																													60
56	2			1		2			1		1	4	3	1	5	5	3	1	1	1																														56
52			2			1		1		1				1	2		1	1																																52
48						1									3			1	1	1																														48
44										1				1	2			3	1	1																														44
40					1						1				1	1																																		40
36												1																																						36
32																																																		32
28																																																		28
24																	1																																	24
20																																																		20
16																																																		16
12																																																		12
8																																																		8
4																																																		4
0-3																																																		0-3
Total	8	5	8	15	5	40	21	25	9	30	36	48	12	6	70	17	12	34	18	8	5	13	40	15	10	62	5	71	66	12	44	17	5	6	8	7	7	5	7						Total					
Q3				100.5		94.7	89.5	87.8		90.5	92.0	92.0			90.0	89.5		91.0	83.0				84.0	78.5		86.8		81.7	81.5		76.0	81.5															Q3			
Mid	98.0	98.0	92.0	91.0	90.0	83.0	82.0	82.0	82.0	81.3	80.7	80.0	80.0	80.0	79.4	77.0	76.0	74.0	74.0	74.0	74.0	73.0	72.7	72.7	72.0	70.5	70.0	69.1	68.8	68.0	64.0	63.6	62.0	60.0	56.0	55.0	54.0	51.0	46.0						Mid					
Q1				71.5		68.7	75.3	76.2		69.0	69.3	62.7			67.0	64.5		63.0	63.0	63.0	62.0		62.0	59.7		59.5		57.6	60.3		54.7	60.2															Q1			
Range	57-111	76-108	52-116	58-107	69-111	51-114	43-125	53-110	58-104	46-104	57-119	40-110	47-96	58-93	45-116	26-105	58-100	48-124	50-90	50-106	64-104	43-99	37-107	36-108	63-104	36-120	43-108	40-112	39-104	54-98	31-107	47-100	51-93	44-106	35-70	40-84	24-86	37-81	32-83					Range						



CORRELATIONS BETWEEN OBJECTIVE TESTS IN ACCOUNTING  
AND CPA EXAMINATIONS--A FIRST REPORT

by

Robert L. Kane, Jr. and Arthur E. Traxler

In order to appraise the value of tests, it is necessary to study the relationship of the test scores to criteria of success. Since no perfect criterion is ever available, a variety of criteria must be used if the evaluation of a test is to be thorough and dependable.

The validity of the tests used in the College and Professional Accounting Testing Programs has previously been studied through correlations of the test scores with grades obtained in college and with ratings of success after employment in accounting positions. Encouraging evidence of positive relationship has been found, although the results have, at the same time, served to warn users against depending upon the tests as the sole predictive agency.<sup>1</sup>

An especially important criterion of success in public accounting is ability to pass the CPA Examinations. At the beginning of the accounting testing project it was not possible to apply this criterion, since there were almost no individuals who had taken both the tests and the CPA Examinations. Now that the project has been in operation for about five years, a considerable number of men who took the accounting tests in college have recently sat for the CPA Examinations. The number of cases is not yet large enough to serve as the basis of a thorough study, but it is large enough for a preliminary study and a report of progress.

The purpose of the present paper is to report such a study based on the test scores and examination grades of persons who wrote the May, 1950, CPA Examinations.

The accounting tests used in this study are the Orientation Test and the Achievement Test, Level II. The Orientation Test is a test of mental ability based on vocabulary and reading materials drawn from the field of business and on arithmetic problems involving business situations. It yields a verbal score, a quantitative score, and a total score. This test, which exists in three forms, is suitable for use in any college year or with accounting employees, and norms are available at all levels.

The Achievement Test, Level II, is designed to sample the knowledge of accounting principles and procedures possessed by graduating college seniors majoring in accounting and by employed accountants. There are two four-hour forms of this test and two two-hour forms. Each of the four-hour forms contains a section on auditing, while the two-hour forms do not include a section of this kind.

All questions in the Orientation Test and Achievement Tests are of the objective type.

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<sup>1</sup>Fairly comprehensive summaries of data on the validity of the accounting tests are contained in the following articles: Arthur E. Traxler and Robert Jacobs, "Validity of Professional Aptitude Batteries: Tests for Accounting," Proceedings of the Invitation-  
al Conference on Testing Problems, October 28, 1950, pp. 13-29. Princeton, New Jersey: Educational Testing Service, 1951; Robert Jacobs, "The Relationship of Accounting Test Scores to Job Performance in the Field of Accounting," Results of the Fall, 1950, College Accounting Testing Program in Ninety-eight Colleges, pp. 21-32. The American Institute of Accountants College Accounting Testing Program. Bulletin No. 10. New York: Committee on Selection of Personnel, January, 1951.

