

ACADEMIC ACHIEVEMENT AND SATISFACTION AMONG  
SCHOOL OF AGRICULTURE FRESHMEN

by

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## INTRODUCTION<sup>1</sup>

In recent years, business and industrial organizations have been greatly concerned with the assessment of employee attitudes, the establishment of relationships between employee attitudes and employee performance, and investigation of the factors associated with various employee attitudes and especially job satisfaction. A great mass of specific findings and a few tentative generalizations have emerged from the efforts of investigators in business and industry, and the methods for appraising employee attitudes have become well-established, Viteles (15).

Turning to academic institutions, it is apparent that there has been very little research interest in the attitudes of students toward their college and university experience, to the relationships between student attitudes and student achievement, or in studying the factors which may be associated with student satisfaction. College campuses abound in such discussions among staff and students, but there is very little firm evidence regarding these matters.

Thus, it seemed to be of some interest to apply the methods of business and industrial personnel research to the academic environment with the student in the role of the employee. Although the findings of such investigations would be of intrinsic interest they might also contribute positive or negative support to the generalizations which are beginning to emerge from industrial psychology regarding attitudes and their correlates.

### Review of the Literature

In industry, there has been an attempt to associate employee morale or

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<sup>1</sup>This investigation was conducted with the support of the Agricultural Experiment Station, Kansas State College, Dr. Glen Beck, Director, as a part of Project #406.

job satisfaction with production. Blum (3) reported a number of studies which attempted to determine this relationship. He reported theoretical evidence that there was a strong relationship between morale and productivity; however, two practical studies reported show no such relationship existing. One study of 43,962 employees showed no correlation whatsoever between morale and productivity. A second study found a very slight relationship between these two measures. There was a notion that morale of a department may be reflected by certain types of group performance.

Brayfield and Crockett (4) reported a number of studies which attempted to determine the relationship between job satisfaction and production. A study of 231 women office workers yielded a correlation of .138 between satisfaction scores and supervisors' job performance ratings. When controlled for the influence of job level, correlations ranged from  $-.06$  to  $+.13$  for five groups. A sixth group of 33 inexperienced and untrained girls showed a correlation of .387. A study of 55 apprentice plumbers in Oakland, California, showed a relationship of .203 between job satisfaction and foremen's or employers' production ratings. Fifty farmers enrolled four hours per week in a Veterans' on-job training program were rated on performance by their instructors and when this rating was compared with ratings of job satisfaction, a correlation of .115 was obtained. When the proficiency ratings of 109 Air Force control tower operators were correlated with individual proficiency ratings the relationship between the two variables was .005. A similar result was obtained for 190 male IBM operators. The correlation coefficient was .08. A study of 9,353 life insurance salesmen showed an insignificant relationship between job satisfaction and amount of insurance sold. Another study reported concerning insurance agents rated these agents on sales volume for their first year on the job. When correlated with job satisfaction, the 223

correlated .26 and a correlation of .23 was obtained when supervisors' ratings and satisfaction were compared.

Probably the most carefully done study which was reported had to do with 94 teenage female retail salesclerks. Two measures of satisfaction were used: (1) attitude toward departmental assignment, merchandise assignment, relations with fellow salesgirls, relations with customers, relations with supervisors, and working conditions; (2) a single multiple-response item asking, "How do you REALLY feel toward your job?" These two indices of satisfaction correlated .53 with each other. The girls were then rated on their performance by four experienced and specially trained shoppers. The clerks were rated on their "selling attitudes" and "selling skills." The inter-correlation of these two measures was .76.

The composite job satisfaction score correlated  $-.07$  with the attitudes criterion and  $-.03$  with the skill criterion. The single item job satisfaction index correlated .15 and .06, respectively. None of these were significant.

The final study reported which associated the two variables of job satisfaction and production involved 880 aircraft workers. Four measures of attitude were utilized. These attitude scales measured group morale, acceptance of formal organization, supervisor satisfaction, and work group satisfaction. The performance criterion was the average weighted score of a graphic rating scale with five dimensions of adaptability, dependability, job knowledge, quality and quantity.

The correlations between the four attitude measures and the performance criterion ranged from .02 to .05.

It is of interest to note that in only two of the studies reported were significant correlations found. These were, however, too small to be of practical use.

Further studies have been reported which have attempted to discern an association between job satisfaction and employment stability. Viteles (15) reported a study of 722 employees in five widely scattered plants of a confectionary manufacturing company. The employees completed a questionnaire which obtained their reactions toward 28 items pertaining to the employee's job. When compared with age, the measure showed that employees under 20 years of age had relatively high morale; those between 20 and 29 years of age had relatively low morale; and morale rose again with each successive group beyond 30 years of age. Similar results were obtained in the comparison of length-of-service groups. Morale was found to be highest among employees with less than two years of service; the level of morale fell consistently with increased length of service, with a slight upturn occurring among employees with ten and more years of service.

A second study reported findings from plant-wide samplings of rank-and-file manufacturing employees showing a statistically significant relationship between length of service and over-all attitudes toward the company, in that employees on a job five years or more have higher average attitude scores than those on a job from one to four years.

From the preceding studies which attempted to discover the relationship between morale and longevity, Viteles (15) p. 278, as a conclusion of one of the studies, made the following statement:

...the decrease in morale following the first few years of service is probably a process of disillusionment involved in the average worker's adjustment to the job. On the other hand, employees who remain on the payroll for more than five or ten years are a selected group, having survived the constant process of elimination through dismissal or resignation. If they are of outstanding ability, that ability may have been recognized. Those who have not advanced have accepted the fact that there is not room at the top for all and have resigned themselves to their fate, a fate which does not seem so bad after all.

Brayfield and Crockett (4) reported four studies which endeavored to determine the relationship between morale and employment stability. In one study, 1,200 insurance agents completed two attitude questionnaires, one composed of 18 indirect items and one consisting of 10 direct items. Total scores of each of the questionnaires were related to survival during a one-year period. The direct method correlated insignificantly at the 1 percent level; the indirect method correlated insignificantly with survival. There was, however, some bias resulting from the fact that an extremely small number of men, who later terminated, responded.

A second study reported correlated total Tear Ballot job satisfaction scores from 98 miscellaneous wage earners with an index of self-reported past job tenure (number of years on labor market divided by number of employers). The result was .25, significant at the 5 percent level. A third study correlated a total score on two Hopcock-type items with employee reports of previous job tenure. The obtained correlation was .09. The final study reported was an attempt to measure employee attitudes using an incomplete sentence technique. Four scales were labeled Working Situation, Work, Self, Leisure. The study was done on women office workers from one company with "N's" ranging from 38 to 70. When the four attitude scales were related to a criterion of employment stability (two or more years with each employer versus less than two years with each employer) the biserial correlations were .43, .53, .37, and .22, respectively. All were significant at the 4 percent level or better.

These results are all interesting; however, the statement reported above by Viteles (15) seems to apply here as well.

Because of the small relationships found in industry, it might be assumed that there is no possible way to validate job satisfaction. However, there is

a possibility that attempting to do so is a use of the wrong criterion, as Blum, (3) p. 156, so aptly states:

It is hazardous to expect to validate job satisfaction by correlating it with such external and possibly arbitrary criteria as termination or production. The Term "unseasonable sweetness" may be used to explain the naive approach of expecting all "good" things to go together.

Job satisfaction is an individual phenomenon and is measured by ascertaining certain attitudes. Whether it correlates with certain assumed or stated criteria depends upon a host of realistic factors but does not depend upon assumed expectations. Possibly job satisfaction will correlate with an integrated combination of such factors as termination, production, and many similar ones, but only in the way these factors have meaning to the individual.

A related problem is to determine the relationships between job satisfaction and general morale or attitude toward life.

The attempt to discover relationships between job satisfaction and general morale has provided small but positive relationships between attitude toward the job and attitude toward life in general. Since most studies have utilized different measures to assess each trait, Brayfield and Wells (5) made a very positive step to ascertain possible differences between scales. In this study, the Brayfield-Rothe Job Satisfaction Index and the SRA Employee Inventory were chosen to assess job satisfaction. The former is an over-all measure using general items and the latter is a summation of responses to specific job situations as content items.

The two measures used to index general satisfaction or attitude toward life were the Rundquist-Sletto Morale Scale and the Weitz Test of General Satisfaction.

The four instruments were administered to 41 male and 52 female city civil service employees who were employed in three departments of the city government. All were in office-type occupations. The men were predominantly

in higher level classifications, which entail independent judgment and carry higher salaries. The women were generally clerks. The men were generally in their forties, and the women in their thirties.

The materials were administered by the writers to four groups of approximately 25 each. Anonymity of the responses was stressed, although identification by job classification and department was obtained.

The split-half reliabilities for the four measures were all very substantial. Inter-correlations among the four measures were obtained and it was found that the two measures of job satisfaction correlated .20 for women and .40 for men. Correlation between the two general satisfaction indices was .57 in the male population and .43 among the females. The job satisfaction scales were not significantly correlated among the women; however, it was significant when the men were considered. The general satisfaction scales were significant in both cases.

In order to determine the relationship between job satisfaction and general satisfaction, all four measures were inter-correlated. These correlations were found to be significant in all cases in the male population. The Rundquist-Sletto correlated .50 with the Brayfield-Rothe, and .67 with the SRA. The correlations obtained with the Weitz were .32 with Brayfield-Rothe and .68 with SRA. The female population did not yield significant correlations in any of the cases. This finding would lead to the tentative conclusion that job satisfaction and general satisfaction are positively related among males in comparable work situations with the magnitude of the relationship dependent upon the particular measures used. The three other studies which they report in their review of the literature showed correlations ranging from .25 to .39.

The cause for no significant relationships among the female subjects was hypothesized to be partially attributable to the restricted range of score for the females on the four measures. The standard deviation reported showed the women to be more homogeneous than the men. A second hypothesis made by the authors was that work is a less important factor in the lives of men than it is for women. Evidence which was found to support this was that women were somewhat more likely to say their job did not give them a chance to work off their emotions, that it was not exciting, that it was nothing more than a way to make a living, and that they did not have to work for a living.

In conclusion, the authors found a positive and significant relationship between job satisfaction and general satisfaction in the male population.

Only three studies have been found which attempt to predict satisfaction from measures of personal attributes. Strong (14) mailed satisfaction rating scales to a number of men who had been originally tested on the Strong Vocational Interest Blank while college students and then retested 18 years later. Scale 1 assessed the respondent's satisfaction with his occupational career. Scale 3 measured the satisfaction with the present position.

An "N" of 655 was obtained and tetrachoric correlations between test interest scores and Scales 1 and 3 were, respectively, .23 and .30; with re-test scores, .38 and .39. All correlations were significant at the .01 level.

Viteles (15) reported that in a railroad study which compared the high and low production groups, those groups who most frequently expressed satisfaction with content of work were those in a low producing section. Another study reported by Viteles showed a positive relationship between scores on the Strong Vocational Interest Blank and job satisfaction in a group of clerical workers.

Berdie's (1) study presents a great deal of interesting findings in relationships of Curriculum Satisfaction. In an attempt to predict Curriculum Satisfaction, Berdie administered an adaptation of the front page of Hoppock's Job Satisfaction Blank to 154 engineering students. Scores for these students were available on the following: high school grades; American Council on Education Examination; Cooperative English Test; Cooperative Mathematics Test; Cooperative Chemistry Test; Revised Minnesota Paper Form Board; Minnesota Vocational Test for Clerical Workers; Honor Point Ratios for the first year of college. Correlations were computed between the predictive indices, Honor Point Ratio, and Curriculum Satisfaction. Each of the measures of ability and scholastic achievement had a significant correlation with Honor Point Ratio. The best predictor of grades was high school percentile rank, which correlated .56. The same index correlated .23 with Curriculum Satisfaction. None of the other measures were related to Curriculum Satisfaction.

