

A COMPARATIVE STUDY OF COLLEGE FRESHMEN WITH DIFFERENT INTEREST AREAS*

E. LEE HOFFMAN and DEAN H. STEPHENS
University of Oklahoma, Norman

This study is concerned with the question as to whether differences exist among students who, on entering the University of Oklahoma, indicate an interest area at the time of enrollment and students who do not. All students are given the opportunity to designate a field of interest around which the major academic work is planned. If the student does not have a specific objective at the outset of his college career he may enroll as a general student. This procedure places the students into two broad categories hereafter referred to as *majors* and *nonmajors*. The majors are further divided according to specific interest areas which are grouped together in college areas.

PRESENT EVIDENCE

Problem. Certain aspects of the problem are revealed by the following questions which were raised concerning the two groups. 1. Are there differences in placement-test results? 2. Are there differences in grades or achievement? 3. Are there differences in interests as measured by the Strong (1935) *Vocational Interest Test*? 4. Are there age or sex differences? 5. Are there differences between veterans and nonveterans?

Method. Records obtained for 806 freshmen matriculating in September 1945 were punched into International Business Machine cards for mechanical tabulation. Individual grade averages and placement-test results were punched into the cards. The grades of the students were the result of their first-semester work in the 1945-1946 school term. Grades were averaged on a per-hour basis for all students enrolled in ten hours or more, excluding physical education and military science, by assigning to the letter grades numerical values ranging from four points for "A" to zero for an "E," "F," or "WF."

As the study progressed it seemed feasible to investigate some of the problems further. Information was gathered on 1787 freshmen who entered school the following September. This information was likewise punched into IBM cards. Placement-test results and grade averages were included in this information. Achievement ratios (Du Bois 1939) were computed using the *Ohio State Psychological Examination* scores and the grade-point averages. The grade results and the OSPE results were converted into standard scores and the former divided by the latter to obtain the achievement ratio.

Results. The results of the 1945 placement tests are entered in deciles in Table I. Table II contains the September-1946 placement-test results in the form of raw scores. They are averaged for majors in each college area, total majors, and nonmajors (Steed 1927). Table III lists the differences between the means obtained by the majors and the nonmajors on the September-1946 placement tests. The null hypothesis that the population mean difference is zero was tested for each of the eight parts of the placement-test battery. It was refuted for the *Iowa Highschool Content English Test* with the nonmajors scoring significantly higher than the majors. The majors scored significantly higher than the nonmajors on the *Iowa Highschool Science Test* and the *Oklahoma University Math Test*.

Grade averages for the various colleges are listed in Table IV. The average for all students involved in the 1945-1947 group is 2.07 with a standard deviation of 0.83. Grades correlated 0.52 with OSPE results. There are no

*This study was conducted under the supervision of M. O. Wilson, Chairman of the Department of Psychology and Councilman for General Students in the University College at the University.

TABLE I

Decile results for placement tests given in September 1945

	No. of students	OSPE	Vocab.	Reading rate	Reading compre.	Social science	Phys. science	Sentence structure	Grammar	Punct.	English totals
Liberal arts	96	5	7	7	6	7	6	6	6	6	6
Business	68	4	5	5	5	6	5	6	6	6	4
Education	10	3	4	5	3	5	5	5	4	5	4
Engineering	128	4	5	5	6	5	7	6	5	5	4
Fine arts	91	4	5	6	5	5	5	6	6	6	6
Pharmacy	13	5	6	6	5	5	6	6	6	6	5
Science	125	4	5	6	5	6	6	6	5	6	5
General	152	4	6	6	5	5	6	6	6	6	6

TABLE II

Raw-score results for placement tests given in September 1946

	No. of students	OSPE total	OSPE pt. 3	IHS English	IHS math.	IHS science	IHS history	IHS totals	OU math.
Liberal arts	205	84.6	33.1	59.5	34.9	37.5	58.7	190.5	24.4
Business	281	73.5	29.6	53.6	34.0	35.6	54.7	176.8	24.8
Education	11	69.8	29.3	50.0	24.4	32.4	47.3	154.0	20.0
Engineering	658	78.0	32.2	54.3	39.8	40.7	54.9	189.6	29.2
Fine arts	104	80.9	31.1	58.9	30.7	33.0	53.7	176.1	20.0
Pharmacy	66	70.8	29.5	50.0	30.9	35.3	50.1	166.2	21.8
Science	321	77.5	31.7	56.0	35.0	39.3	55.8	186.1	24.7
General	115	79.7	31.8	58.0	34.2	35.9	53.4	181.2	22.8
All majors	1672	77.7	31.5	56.1	36.0	38.3	55.0	184.1	26.0

TABLE III

Significance of differences on placement tests given September 1946

	Majors	Nonmajors	Difference	SD of diff.	Critical ratio
OSPE total	77.7	79.7	2.0	2.39	.837
OSPE reading	31.5	31.8	0.3	0.28	1.083
IHS English	55.1	58.0	2.9	1.24	2.339*
IHS math.	36.0	34.2	1.8	1.09	1.651
IHS science	38.3	35.9	2.4	1.01	2.376*
IHS history	55.0	53.4	1.6	1.27	1.260
IHS total	184.1	181.2	2.9	3.78	0.767
OU math.	26.0	22.8	3.2	1.04	3.076*

*Significant at 0.05 level

*Significant at 0.01 level

differences between the grade averages for the major and nonmajor groups. The difference between the grade average for fine arts and that for nonmajors is significant at the 0.05 level of confidence, which is the only significant difference from the nonmajor grade average.