The CPA Examinations consist of separate examinations in auditing, theory, problems, and law. The questions are of the essay and problem-solving type. They are graded on a percentage basis, with 75 as the passing mark. A candidate seldom passes all four examinations the first time that he takes them nor does he have to pass all four in order to obtain credit on those passed. In most states, candidates may obtain credit on the examinations passed, provided they are successful in two of the examinations, although they are commonly required to take all four. Consequently, candidates often thoroughly prepare for, and make every effort to pass, two of the examinations, but they make no serious effort at the other two since they know they may take them again at a later time. This variation in effort from individual to individual and from examination to examination tends to reduce the value of the CPA Examinations as a criterion with which to correlate the objective tests.

Even if difference in effort did not exist, very high correlations between the tests and the CPA Examinations could not be expected. In the first place, since many individuals do not take the CPA Examinations until they have had some actual experience in accounting work, there is often a considerable time interval between the taking of the accounting tests and the CPA Examinations. The interval may vary from a year or so to four or more years. Differences in time tend to lower the correlations.

A second condition tending to limit the size of the correlation coefficients is that obviously there are important differences in the content, organization, and scoring system for the two sets of examinations. It stands to reason that a rather wide-range achievement test could hardly yield results that would agree well with an examination covering a definite field, such as auditing or law.

A third limiting factor is difference in kind and amount of work experience in accounting on the part of the individuals in a group. Two men, at first equal in knowledge of accounting, may differ widely after a year or two as a result of difference in experience after employment.

It was felt, however, that, in general, there should be some positive correlation between the accounting test scores and the CPA Examination grades, and it was thought that the differences might be minimized to some extent by averaging three or four of the CPA Examinations and through choosing some groups with similar kinds and amounts of experience.

More than two hundred individuals were identified who had taken a portion or all of both sets of examinations. However, when the individuals were classified according to form of each test taken and according to CPA Examinations, each group thus selected was comparatively small. Notwithstanding the small size of the groups, the number of correlations computed with these data seems sufficient to indicate tendencies in the relationships between the tests and the CPA Examinations. The correlations are shown in three tables.

Table I shows for a group of twenty-five cases correlations between the scores on the Orientation Test taken in the senior year of college and grades on the various CPA Examinations. All persons in this group either had had experience in non-public accounting or had not had more than one year of public accounting experience. All eighteen correlations in the table are positive. They range from .25 to .53, with a median of .42. The verbal and quantitative parts of the test show about equal degrees of correlation with the CPA Examinations. The correlation of the total score on the Orientation Test with examination grades tends to be somewhat higher than the correlation of the score on either part of the test with examination grades.

TABLE I  
CORRELATION OF RAW SCORES ON ORIENTATION TESTS  
TAKEN BY COLLEGE SENIORS WITH GRADES ON  
CPA EXAMINATIONS TAKEN SOME YEARS LATER\*

Test	CPA Examination May, 1950		<u>r</u>	P.E.	N
Orientation A					
Verbal	vs.	Auditing	.41 ±	.112	25
Verbal	vs.	Theory	.37 ±	.116	25
Verbal	vs.	Problems	.39 ±	.114	25
Verbal	vs.	Law	.25 ±	.126	25
Verbal	vs.	Average of First Three	.43 ±	.110	25
Verbal	vs.	Average of All Four	.45 ±	.107	25
Quantitative	vs.	Auditing	.36 ±	.117	25
Quantitative	vs.	Theory	.28 ±	.124	25
Quantitative	vs.	Problems	.51 ±	.100	25
Quantitative	vs.	Law	.32 ±	.121	25
Quantitative	vs.	Average of First Three	.46 ±	.106	25
Quantitative	vs.	Average of All Four	.43 ±	.120	25
Total	vs.	Auditing	.43 ±	.110	25
Total	vs.	Theory	.28 ±	.124	25
Total	vs.	Problems	.52 ±	.098	25
Total	vs.	Law	.33 ±	.120	25
Total	vs.	Average of First Three	.55 ±	.094	25
Total	vs.	Average of All Four	.51 ±	.100	25

\*Group consisting of individuals with private accounting experience or not more than one year of public accounting experience.

In general, the correlations of the test scores with the averages of the CPA Examination grades are higher than the correlations with the individual CPA Examinations.