Further analysis of the data was made to determine the relationship between Honor Point Ratio and Curriculum Satisfaction. These two measures correlated .23. Inspection of the blanks revealed that total scores of 18 or below indicated dissatisfaction with the curriculum, scores of 25 or above indicated satisfaction. These points were approximately one standard deviation below and above the mean. When cases having Curriculum Satisfaction scores of 18 and below were compared with those having scores of 25 and above, the dissatisfied group had a mean Honor Point Ratio of .89, the satisfied group a mean Honor Point Ratio of 1.33. The "t" test was significant beyond the one percent level of probability.

The Engineer key of the Strong Vocational Interest Blank correlated .10 with Curriculum Satisfaction and .13 with Honor Point Ratio.

Scores on the Masculinity-Femininity and Occupational Level Scales of the Strong were available for 43 of the students, who were divided into four groups: those with a primary interest pattern in the engineering fields, those with a secondary interest here, those with a tertiary interest pattern, and those with no interest pattern in engineering.

Analysis of variance revealed that no significant differences existed between these groups on the basis of Honor Point Ratio or high school percentile rank. The groups differed significantly, however, on the basis of the Curriculum Satisfaction score, that group having no pattern being significantly less satisfied than the groups having interest patterns in engineering.

The group was then divided into two sub-groups, one having only scientific interests, the other with scientific interests and other interests. The two sub-groups did not differ on any of the measures, which would indicate that the presence of two conflicting measured interest patterns does not appear to interfere with achievement or influence Curriculum Satisfaction.

The correlation between Masculinity-Femininity and Honor Point Ratio and Curriculum Satisfaction, and between Occupational Level scores and these two variables was determined for the 43 cases. Masculinity-Femininity and Honor Point Ratio correlated .14, and with Curriculum Satisfaction the correlation was .07. Occupational Level correlated with Honor Point Ratio and Curriculum Satisfaction .03 and .01, respectively. None of these were significantly different from zero.

The final major study which has been related to morale or job satisfaction as applied to the academic situation is Roy's (11) construction of a College Satisfaction Index.

The College Satisfaction Index, composed of ten sub-scales, was administered to 890 male and female students at the University of Michigan. Ages

ranged from 16 to over 22. It should be noted that the Index was standardized during World War II and, therefore, a proportionate number of females were in the population. No attempt was made to obtain a sample which was proportionate to class or curriculum.

In order to facilitate computation and the making of comparisons between the sub-scales, a 22.5 percent sample of the total tested population was chosen. The sample was selected by eliminating those papers which did not have the blanks for all ten sub-scales filled out properly. The final sample is known as the "200" sample.

The "200" sample was found to be very similar to the total group in regard to age distribution; however, a greater proportion of men were in the sample than were in the total group.

The split-half reliabilities obtained by Roy ranged from .77 to .93 for the ten scales. In terms of reliability the scales seem to be reasonably accurate. As has been discussed above, the attempt to validate job satisfaction blanks in industry has proven unsatisfactory; therefore, Roy accepted "face validity" as being the only practicable measure in the type of measurement.

The degree of satisfaction was calculated for each of the sub-tests and an analysis of differences for age, sex, and class in school was obtained.

Older students were found to be more satisfied with their curriculum, professional counseling, and faculty advising than were the younger students. None of these differences were significant. Conversely, younger students were better satisfied with social life, which was not significant. There was a significant difference in that the younger students were more satisfied with their living quarters than were the older students.

The freshmen were found to be more satisfied with instructors (a significant difference), social life, professional counseling, and university health service. The sophomores were not found to obtain higher satisfaction scores than the freshmen in any of the ten areas.

A difference between the sexes was found in only three of the sub-scales. The males were found to be slightly more satisfied with the university health service than were the females, while the women were significantly more satisfied with the opportunities for cultural development than were the men. There was also a slight tendency for the women to obtain a higher satisfaction score than the men when the over-all institution was considered.

In an attempt to discover the effect of scholastic aptitude upon the various measures of satisfaction, Roy deduced that only two of his scales were related significantly to scores obtained on the American Council on Education Examination. These two scales were Instructor Satisfaction and Over-all Institutional Satisfaction, which had contingency coefficients of .20 and .45, respectively.

Honor Point Ratio was found to be significantly related only to Curriculum Satisfaction. This correlation was .29.

All of the above studies have found a great deal of difficulty in determining the effects of morale or job satisfaction on production (in the industrial situation) or in the academic situation, to ascertain the relationships between College Satisfaction or Curriculum Satisfaction and Academic Achievement. A possible cause of the difficulty in these earlier studies is that not enough areas were being explored. In the main, only one measure of satisfaction or morale has been employed.

### Statement of the Problem

The first two objectives of this study were primarily descriptive in nature, as follows:

1. Determine the status of a group of School of Agriculture second semester freshmen with respect to their Curricular Satisfaction, over-all College Satisfaction, over-all Institutional Satisfaction, and their satisfaction with Life in General.

2. Describe this same group with reference to its status on measures of scholastic aptitude and ability, interests, personality, and study habits and attitudes.

The major portion of the study was concerned with the following two problems:

3. Examine the inter-relationships among a) the measures of satisfaction, and b) the measures of satisfaction and Academic Achievement.

4. Compare the predictive value of the various objective indices of aptitude and ability, interest, personality, and study habits and attitudes by relating them to Academic Achievement and satisfaction, respectively.

### METHOD

#### Subjects

The subjects of this investigation were 135 male freshmen enrolled in the School of Agriculture at Kansas State College during 1955-56. This group represented practically all of the entering freshmen in the fall semester who survived through the second semester of their freshman year.

More than 40 percent of this group was enrolled in General Agriculture; almost a quarter of them were in Agricultural Education. The large enrollment in General Agriculture includes those students planning to major in a variety of specializations, and who spend their first two years in the general curriculum before declaring their majors.

Only 13-1/2 percent were twenty years of age or older. Their vocational goals, which they stated with a considerable degree of certainty, were farming or related occupations in approximately 75 percent of the cases. Most of them were farm-reared boys as indicated by their statement of their fathers' occupations.

A detailed breakdown of these characteristics is given in Table 1.

#### Materials

Measures of Satisfaction. The primary concern in this investigation, with respect to satisfaction with college experiences, was to assess Curricular Satisfaction. From the standpoint of an institution of higher learning, the curriculum is the focal point of its program. It follows that it would be useful to teachers, counselors, and administrators to have the fullest possible knowledge of the factors associated with Curricular Satisfaction. Such knowledge is dependent upon the availability of a criterion measure of Curricular Satisfaction.

Curricular Satisfaction has been assessed in two prior investigations. Berdie (1) adapted the Hoppock Job Satisfaction Blank to obtain an index of

Table 1. Characteristics of 135 male agriculture students.

	Number	Percentage
<u>Curriculum</u>		
General Agriculture	56	41.5
Technical Agronomy	6	4.4
Agriculture Education	32	23.7
Agriculture Administration	7	5.2
Dairy Manufacturing	3	2.2
Landscape Design	1	.7
Horticulture	3	2.2
Flour and Feed Milling	17	12.6
Animal Husbandry	10	4.7
<u>Age</u>		
17 years	15	11.1
18 years	91	67.3
19 years	11	8.1
20 years	1	.7
21 years	4	1.5
22 years	3	2.2
23 years	4	2.9
24 years	3	2.2
25 years	2	1.5
26 years	1	.7
<u>Vocational Goal</u>		
Farming	45	33.3
Related to Agriculture	55	40.7
Not related to Agriculture	10	4.7
Don't know	25	18.5
<u>Certainty of Vocational Goal</u>		
Very certain	35	25.9
Quite certain	68	50.4
Quite uncertain	20	14.8
Very uncertain	12	8.9
<u>Father's Occupation</u>		
Farming	100	74.1
Related to Agriculture	11	8.1
Not related to Agriculture	21	15.6
Don't know	3	2.2

Curriculum Satisfaction for 144 engineering students in the first study of this nature. A subsequent study by Roy (11) used the same measure. This revised attitude questionnaire consists of four items, each of which has seven statements from among which the respondent is to select one which most nearly expresses the way he feels. In each item, a value of seven is assigned to the most extreme positive statement and a value of one is assigned to the most extreme negative statement; the intermediate values are assigned in accordance with this pattern so that the possible score for each item ranges from one through seven. The statements were not scaled in any formal manner. The total score for the questionnaire is the sum of the scores for the four items and ranges from 4 through 28 with the neutral or indifference point at 16.

The items attempt to evoke a general set toward the curriculum; that is, they do not consider specific aspects of the curriculum.

Several changes were made in the wording of Item 4 in the Berdie and Roy questionnaire to improve the clarity of expression. The resulting questionnaire was used as the measure of Curricular Satisfaction.

Inspection of the inter-correlations among the four items of the Curriculum Satisfaction scale suggests a fair degree of communality. Berdie's results for his engineering male students are shown in Table 2.

Comparable data from the present investigation are given in Table 3. They are substantially in line with Berdie's findings.

The Curriculum Satisfaction measure appears to meet minimum reliability requirements. The corrected split-half reliability coefficients obtained by Berdie and Roy were .87 and .82, respectively. In the present study, the similar coefficient was .82.

Table 2. Inter-correlations between the four items of the Curriculum Satisfaction blank (1, p. 241).

Items	:	2	:	3	:	4
1		.58		.53		.37
2		--		.83		.41
3				--		.63
Median inter-correlation: .555						

Table 3. Inter-correlations among the four-part scores of the Curriculum Satisfaction measure.

	:	Item						
	:	1	:	2	:	3	:	4
1		--		.65		.56		.57
2				--		.52		.66
3						--		.51
Median inter-correlation: .565								

A secondary interest was the assessment of Over-all College Satisfaction apart from satisfaction with the curriculum. That is, items relevant to a range of college experiences might be included in an inventory of College Satisfaction. It was possible to make an adaptation of Roy's College Satisfaction Index (11) for this purpose.

The items for Roy's scale were selected from lists of grievances of students enrolled in the University of Minnesota. The grievances were obtained from student "gripe sessions," grievances brought to the attention of the Dean

of Students, and from short themes written by members of a class in "How to Study" which was taught by the author. A tabulation of the grievances was made to determine general areas which would give a broad view of the complaints. After a preliminary form was tried out, the list was altered to include ten general areas. The ten areas decided upon were:

- I. Satisfaction with the curriculum.
- II. Satisfaction with the instructors you have had in the university.
- III. Satisfaction with extra-curricular activities and social life.
- IV. Satisfaction with professional counseling.
- V. Satisfaction with faculty advising.
- VI. Satisfaction with opportunities for cultural development.
- VII. Satisfaction with pre-professional or professional curriculum.
- VIII. Satisfaction with the university health service.
- IX. Satisfaction with living quarters.
- X. Satisfaction with the university in general.

The items in each area were of a rather broad nature; this was the same approach used by Hoppock (8). Each area was composed of four items. Each item contained seven statements scored on a seven-step scale. A value of 1 was assigned to the phrase indicating the greatest amount of dissatisfaction, a value of 2 was assigned to the phrase indicating the next greatest amount of dissatisfaction, and so on up the scale to an assignment of a value of 7 to the phrase indicating the most satisfaction.