The charts in Fig. 1 were prepared to indicate the similarity of interests as measured by the Strong Vocational Interest Blank, Form M, for the major and nonmajor groups (Strong 1941). The Blank was scored for six broad

TABLE IV

Grade averages and achievement ratios for Freshmen entering in September 1946

	No. of students	Grade averages	Achiev. ratios
Liberal arts	205	2.18	97.3
Business	281	1.99	101.7
Education	11	2.10	107.8
Engineering	658	2.04	99.2
Fine arts	104	2.33	103.7
Pharmacy	66	1.98	103.8
Science	321	2.06	100.2
Total majors	1646	2.07	100.1
Nonmajors	115	2.07	98.6

occupational areas. Area I is composed of occupations calling for technical skills in the arts-and-science field. Area II is composed of occupations which are related to the physical sciences. Social-service work is a typical occupation for Area V. Business and detail work are representative of Area VIII, while occupations requiring an interest in persuasive or exploitive activities are found in Area IX. Area X consists of occupations which are concerned with verbal skills. A simplified procedure described by Dunlap (1940) was used in scoring the blanks. This procedure makes it possible to use the same form for both men and women.

The age differences of the two groups are shown graphically in Fig. 2. The major group has a proportionately larger percentage in the 16-17- and the 22-26-year age brackets, while the nonmajor group was proportionately stronger in the 18-21-year age bracket.

Table V lists the totals for the major and nonmajor groups separated according to sex. Classifying data in dichotomy as has been done makes possible the use of tetrachoric correlation to examine the data. $R_1 = 0.75$ is

	A	B+	B	B-	C+	C	
A1	18	23	21	19	11	8	M
	18	24	23	18	10	7	N
A2	6	5	7	11	11	60	
	3	6	4	8	11	68	
A5	25		19	22	15	12	7
	29		17	20	15	14	5
A7	19	19	20	20	10	12	M
	16	16	26	21	12	9	N
A9	49			20	15	9	4
	55			15	15	9	4
A10	31	22	19	16	8	4	M
	41	20	21	11	5	2	N

Fig. 1. Results of the Strong Vocational Interest Test. Legend: M, major; N, nonmajor; A 1, Area I; A 2, Area II; etc.

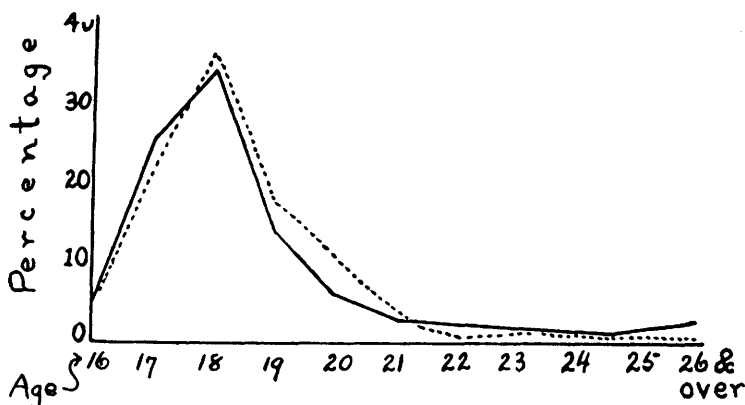


Fig. 2. Comparison of majors and nonmajors as to age. Solid curve represents majors; broken line, nonmajors.

the coefficient of correlation of the normal surface which fits the data of Table V. The males and the females have a difference between proportions as to major or nonmajor which is significant at the 0.01 level of confidence for this group.

TABLE V

Sex differences

Sex	Major	Nonmajor	Total
Male	1444	67	1511
Female	238	48	276
Total	1672	115	1787

Table VI lists the totals for the two groups classified as veterans and nonveterans. The difference between the proportions of veterans and nonveterans who selected majors is significant at the 0.01 level.

TABLE VI

Differences between veterans and nonveterans

Status	Major	Nonmajor	Total
Veteran	1062	52	1114
Nonveteran	610	63	673
Total	1672	115	1787

CONCLUSIONS

For the particular group tested, those indicating majors scored significantly higher on the science and O. U. mathematics sections of the placement test. (Over one-third of the majors selected engineering as their area of interest. The presence of this group in the majors undoubtedly had some effect on the placement-test results obtained by the majors.) Interest-age status is possibly casual rather than causal for any placement-test results obtained by the nonmajors.

There are no differences in grade averages for the two groups, but the individuals in the nonmajor group were found to be underachievers, i. e., their grades were not as high as the estimate of their grades made from OSPE results.

The individuals in the different colleges vary in achievement, owing either to the fact that grading is on a different basis or to the fact that actual achievement is accomplished above ability (as measured by the OSPE score).

Since a relatively high percentage of older students, males, and veterans enter college with their major interests already determined, it might be predicted that a larger proportion of nonmajors will prevail after the present influx of veterans has passed.

The two groups follow similar patterns of interests as measured by the *Strong Vocational Interest Test*.

In general, there are no apparent losses incurred by failing to select a major area of interest upon entering college. It seems that there should be no special concern over the student who elects to wait a semester or two before designating a major.

LITERATURE CITED

- Du Bois, P. H. 1939. Achievement ratios of college students. *J. Educ. Psych.* 30: 699-702.
- Dunlap, J. W. 1940. Simplification of the scoring of the *Strong Vocational Interest Blank*. *Psych. Bull.* 37: 450.
- Steed, J. B. 1927. Comparative scholastic success of department major groups. M. S. thesis, Univ. Okla. (Unpublished.)
- Strong, E. K., Jr. 1935. Predictive value of the vocational interest test. *J. Educ. Psych.* 26: 331-349.
- Strong, E. K., Jr. 1941. *Manual for Vocational Interest Blank for Men*. Stanford University (Calif.): Stanford University Press.