The highest correlation presented in Table I, .55, is between the Orientation Test total score and the average grade in auditing, theory, and problems. Since the Orientation Test provides a rather broad measurement of mental ability in business situations, it is to be expected that it would be somewhat more closely related to an average grade representing a fairly broad measure of achievement than with a grade indicating knowledge of some one aspect of the accounting field.

Several of the correlations reported in the first table may be regarded as statistically significant in that they are approximately four times the probable error, or, in a few instances, somewhat more than four times the probable error. The correlations which may be termed significant are those for verbal vs. auditing, verbal vs. average of first three CPA Examinations, verbal vs. average of all four; quantitative vs. problems, quantitative vs. average of first three, quantitative vs. average of all four; total vs. auditing, total vs. problems, total vs. average of first three CPA Examinations, and total vs. average of all four CPA Examinations.

These statistically significant correlations are in contrast to most of those reported in Table II, which shows correlations of scores on the Orientation Test taken in either the first or second year of college with CPA Examination grades. Of the thirty-six correlation coefficients given in this table, twenty-nine are positive and seven are negative. They range from  $-.33$  to  $.64$ , with a median of  $.21$ . They show a great deal of variation.

For the groups that took the Orientation Test during the first year of college, the correlations between the test scores and the auditing and theory examinations are comparatively substantial, but most of the other correlations for these groups are low. All the correlations for the groups that took the Orientation Test in the second year of study are quite low. There seems to be no logical reason for the fact that these correlations are lower than those resulting from the administration of the Orientation Test during the first year of the study of accounting in college. The difference may be due to lack of reliability in the rather small samples involved.

It will be observed that all the groups whose results were used in the correlations reported in Table II are small. The size of the different groups varies from ten to twenty-one cases. The small size of these groups made it impossible to subdivide them further on the basis of public accounting experience.

The fact that these groups were not differentiated according to amount of public accounting experience may have tended to reduce the correlations, although it is believed that the more important reason for the low correlations in this part of the study is the fact that the Orientation Tests were taken fairly early in the study of accounting so that differences in accounting study in college, as well as differences in experience, may have influenced the scores. Although the Orientation Test is designed as a test of mental ability, the scores are without doubt affected to some extent by training and experience.

As one would anticipate, the correlations between the Level II Achievement Test and CPA Examinations, as shown in Table III, are, in general, somewhat higher than those between the Orientation Test and examination grades. Those in which the scores on Form A are used are comparatively low, which is somewhat surprising since evidence from other studies has indicated that Form A is fully as good as the other forms. Several of the correlations between scores on the other forms and the examination grades are quite high for correlations between objective

TABLE II  
CORRELATION OF RAW SCORES ON ORIENTATION TESTS TAKEN BY  
FIRST AND SECOND YEAR ACCOUNTING STUDENTS IN COLLEGE WITH  
GRADES ON CPA EXAMINATIONS TAKEN SOME YEARS LATER\*

Test	CPA Examination May, 1950	$\bar{r}$ P.E.	$\underline{N}$
Orientation A (1st Year)			
Verbal	vs. Auditing	.34 ± .137	19
Verbal	vs. Theory	.64 ± .100	16
Verbal	vs. Problems	-.03 ± .147	21
Verbal	vs. Law	-.19 ± .181	13
Verbal	vs. Average of First Three	.29 ± .179	12
Verbal	vs. Average of All Four	.14 ± .191	12
Quantitative	vs. Auditing	.47 ± .121	19
Quantitative	vs. Theory	.38 ± .144	16
Quantitative	vs. Problems	.34 ± .130	21
Quantitative	vs. Law	-.33 ± .166	13
Quantitative	vs. Average of First Three	.24 ± .184	12
Quantitative	vs. Average of All Four	-.06 ± .194	12
Total	vs. Auditing	.46 ± .122	19
Total	vs. Theory	.62 ± .104	16
Total	vs. Problems	.08 ± .147	21
Total	vs. Law	-.30 ± .170	13
Total	vs. Average of First Three	.32 ± .175	12
Total	vs. Average of All Four	.11 ± .193	12
Orientation A (2nd Year)			
Verbal	vs. Auditing	.02 ± .174	15
Verbal	vs. Theory	.21 ± .204	10
Verbal	vs. Problems	.26 ± .168	14
Verbal	vs. Law	.10 ± .192	12
Verbal	vs. Average of First Three	.21 ± .204	10
Verbal	vs. Average of All Four	.21 ± .204	10
Quantitative	vs. Auditing	-.10 ± .173	15
Quantitative	vs. Theory	.26 ± .199	10
Quantitative	vs. Problems	.04 ± .180	14
Quantitative	vs. Law	.21 ± .186	12
Quantitative	vs. Average of First Three	.18 ± .207	10
Quantitative	vs. Average of All Four	.24 ± .201	10
Total	vs. Auditing	-.11 ± .172	15
Total	vs. Theory	.14 ± .209	10
Total	vs. Problems	.15 ± .176	14
Total	vs. Law	.06 ± .194	12
Total	vs. Average of First Three	.08 ± .212	10
Total	vs. Average of All Four	.12 ± .210	10