In the present study, changes were made in the areas to be included in the College Satisfaction measure. Area I, curriculum, was considered separately in this study as indicated earlier. Roy's Areas IV and VIII were eliminated from the present study as it was felt that the students at Kansas State had not utilized these two areas as much as had been done at Minnesota. Therefore, there would be a number of unanswered satisfaction questions. Roy's Area X, satisfaction with the university in general, was eliminated from the College Satisfaction inventory since a separate measure of Over-all Institutional Satisfaction was to be used. Finally, an area of Academic

Administration Satisfaction was added. This was an area which Roy had discarded from his original College Satisfaction Blank. The areas measured in this study, then, numbered seven as follows:

- I. Satisfaction with the instructors you have had in the college.
- II. Satisfaction with faculty advising.
- III. Satisfaction with academic administration.
- IV. Satisfaction with extra-curricular activities and social life.
- V. Satisfaction with opportunities for cultural development.
- VI. Satisfaction with professional training.
- VII. Satisfaction with living quarters.

The seven areas used in the present study were each composed of two items as compared to four used by Roy. Items which called for the subjects to compare themselves with others and, usually, the items which required the subject to estimate the amount of time satisfied with one of the areas were discarded. The method of scoring each item was identical with Roy's scoring system. The scores for the seven areas were totaled to give an over-all measure of College Satisfaction. This total score was, of course, exclusive of Curricular Satisfaction, although it did include two items on professional training.

It is of interest to examine the inter-correlations among the sub-scales of the College Satisfaction blank. For comparative purposes, Roy's data are presented in Table 4. These inter-correlations are for the nine specific area scales. The nine scales apparently are measuring different aspects of College Satisfaction.

The findings from the present study are included in Table 5. Both the part score inter-correlations and the correlations with the total score are given.

There appears to be somewhat more communality among these measures than was found by Roy. That such a composite may have some utility as an over-all measure is demonstrated by Roy's finding that the total score from his nine

Table 4. Inter-correlations between nine scales of the College Satisfaction Index (11).

	: II :	: III :	: IV :	: V :	: VI :	: VII :	: VIII :	: IX :
I. Curriculum	.14	.26	.18	.30	.18	.46	.17	.01
II. Instructors		.27	.18	.23	.16	.23	.26	.04
III. Social Life			.12	.17	.21	.32	.26	.25
IV. Professional Counseling				.20	.06	.16	.17	.04
V. Faculty Counseling					.09	.17	.11	.04
VI. Cultural Development						.29	.15	.17
VII. Professional Curriculum							.22	.11
VIII. Health Svc.								.16
IX. Living Quarters								--
	Median inter-correlation: .17							

Table 5. Inter-correlations among the part and total scores of the College Satisfaction measure.

	: Instr. :	: Adv. :	: Admin. :	: Soc. :	: Cult. :	: Prof T. :	: Res. :	: Total :
Instructor	--	.18	.33	.14	.17	.31	.19	.44
Advisor		--	.23	.21	.36	.33	.18	.53
Administration			--	.27	.33	.35	.35	.59
Social				--	.50	.31	.52	.68
Cultural					--	.38	.36	.66
Professional Training						--	.34	.64
Residence							--	.69
	Median inter-correlation: .33							
	Median correlation with total: .64							

sub-scales correlated .60 with his Area X, satisfaction with the university in general. Although he did not report a reliability for the total score for the nine parts it can roughly be estimated to be perhaps .90. The reliability

for Area X is .72. Using these reliabilities, the obtained  $r$ . of .60 between the two measures corrects to .72. It is interesting also to note that the Curriculum Satisfaction scale correlated .34 with Roy's Area X. These data seem to indicate that there is sufficient justification for considering the total score on the seven parts of the present College Satisfaction blank to be a crude but useful measure of over-all satisfaction.

Roy's reliability studies for his sub-scales yielded split-half corrected coefficients ranging from .77 to .93 with a modal correlation of .83. He reports no reliability coefficients for the total score on his Index.

The odd-even reliability for the total score on the College Satisfaction blank used in this study was .79 which corrected to .83.

An attempt also was made to derive a measure of Over-all Institutional Satisfaction patterned somewhat after Roy's Area X scale, but using only two items, only one of which was similar in content to any of the four items used by Roy. However, this two-item measure was discarded since the split-half reliability was only .24, corrected to .39.

As an integral part of this investigation it was desired to examine the relationship between General Satisfaction with life and the more specific measures of College Satisfaction described above. The measure chosen to index General Satisfaction or attitude toward life was the Morale scale of the Rundquist-Sletto Survey of Opinions (12).

The Survey of Opinions was developed to assess the effects of the depression on the personality and family life of young persons; the Morale Scale was one of the six variables measured. The 22 items of the Morale scale were selected after extensive item analyses of a large pool of items thought to be indicative of "morale." The items were worded in impersonal terms to carry

little emotional tone. That is, an attempt was made to obtain a response based on personal feelings without sharply focusing the attention of the individual on his personal problems. In this sense the items deal with generalities rather than specific, personal matters.

According to the authors,

Morale is by definition an exceedingly generalized trait. The word connotes zeal, hope, confidence in oneself and in what the future will bring.....there are symptoms commonly assured to be present when one's morale is poor; distrust of people, the feeling that no one is friendly, and the belief that life is not worth living. All of these are tapped by the present scale. Some items have a very specific reference to the future.....i.e., the future looks very black. Others directly imply discouragement.....i.e., there is really no point in living. Still others approach the problem indirectly.....i.e., most people can be trusted. Such items were called from a study of case histories of those whose morale was presumed to have been shattered by depression effects. (12, p. 201)

The method of scoring as utilized by Rundquist and Sletto was the Likert technique of scale values. It was scored by giving the response at one end of the scale an arbitrary weight of 1, the next phrase 2, and so on up to 5. Whether the strongly agree or the strongly disagree response is assigned the weight of 1 was determined on the basis of judgment which is objectively checked by applying the test of internal consistency. The important consideration is not whether one decides that a low or high score shall indicate good morale, but whether one is consistent in assigning the values from item to item. According to the authors, anyone who works with this method soon discovers that it is a simple matter to assign the values consistently. Below are two statements from the morale scale, together with the score assigned to each response. In this scale a high score indicates poor morale.

THE FUTURE LOOKS VERY BLACK - Strongly Agree (5) Agree (4) Undecided (3)  
Disagree (2) Strongly Disagree (1)

IT DOES NOT TAKE LONG TO GET OVER FEELING GLOOMY - Strongly Agree (1)  
Agree (2) Undecided (3) Disagree (4) Strongly Disagree (5)

The method of scoring the blanks completed by the Kansas State College Agriculture Freshmen differed from the above in that the weightings were reversed so that a high score indicated good morale.

The reliability of the scale was studied by various methods by the test authors and it was found to have a split-half reliability, corrected by the Spearman-Brown formula, of .79. In the present study, a split-half reliability determined from the satisfaction blanks completed by the Agriculture Freshmen yielded a correlation of .82, corrected by the Spearman-Brown formula to .90. The blank was determined to be a reliable measure of General Satisfaction.

The evidence for the validity of the scale comes from a variety of rather fragmentary sources. For example, scores are related to employment, unemployment, separation of parents, and occupational security. It yielded the highest inter-correlations with the other scales in the survey which were designed to assess inferiority feelings, family adjustment, respect for law, economic conservatism, and attitude toward the value of education. This finding argues for its persuasiveness. It is also of interest that it correlated around .60 in several groups with Hall's Scale for Measuring Occupational Morale, when the three items common to both were removed from the Rundquist-Sletto Morale Scale.

Measures of Academic Achievement. The criterion used for Academic Achievement was the Grade Point Average for two continuous semesters in residence at Kansas State College. The Grade Point Average at Kansas State College is computed by dividing the total grade points received for two semesters' work by the total number of credit hours completed. These grade points are assigned for each hour of credit at the grade of A, two for the grade of B,

one for the grade of C, zero for each grade of D, and minus one for each grade of failure.

It was found that the mean Grade Point Average of the 135 students involved in this study was 1.12. The number and percentage of students receiving various Grade Point Averages can be found in Table 6.

Table 6. Number and percentage of 135 Agriculture Freshmen receiving various Grade Point Averages for first semester.

Grade Point Average	Number	Percentage
-.50 to -.99	4	2.9
.00 to .49	20	14.8
.50 to .99	31	22.9
1.00 to 1.49	42	31.1
1.50 to 1.99	24	17.7
2.00 to 2.49	12	8.8
2.50 to 2.99	2	1.4
Total	135	

Measures of Personal Characteristics or Attributes. A major portion of this study was devoted to a determination of the factors related to Academic Achievement and to satisfaction. The factors chosen for investigation were scholastic aptitude, ability, interest, personality, and study habits and attitudes. The specific measures of these factors are described below.

In order to have measures of scholastic aptitude, reading and English skills in the study, the test scores for the ACE Psychological Examination, 1952 Edition, and Cooperative English Test, Form Y, were obtained from the Student Counseling Center. The ACE provides a total score representing general scholastic aptitude. The Cooperative English Test, Form Y, is divided into tests of expression and tests of reading comprehension. The expression

test yields a score for Mechanics of Expression. The Reading Comprehension Test, which is a part of the Cooperative English Test, Form Y, provides three sub-test scores: (1) Vocabulary Score, (2) Speed of Reading Score and, (3) Level of Comprehension Score.

The Iowa Test #6 - Ability to Interpret Reading Materials in the Natural Sciences was included in the test battery to determine the students' ability to think competently about scientific matters. The test is not designed to measure the student's score of scientific knowledge but rather how well he can use this knowledge in interpreting what he reads about scientific matters in the world today (10). From the evidence of previous studies, an ability of this nature appears relevant to success in agriculture curricula.

The measure of vocational interest selected was the Strong Vocational Interest Blank for Men. The Strong test determines whether an individual has interests similar to persons successfully engaged in a given occupation. It apparently measures one aspect of motivation (Strong, 13). It contains scales for 44 different occupations and three special scales.

The occupational scales that were selected for this study were: Physician, Veterinarian, Physicist, Engineer, Production Manager, Farmer, Vocational Agriculture Teacher, Forest Service Man, Y.M.C.A. Secretary, Musician, Office Man, Life Insurance Salesman and Lawyer. The scales Farmer, Veterinarian, Vocational Agriculture Teacher and Forest Service Man were chosen due to their evident relationship to the field of agriculture. The remaining scales were subjectively chosen, each as a representative of one of the eleven occupational groups. The choice was made primarily on the basis of choosing the scale in each occupational group which had the highest inter-correlation with the remaining scales in the group among a sample of 285 college seniors described by Strong (13). The three non-occupational scales,

Interest Maturity, Occupational Level, and Masculinity-Femininity were also included.

The California Psychological Inventory was selected to provide personality data for the study. It was chosen in preference to other measures of personality and motivation because of the apparent relevance of some of its scales to the variables involved in Academic Achievement. Gough (6) p. 1, author of the Inventory, states:

The California Psychological Inventory was created in the hope of attaining two goals of personality assessment. The first goal, largely theoretical in nature, has been to use, and to develop, descriptive concepts which possess broad personal and social relevance. Many of the standard personality tests and assessment devices designed for use in special settings, such as the psychiatric clinic, or have been constructed so as to apply to a particular kind of problem, such as vocational choice. The present endeavor has been concerned with characteristics of personality which have a wide and pervasive applicability in reference to human behavior, and which in addition, are related to the favorable and positive aspects of personality rather than to the morbid and pathological.

The second goal for the CPI has been the practical one of devising brief, accurate and dependable sub-scales for the identification and measurement of the variable chosen for inclusion in the inventory. A further consideration has been that the instrument may be convenient and easy to use, and suitable for large scale application.

The test is printed in booklets of 472 True-False items and contains 18 standard scales plus additional experimental special scales.

Three scales attempt to check on the validity or honesty of the responses which a person gives on the test. The Infrequency (In) scale indicates carelessness or falsification in answering. The Good Impression (Gi) scale attempts to identify persons capable of creating a favorable impression and the Dissimulation (Ds) scale attempts to identify persons tending to exaggerate their problems.

The other fifteen scales seek to assess directly some personality trait. One additional special scale, College Attendance (Cl) which was designed to

differentiate between high school students who go on to college and those who do not, was included in this study.

The remaining scales and their purposes as taken from the Preliminary Guide for the Use and Interpretation of the California Psychological Inventory (r, pp. 3,4), are as follows:

<u>Name of Scale</u>	<u>Purpose</u>
1. Re (social responsibility)	To identify persons who will be seen by others as responsible and dependable.
2. To (tolerance)	To identify persons with permissive, accepting, and tolerant social beliefs and attitudes.
3. Fl (flexibility)	To indicate the degree of flexibility and adaptability of a person's thinking and social behavior.
4. St (social status)	To serve as an index or prediction of actual or potential social status. The scale attempts to measure some of the personal qualities which are usually correlated with status, but it is not in itself, a direct measure of status.
5. Do (dominance)	To assess factors of leadership ability, dominance, and social initiative.
6. Sp (social participation)	To identify persons of outgoing, sociable, participative temperament.
7. Fe (femininity)	To assess the masculinity or femininity of interests. High scores are indicative of feminine interests.
8. De (delinquency)	To indicate the potentiality for delinquent, troublesome behavior, and the tendency to rebel against authority and convention.
9. Ie (intellectual efficiency)	To indicate the degree of personal and intellectual efficiency which the subject has attained.
10. Ac (academic achievement)	To identify those factors of interest and motivation which facilitate academic achievement at the high school level.

- |                                 |  |
|---------------------------------|--|
| 11. Hr (honor point ratio)      | To identify those factors of interest and motivation which facilitate scholastic achievement at the college undergraduate level.     |
| 12. Py (psychological interest) | To measure the similarity of a person's interests to those of advanced students and professional workers in the field of psychology. |
| 13. Sr (social presence)        | To assess factors such as poise, spontaneity, and self-confidence in personal and social interaction.                                |
| 14. Im (impulsivity)            | To assess factors such as impulsivity, self-centeredness, and lack of self-discipline in personal and social interaction.            |
| 15. Sa (self-acceptance)        | To assess factors such as sense of personal worth, self-acceptance and capacity for independent thinking and action.                 |

The reliability data for the California Psychological Inventory were collected by the test author using the test-retest method on a group of 256 high school students. The reliability coefficients obtained ranged from .60 to .77 with the exception of two scales. The author qualified this happening by stating:

All of the reliability coefficients are high enough to indicate that the scales may be taken as dependable measures, with two possible exceptions, the psychological interests scale, and the infrequency scale. The psychological factor may account for its tendency to fluctuate overtime. For the infrequency scale an adequate index of reliability is especially hard to derive because of the distribution of scores it yields. Almost everyone gets a score of zero, one, two, or three, with only a very few subjects scoring higher. This means that even the slightest chance fluctuation in answering (one or two questions) can lead to a great displacement in one's position in the total distribution of scores (6, p. 10).

Gough (6) has done extensive work in validating the various scales in the Inventory. The validity of most of the scales was determined by correlating them with ratings of the individuals tested. However, such scales as Intellectual Efficiency, Academic Achievement and Honor Point Ratio have been correlated against objective criteria. Intellectual Efficiency correlated

.49 with a standard test of intelligence in a sample of 461 high school students. Academic Achievement correlated .41 with high school grades for 1,138 girls, and .40 with grades for 867 boys. Honor Point Ratio correlated .38 with college grades in a sample of 917 students.

More detailed information as to the validity and reliability of the California Psychological Inventory can be found in the reference cited.

The Brown-Holtzman Survey of Study Habits and Attitudes was chosen as a suitable measure of study habits, motivation and attitude toward scholastic activities. According to the Manual (Brown-Holtzman, 2) the purposes of this measure are: a) to identify students whose study habits differ from students who earn high grades, b) to aid in understanding students with academic difficulties, and c) to provide a basis for helping such students to improve their study habits and attitudes and to more fully realize their best potentialities.

The Survey of Study Habits and Attitudes has met sufficient standards to establish its reliability and validity as a research tool. The numerous studies reported in the Manual (2) indicate that it has proved to be an effective predictor of Academic Achievement, if answered honestly and frankly. It is assumed that these conditions prevailed during its administration in this study. Also, the Survey's correlation with the ACE Psychological Examination is low enough to indicate it is measuring factors other than mental ability.

Collection of Data. In the fall of the school year 1955-56 the following tests were administered to all entering freshmen in the School of Agriculture: Iowa Test of Educational Development #6 - Ability to Interpret Reading Materials in the Natural Sciences, Strong Vocational Interest Test, California Psychological Inventory, Brown-Holtzman Survey of Study Habits and Attitudes. In addition, the scores on the American Council on Education Psychological Examination, 1952 Edition, Cooperative English Test, Form Y,

and the Cooperative Reading Test were obtained from the Student Counseling Center. The tests were administered in two sessions by staff members of the Student Counseling Center.

Near the completion of the spring semester of the school year 1955-56, male students enrolled in the School of Agriculture completed the satisfaction blank. This was done in two groups. There were 64 students tested under supervision of the Student Counseling Center staff, and 74 (those who failed to report for the group testing) were tested under supervision of the staff of the School of Agriculture. The Chi square test was run on all items to discover any possible difference in the two groups. This is presented in Table 7.

Table 7. Chi square analysis of two groups on three measures of satisfaction.

Satisfaction	:	$\chi^2$
Curricular	:	1.73
College	:	9.40*
General	:	3.46

\* Significant at .05 level.

The data of Table 7 show a significant difference between the two groups only in the measurement of College Satisfaction. An inspection of the satisfaction blanks showed that those who filled out the blank under supervision of the staff of the School of Agriculture were more satisfied with regard to College Satisfaction than were those who completed the blank under supervision of the Student Counseling Center staff. Although the difference was not significant, there is some evidence, from inspection, of the effect of differential administration upon General Satisfaction scores. With regard to Curricular Satisfaction, no differences were found. Figures 1, 2 and 3

graphically show the relationship between the cumulative percentage curves of the two groups. The ogives of these curves were fitted by sight and not by a mathematical formula.

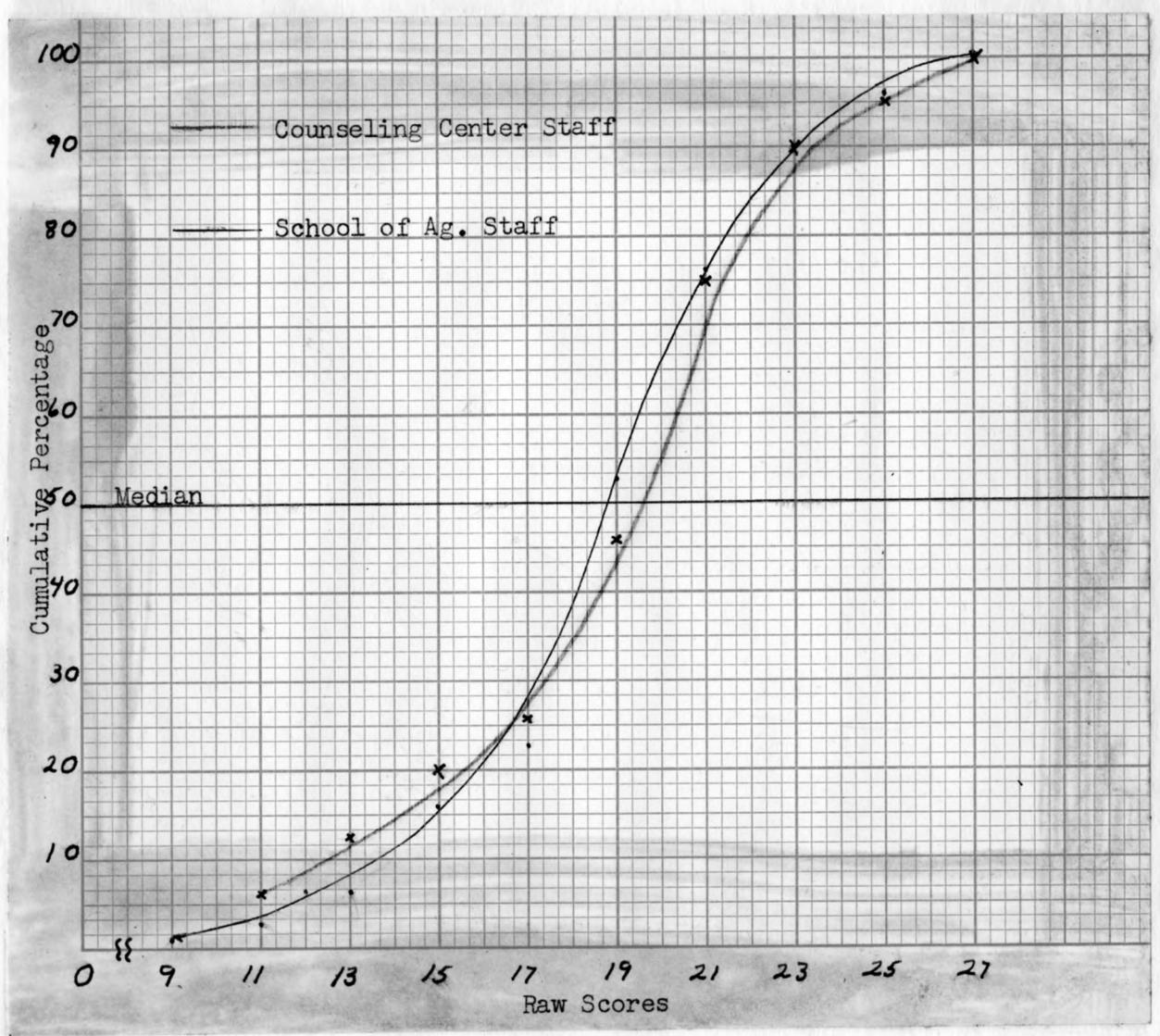


Fig. 1. Cumulative percentage of Curricular Satisfaction scores of Agriculture Freshmen tested under supervision of the Student Counseling Center staff, and those tested under supervision of the staff of the School of Agriculture.