\*Groups not differentiated according to amount of experience.

tests and essay examinations when there is a considerable time interval between them. This is true particularly of the correlations for Form D and the averages of the CPA Examinations. It is also interesting to see that Forms B, C, and D are substantially correlated with the problems examination and that these correlations are in rather close agreement.

TABLE III  
CORRELATION OF RAW SCORES ON ACHIEVEMENT TEST,  
LEVEL II, TAKEN BY COLLEGE SENIORS WITH GRADES  
ON CPA EXAMINATIONS TAKEN SOME YEARS LATER\*

Achievement Test		CPA Examination May, 1950	$\bar{r}$	P.E.	N
Level II-A	vs.	Auditing	.19 ±	.157	17
Level II-A	vs.	Theory	.31 ±	.133	21
Level II-A	vs.	Problems	.18 ±	.124	28
Level II-A	vs.	Law	.11 ±	.172	15
Level II-B	vs.	Auditing	.20 ±	.115	32
Level II-B	vs.	Theory	.55 ±	.080	35
Level II-B	vs.	Problems	.65 ±	.066	35
Level II-B	vs.	Law	.15 ±	.120	30
Level II-C	vs.	Problems	.60 ±	.115	14
Level II-C	vs.	Law	.62 ±	.125	11
Level II-D	vs.	Auditing	.40 ±	.134	18
Level II-D	vs.	Theory	.43 ±	.130	18
Level II-D	vs.	Problems	.64 ±	.097	17
Level II-D	vs.	Law	.07 ±	.163	17
Level II-D	vs.	Average of First Three	.67 ±	.099	14
Level II-D	vs.	Average of All Four	.63 ±	.109	14

\*Groups not differentiated according to amount of public accounting experience.

A summary of the correlations of the objective tests with each type of CPA Examination may be of interest. Twelve correlations of the objective tests with the auditing examination and the theory examination and thirteen correlations of the objective tests with the problems examination and the law examination were computed. The ranges and medians of the correlations are as follows:

Tests	Range	Median
Objective Tests vs. Auditing Examination	-.10 to .47	.35
Objective Tests vs. Theory Examination	.14 to .64	.34
Objective Tests vs. Problems Examination	-.03 to .65	.34
Objective Tests vs. Law Examination	-.33 to .62	.11



Thus, it appears that when the correlations are considered without regard to type of objective tests, the correlations of the first three kinds of CPA Examinations with the objective tests are of rather similar magnitude, while the correlations between the law examination and the objective tests tend to be somewhat lower.

When separate distributions of the correlations for the Orientation Test and the Achievement Test were made, the medians of the correlations were as follows:

<u>Test</u>	<u>Median</u>
Orientation Test vs. Auditing Examination	.36
Orientation Test vs. Theory Examination	.28
Orientation Test vs. Problems Examination	.26
Orientation Test vs. Law Examination	.10
Achievement Test vs. Auditing Examination	.20
Achievement Test vs. Theory Examination	.43
Achievement Test vs. Problems Examination	.62
Achievement Test vs. Law Examination	.13

It will be observed that the Orientation Test shows somewhat higher correlation with the auditing examination than with the other CPA Examinations, whereas the Level II Achievement Test seems to be considerably more closely related to problems and theory than to auditing and law.

Although none of the correlations found in this preliminary study are high enough to suggest that CPA Examination grades can be predicted accurately from scores on accounting tests taken in college, they do indicate that there is enough relationship to render the test scores useful as one kind of information needed for predictive purposes. In order to make a thorough assessment of the value of the accounting tests for this program, more data are needed, especially with regard to relationships between test scores and average CPA Examination grades for groups including individuals with comparable amounts of public accounting experience. It is planned to carry on a follow-up study as soon as sufficient additional data become available.