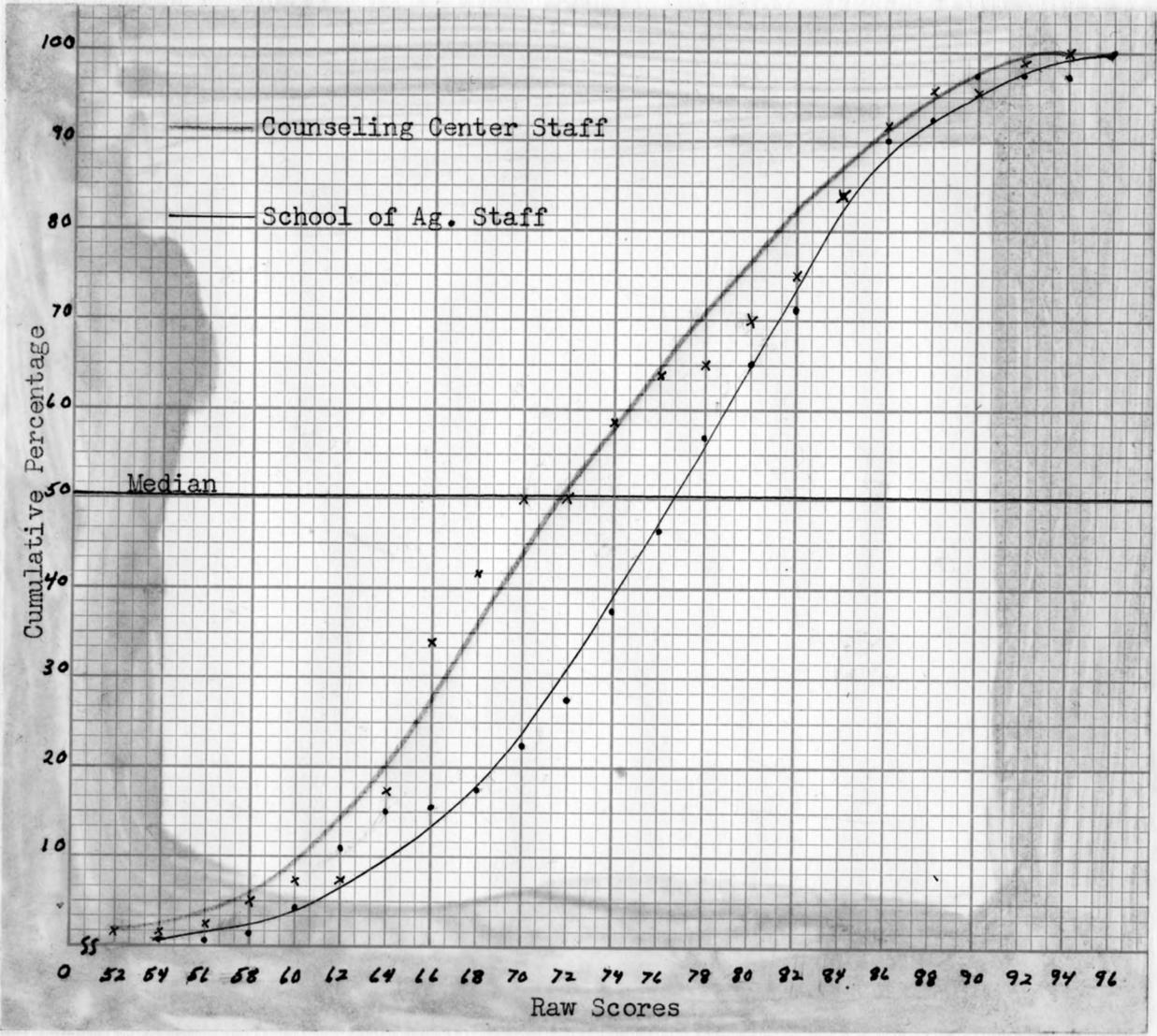


Fig. 2. Cumulative percentage of College Satisfaction scores of Agriculture Freshmen tested under supervision of the Student Counseling Center staff, and those tested under supervision of the staff of the School of Agriculture.

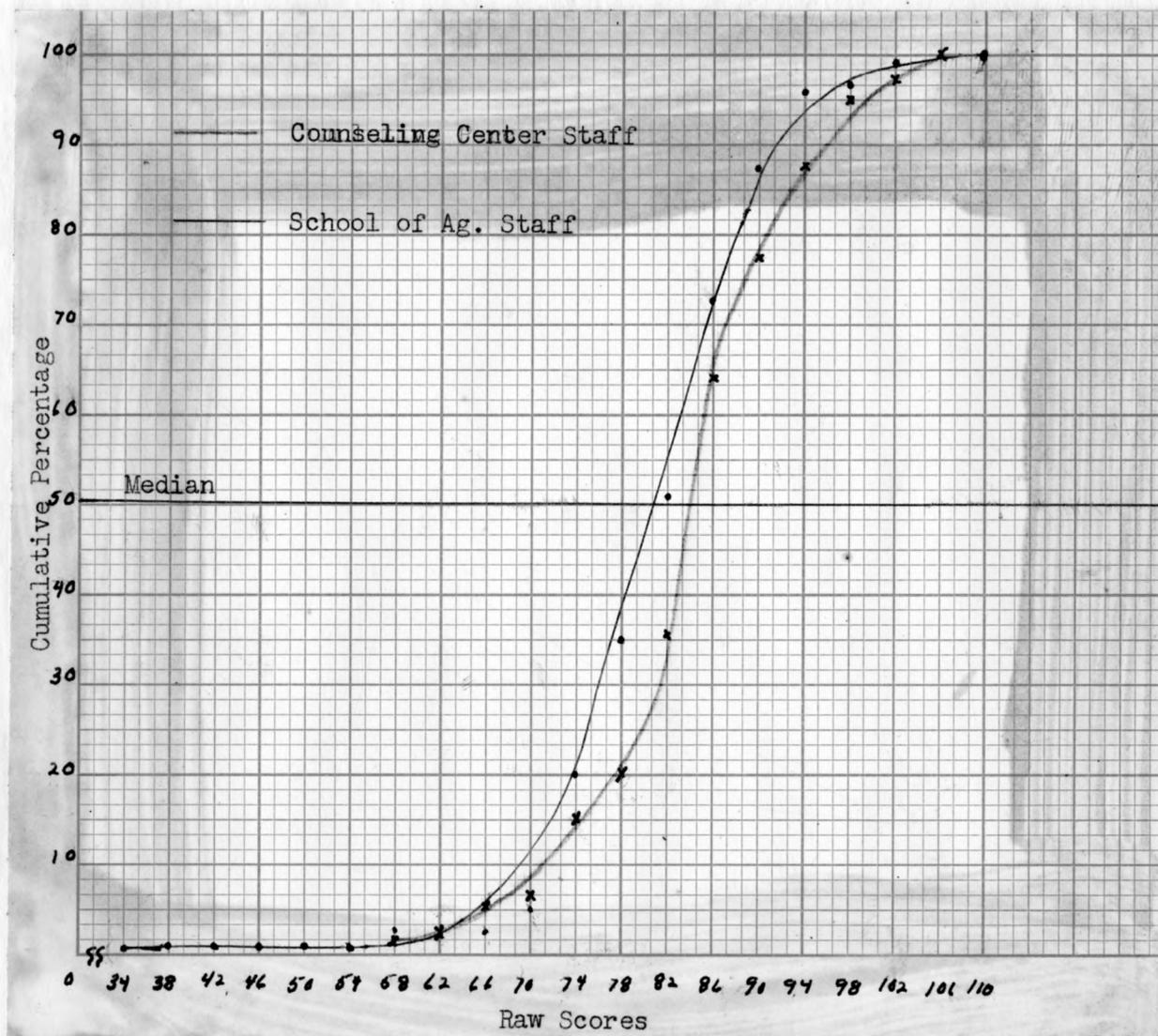


Fig. 3. Cumulative percentage of General Satisfaction scores of Agriculture Freshmen tested under supervision of the Student Counseling Center staff, and those tested under supervision of the staff of the School of Agriculture.

A positive causative factor of the differences between the two groups is the method of administration. Those subjects who were tested under the supervision of the Student Counseling Center staff were: (1) tested in a large group and, (2) assured that the staff of the School of Agriculture would have no knowledge of individual blanks. This was not true for those who were tested under supervision of the staff of the School of Agriculture. Generally, the subjects completed the blanks individually with no particular reference to anonymity of the blanks.

These differences in method of administration could possibly have caused those who completed the blanks under supervision of the staff of the School of Agriculture to attempt to create a more favorable impression than those who completed the blanks under the supervision of the Student Counseling Center Staff.

Although there was found to be some difference in the degree of College Satisfaction between the two groups, the results were combined in order to facilitate computations.

## RESULTS AND DISCUSSION

### Description of Subjects

Measures of Satisfaction. The first stage of this investigation was conducted in an effort to determine the status of second semester freshmen in the School of Agriculture with respect to Curricular Satisfaction, Over-all College Satisfaction, and satisfaction with Life in General.

Table 8 presents the means, standard deviations, mid-point of scales, and possible range of scores for the three measures of satisfaction.

Table 8. Means, standard deviations, mid-point scales, and possible range of scores for the measures of Curricular Satisfaction, College Satisfaction, and General Satisfaction.

Satisfaction	Mean	S.D.	Mid-point	Possible range
Curricular	19.30	3.77	16	4-28
College	75.08	9.20	56	14-98
General	82.74	9.67	66	22-110

In order to interpret the mean scores in Table 8, it is necessary to include the possible range and mid-point of each scale. The lowest possible score on either the Curricular or College Satisfaction scales is typified by the response, "I hate it." The typical response necessary to obtain the mid-point would be, "I am indifferent to it," whereas the typical response, "I like it better than I could possibly like anything," would indicate complete satisfaction.

While the responses were worded somewhat differently from scale to scale, the above description indicates the "meaning" of each position on the scale of scores.

Responses which would agree completely with negative statements in the General Satisfaction scale and disagree completely with positive statements would typify the lowest possible score. Undecided responses would typify the mid-point, while complete agreement with positive statements and complete disagreement with negative statements would be typical of the highest attainable score. Of course, the subjects did not choose all responses at the same score level of each scale, hence there were intermediate scores. Since there was a difference in the number of statements in each scale, it is impossible to make

a direct comparison of the three scales. However, if the standard deviations are considered, it is possible to ascertain certain information and reach fairly definite conclusions.

In all cases, the mean score was found to be higher than the mid-point of the scale. The mean score for Curricular Satisfaction was found to be 1 standard deviation above the mid-point. College Satisfaction was 2 standard deviations above the mid-point, and General Satisfaction was  $1\frac{3}{4}$  standard deviations above. It is apparent from this that these Kansas State College freshmen enrolled in the School of Agriculture were satisfied with their curriculum, college, and with life in general.

In order to show the distribution, and perhaps to make it more meaningful, Figs. 4, 5 and 6 are presented. The base line of each histogram represents the total score obtained on the measure of satisfaction illustrated by the corresponding histogram.

Figure 4 represents the total score obtained on the measure of Curricular Satisfaction. The dispersion of scores around the mean point of the scale suggests that the feelings of these students toward their curriculum have been adequately sampled.

Figure 5 indicates the dispersion of scores obtained on the measure of College Satisfaction. The amount of dispersion of scores around the mean point indicates an adequate sampling of the students' attitude on the basis of College Satisfaction.

Figure 6 represents the dispersion of scores obtained on the measure of General Satisfaction. It was believed that this histogram indicated sufficient dispersion about the mean point of each scale to suggest that the feelings of these students had been adequately sampled. There was noted, however, a slight negative skewness on this measure.

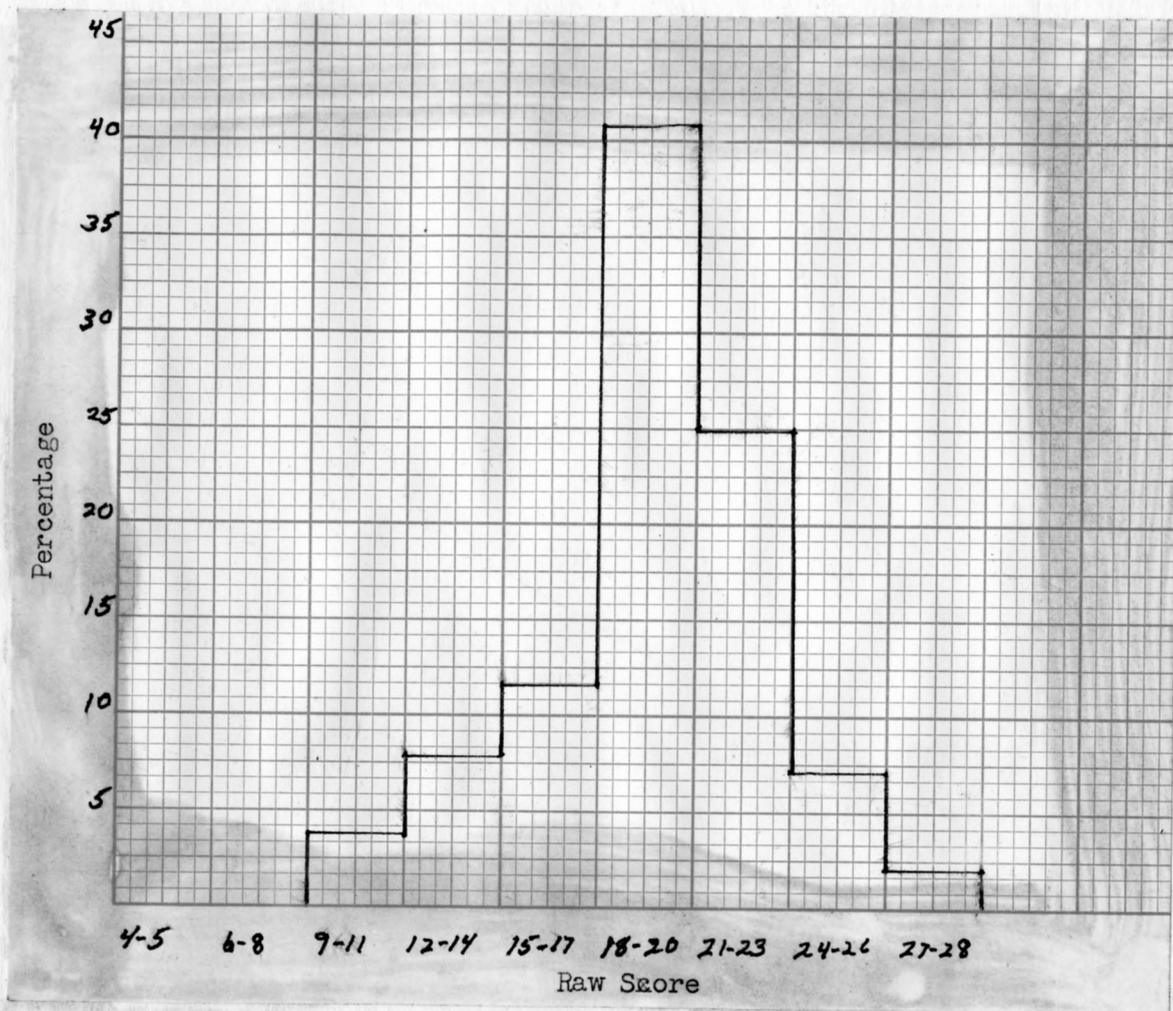


Fig. 4. Histogram of scores obtained on the measure of Curricular Satisfaction.

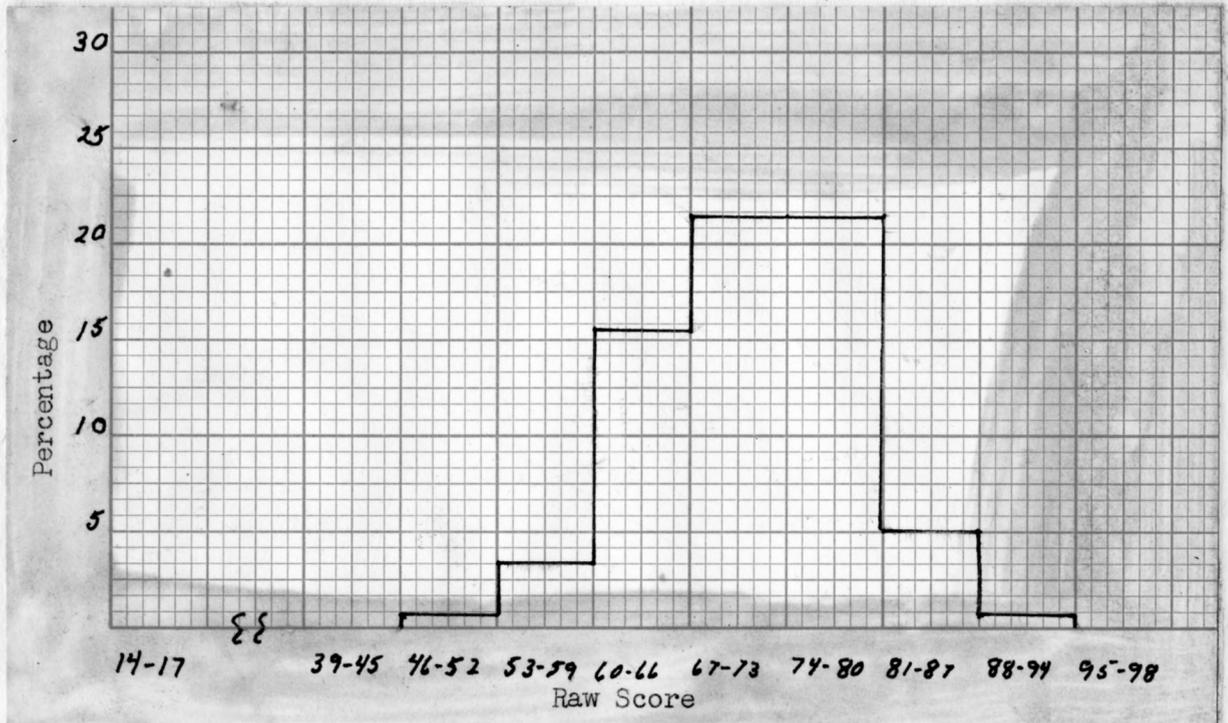


Fig. 5. Histogram of scores obtained on the measure of College Satisfaction.

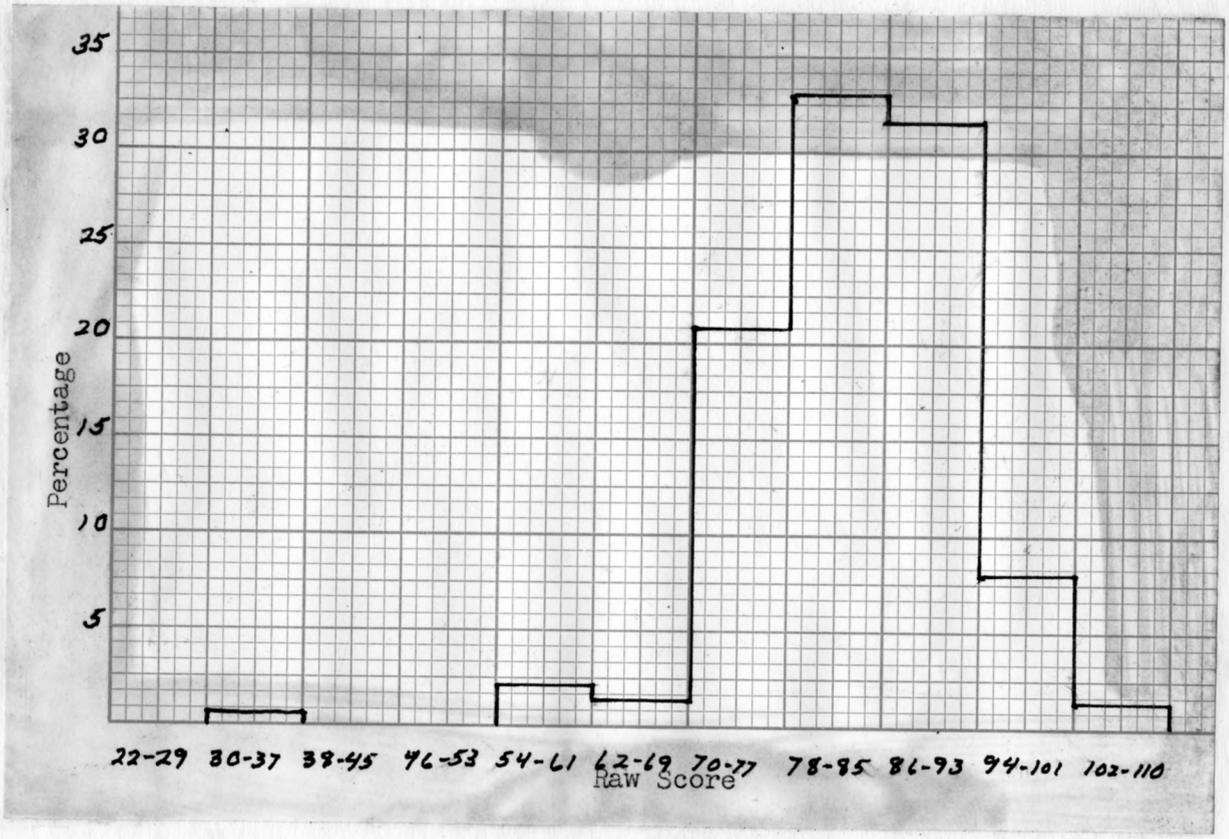


Fig. 6. Histogram of scores obtained on the measure of General Satisfaction

Measured Characteristics. The second phase of this investigation was to describe the sample with reference to its status on objective indices of scholastic aptitude and ability, including mechanics of expression, reading comprehension and the interpretation of natural science materials, vocational interests, personality characteristics, and study habits and attitudes.

The selection of the norm groups for comparison was based, in part, on the availability of appropriate norms. Preference was given to twelfth grade norms in order to determine if there was any selection between the average high school senior and Agriculture College Freshman; secondly, preference was given to college freshmen norms, and more especially to Kansas State College freshmen norms, to determine how they compared with an unselected freshmen population. Finally, whatever norms were available were used in the absence of either of the above comparison groups.

The comparison of the 135 Freshmen Agriculture students and the norm group of 1,245 entering male and female freshmen at Kansas State College for the school year of 1953-54 is presented in Table 9.

Table 9. Comparison of ACE Psychological Examination scores of Freshmen Agriculture students and norm group samples.

Test	: Ag. Freshmen:		Norm Group		: Diff.	: $\frac{\text{Diff.}}{\sigma\text{-DIFF.}}$
	: (N = 135) :		: (N = 1,245) :			
	: M	SD :	M	SD :		
ACE Total Score	105.35	19.73	102.5	26.0	2.80	.8730

The difference between the two groups was found to be negligible. This finding is not consistent with previous studies. Hardy (7) found a significant difference between the norm group and 220 entering male Agriculture Students at Kansas State College for the school year of 1954-55. It is likely that the difference between these two findings is caused by a selectivity factor.

Hardy studied first semester freshmen, whereas the present study utilized students who had survived through two semesters of college work.

The mean scores and standard deviation obtained by the 135 Freshmen Agriculture students on the Cooperative English Test are compared with those for 1,241 entering male and female freshmen at Kansas State College for the school year 1953-54. This comparison is presented in Table 10.

Table 10. Comparison of Cooperative English Test scores of Freshmen Agriculture students and norm group samples.

Test	: Ag. Freshmen :		Norm Group :		Diff. :	Diff. O- Diff.
	: (N = 135) :		: (N = 1,241) :			
	: M	SD	: M	SD		
Coop. English Test	83.88	24.52	88.5	28.0	4.62	1.2473

There was no significant difference between the two groups on this test, although the Agriculture Freshmen scored slightly lower in this test than the norm group.

Table 11 presents the mean scores and standard deviation for the 135 Freshmen Agriculture students on the Cooperative Reading Test as compared with the scores obtained by 1,230 entering male and female freshmen at Kansas State College for the school year of 1953-54.

Table 11. Comparison of Cooperative Reading Test scores of Freshmen Agriculture students and norm group samples.

Test	: Ag. Freshmen :		Norm Group :		Diff. :	Diff. O- Diff.
	: (N = 135) :		: (N = 1,230) :			
	: M	SD	: M	SD		
Vocabulary	23.27	11.07	23.5	12.0	.23	.0681
Speed of Reading	22.16	11.70	19.7	13.2	2.46	.6348
Level of Reading	12.74	5.43	13.3	7.8	.56	.2133

The inspection of Table 11 indicates virtually no difference between the two groups on the basis of the Cooperative Reading Test.

The most relevant data available for comparison with the scores of the Agriculture Freshmen on the Iowa Test #6 - Ability to Interpret Reading Materials in the Natural Sciences was the percentile rank of scores earned by a sample of second semester high school seniors. These data were obtained from the Iowa Test #6 answer sheet. Fig. 7 graphically shows the relationship between the cumulative percentage curves of the two groups.

By inspection of Fig. 7, it can be seen that:

1. The average Freshman Agriculture student is only slightly superior to the high school senior in this ability. (50th percentile of the Agriculture Freshmen is equal to the 60th percentile of the norm group.)
2. The range of ability is about the same for both groups.
3. Some selection has taken place at the lower ability levels. In the Agriculture Freshmen group there are not as many low-ability students as might be anticipated from a completely unselected population.
4. Selection has not taken place in the upper ability levels. The difference between the two groups is negligible in the top one-half students.

The Agriculture Freshmen scores on the Strong Vocational Interest Blank were compared graphically with the scores of adult males successfully employed in specific occupations. These comparisons on thirteen occupational scales and the three special scales are graphically presented on Hanke's Report Form in Fig. 8.

By the inspection of Fig. 8, it is apparent that the Agriculture Freshmen sample is a select group on the basis of interests. The high scores indicate that their interests are quite similar to persons successfully engaged in farming, or in occupations related to agriculture. The relatively

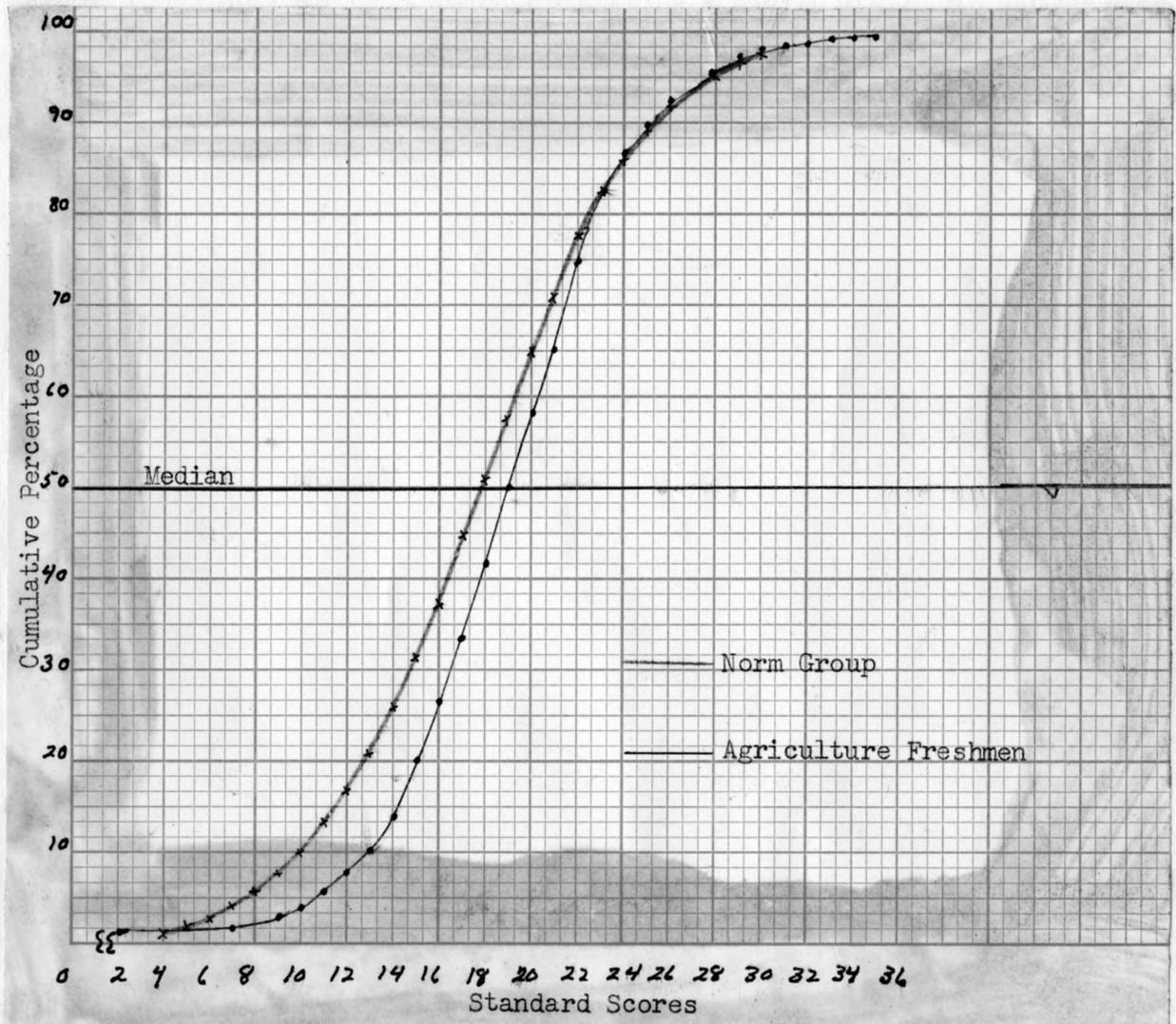


Fig. 7. Cumulative percentage of standard scores of second semester high school seniors and Agriculture Freshmen sample on the Iowa Test #6.

lower score on Forest Service Man seems to be an exception; however, this score is within the B range which would be of significant use in counseling.

The three non-occupational scales--Interest Maturity, Occupational Level, and Masculinity-Femininity--are designed as predictors of general interests.

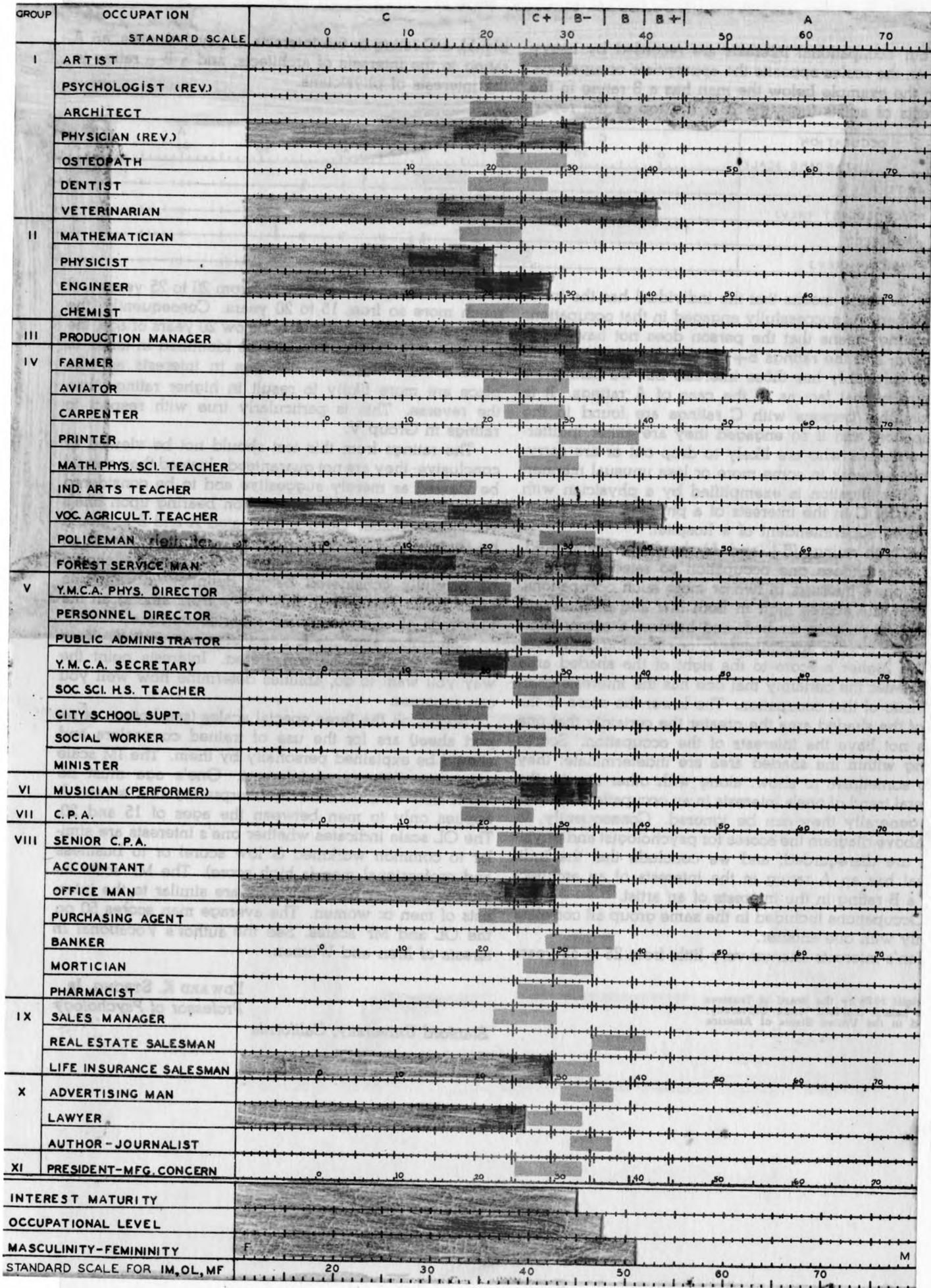


Fig. 8. Profile of mean scores of 135 Freshmen Agriculture students on the Strong Vocational Interest Blank.

The Interest Maturity scale measures differences in interests of 15- and 25-year old males. By the standards of the scale, the Agriculture Freshmen are immature in interests. Recent research has cast doubt upon the validity of the Interest Maturity scale as a predictor of interest stability (Hoyt, 9). Whether or not it measures a more general type of "maturity" is still open to question.

For the Occupational Level scale, the scores of the Agriculture Freshmen indicate that their interests are similar to semi-skilled workmen. According to the standards of the scale, a score of this magnitude should be anticipated for persons with high farmer interests.

The Masculinity-Femininity scale indicates that the interests of those Agriculture Freshmen are slightly more masculine than feminine.

The mean scores of the 135 Freshmen Agriculture students on the eighteen scales of the California Psychological Inventory are compared with those for 1,424 twelfth grade boys. Table 12 presents this comparison. Because the available norm groups for the California Psychological Inventory are not described in any precise way in the manual, tests of statistical significance were not made for the comparisons. The following analysis is simply inspectional.

The Infrequency, Dissimulation and Good Impression scales are those which attempt to check the validity of the responses a person gives in the test. From the comparison of the two samples on the Infrequency and Dissimulation scales it was found that the Agriculture Freshmen were more straightforward and did not tend to exaggerate their problems as much as the norm group. However, the Good Impression scale indicated that the Agriculture Freshmen were more likely to try to create a favorable impression.

Table 12. Comparison of California Psychological Inventory scores of Freshmen Agriculture students and a male twelfth grade sample.

Scale	Agriculture freshmen (N = 135)		Norm group (N = 1,424)	
	M	SD	M	SD
Infrequency	1.81	1.72	2.58	2.48
Good Impression	18.85	6.12	14.86	6.08
Dissimulation	6.98	4.59	10.04	5.33
Social Responsibility	29.76	4.81	27.06	5.63
Tolerance	22.10	5.05	18.05	5.36
Flexibility	9.13	3.52	9.00	3.37
Social Status	18.16	4.41	15.86	4.47
Dominance	25.24	5.85	23.80	6.31
Social Participation	23.25	5.58	21.98	5.48
Femininity	14.73	3.30	15.04	3.55
Delinquency	14.53	5.08	17.71	5.91
Intellectual Efficiency	37.87	5.39	34.25	6.29
Academic Achievement	26.10	4.74	22.50	5.38
Honor Point Ratio	17.76	4.40	14.83	4.11
Psychological Interest	10.13	2.98	9.22	2.07
Social Presence	34.45	5.67	33.40	5.76
Impulsibility	19.54	7.73	24.99	8.04
Social Acceptance	20.19	3.96	19.18	4.19
Collega Attendance	31.44	3.89	31.21	3.75

As compared to the twelfth grade group the Agriculture Freshmen were more socially responsible, more tolerant, less impulsive, and had less potentiality for delinquency. The comparison of mean scores on the Social Status scale revealed that the Agriculture Freshmen had more personal qualities which are correlated with Social Status than the norm group. The comparison of mean scores on the Psychological Interest scale indicated that the Agriculture Freshmen had interests more similar to advanced students and professional workers in Psychology than the twelfth grade group.

The Agriculture Freshmen were found to be above the average for the twelfth grade group on the three objectively validated scales---Intellectual Efficiency, Academic Achievement, and Honor Point Ratio. High scores on these scales indicate intellectual efficiency and identify factors of interest and motivation which facilitate scholastic achievement at the high school and college undergraduate levels.

Percentile rankings are not available for the above comparison. However, Table 13 presents the percentile rankings of the Agriculture Freshmen based on a norm group of 680 male college students of all grade levels. From the inspection of Table 13, it is interesting to note that, although the mean scores of the Agriculture Freshmen are significantly higher on several scales in comparison with the high school norm group, they are below average on all of the scales, with the exception of the validation ones, when compared with college students.

Table 13. Percentile rankings of 135 male Agriculture Freshmen based on college norms.

Scale	Mean Raw Score	Percentile Ranks— College Norms
Re	30	39.21
To	22	34.46
Fl	9.1	27.43
St	18	18.41
Do	25	27.43
Sp	23	30.85
Fe	15	30.85
De	15	39.21
Ie	38	30.85
Ac	26	27.43
Hr	18	18.41
Py	10	27.43
Sr	34	27.43
Im	20	46.02
Sa	20	46.02
In	1.8	30.85
Gi	19	53.98
Ds	7.0	50.00

The comparison of mean scores on the Brown-Holtzman Survey of Study Habits and Attitudes is shown in Table 14. The available norm group is described in the Manual (2) p. 5, as ".....2,114 men in twelve colleges. All were freshmen except for 162 who were sophomores."

Table 14. A comparison of Brown-Holtzman Survey of Study Habits and Attitudes scores of Freshmen Agriculture students and norm group sample.

Test	Agriculture Freshmen (N = 135)		Norm Group (N = 2,114)	
	M	SD	M	SD
Brown-Holtzman	35.50	12.31	35.28	12.95

There was no significant difference in the mean scores of the two groups on this measure of motivation and attitude.

#### Inter-relationships Among Measures of Satisfaction

The third phase of this study was an examination of the inter-relationships among (1) measures of satisfaction, and (2) measures of satisfaction and Academic Achievement.

The inter-correlations of the three measures of satisfaction are presented in Table 15.

Table 15. Inter-correlations among measures of Curricular Satisfaction, College Satisfaction and General Satisfaction.

	Curricular	College	General
Curricular Satisfaction	--	.22*	.24**
College Satisfaction		--	.35**

\* Significant at 5 percent level.

\*\* Significant at 1 percent level.

Although the relationships among the three variables were relatively low, they were significant. The three scales of satisfaction apparently are measuring different areas of satisfaction. The index of Curricular Satisfaction

is a relatively narrow area in that a specific area is under discussion. The measure of College Satisfaction is a combination of seven specific areas (advisor satisfaction, instructor satisfaction, administration satisfaction, etc.), while the measure of General Satisfaction is the broadest of the three indices in that it is concerned with life in general. The findings point to the specificity of these attitudes; there is no pervasive satisfaction fact running through these measures. These results are comparable to those found in job and general satisfaction studies among employed males in suggesting a low, positive relationship among such variables.

The relationships between the three measures of satisfaction and Academic Achievement are presented in Table 16.

Table 16. Relationships between Satisfaction (Curricular, College, General) and Academic Achievement (Grade Point Average).

Satisfaction	Academic Achievement (GPA)
Curricular	.08
College	.08
General	.30*

\* Significant at 1 percent level.

As shown in Table 16, the only measure of satisfaction which was found to be significantly related to Academic Achievement was that of General Satisfaction. These findings call into question any popular notion that the satisfied student is the best achiever or vice versa.

During the process of standardizing their Survey of Opinions, Rundquist and Sletto (12) discovered a sex difference when the Morale scale was correlated with honor points for 37 males and 34 females of high school age. In

the male population honor point correlated  $+0.506$  with morale, whereas the correlation for the females was  $-0.194$ . Further analysis showed that the form of the statement (i.e., acceptable or unacceptable) also affected the correlations. In the male population acceptable statements correlated  $+0.540$  with honor points and unacceptable statements correlated  $+0.275$ . In the female group acceptable statements and honor points correlated  $-0.277$  and for the unacceptable statements the correlation was  $-0.112$  (12) p. 295.

If Academic Achievement were compared to production in industry, these findings would be similar to correlations found in the industrial situation. The correlations between job satisfaction (Curricular Satisfaction) and production (Academic Achievement) in the industrial setting is generally of a low order magnitude. This might be expected in that an employee may not be satisfied with his job but other factors are influencing him to have a relatively high output. Or, conversely, an employee might be under external pressures which tend to hold his production at a rather low degree. College Satisfaction might be compared with employer satisfaction in that a number of factors such as foremen, administration, fellow workmen, etc., are considered. In this case, although a number of factors are considered, prevailing situations outside the plant might be influencing the production level. The comparison of General Satisfaction with production seems to get at a broader set of factors in that it takes into account a number of specific areas which might influence an employee's production. Because it is virtually impossible to measure all factors which might affect the person's production, high correlations should not necessarily be expected. The magnitude of the correlations of this study are comparable to those found in industrial studies.

The final purpose of this study was to compare the predictive value of the various objective indices of scholastic aptitude, ability, vocational

interests, personality, and study skills and attitudes by relating them, first, to Academic Achievement and, then, to satisfaction.

Table 17 presents the relationships of performance, interest, personality, and study habits and attitude measures to Academic Achievement.

**Table 17.** Relationships between interest, personality, study habits and attitudes, ability measures, Academic Achievement, and measures of satisfaction.

	: Academic : : Achievement : Satisfaction			
	: GPA	: Curricular	: College	: General
ACE Total	.382	-.066	.067	.125
Cooperative Reading Test				
Vocabulary	.380	-.166	-.098	.062
Speed	.327	-.104	.008	.100
Level	.454	-.113	.023	.176
Mechanics of Expression	.396	-.118	.087	.130
Iowa Natural Science	.361	-.192	-.011	.137
Strong Interest Inventory				
Physician	.226	-.069	.063	.120
Veterinarian	.037	.157	.153	.168
Physicist	.229	.039	-.063	-.003
Engineer	.200	.027	-.041	.008
Product Manager	.049	-.004	.096	.148
Farmer	.154	.161	.060	.030
Voc. Ag. Teacher	.199	.209	.171	.154
Forest Service Man	.235	.020	.111	.100
YMCA Secretary	.130	-.024	.113	.111
Musician	.080	-.104	.028	-.025
Office Manager	.004	-.055	.068	-.054
Life Insurance Salesman	-.318	-.026	.062	.025
Lawyer	-.240	-.091	-.028	.053
IMS	.211	-.001	.111	.114
OL	.014	.029	-.080	.041
M-F	.149	.032	.006	.148
California Psychological Inventory				
In	-.073	.070	-.006	-.236
Ci	.002	.229	.103	.241
Ds	-.202	-.197	-.199	-.572

Table 17. (Cont.)

	: Academic :		Satisfaction	
	: Achievement :		: Curricular :	: College : General
	GPA			
CPI (cont.)				
Re	.278	.179	.117	.392
To	.332	.102	.137	.509
Fl	-.167	-.017	-.079	-.122
St	.026	-.001	.109	.388
Do	.075	.045	.225	.452
Sp	-.014	.060	.191	.425
Fe	.035	.030	-.108	-.493
De	-.295	-.196	-.198	-.459
Ie	.301	.064	.199	.492
Ac	.265	.243	.252	.541
Hr	.334	.107	.069	.357
Py	.202	.198	.067	.245
Sr	-.104	-.016	.105	.242
Im	-.232	-.234	-.051	-.279
Sa	-.059	-.063	.156	.273
Cl	.319	.081	.199	.315
Brown-Holtzman	.345	.241	.233	.512

Correlations of .174 or beyond are significant at the 5 percent level.

Correlations of .228 or beyond are significant at the 1 percent level.

All of the relationships between ability and Grade Point Average were positive and statistically significant. The highest relationship was found for the Level of Comprehension, a sub-test of the Cooperative Reading Test. A high correlation between this measure and first year's Grade Point Average is reasonable, since a substantial portion of the Agriculture Freshman's studies are composed of reading.

The next best predictor was the Mechanics of Expression test. Again, this is plausible, since the Agriculture Freshman's curriculum is composed of a great many courses in written and oral communication.

However, the correlation coefficient between Grade Point Average and the ACE Psychological Examination indicated this test would provide a predictive

measure almost equal to the reading and English tests. The correlation of this test with Grade Point Average is .382.

The Strong Vocational Interest Blank provided the greatest predictive values by use of the Forest Service Man key. It was interesting to note that the Farmer key of the Strong scale was not found to be useful in predicting Grade Point Average. The most plausible explanation of this is that the range of scores on the Farmer key is relatively small, whereas the range of the Forest Service Man key is greater.

The next three best predictors were found to be the Physician, Physicist and Engineer occupational keys. This might be expected, since the Agriculture Freshman's curriculum is composed of a number of courses in the natural sciences.

The best predictor of Academic Achievement as measured by the California Psychological Inventory was the Honor Point Ratio scale, the scale which was specially derived to determine factors facilitating scholastic achievement of a college undergraduate.

The magnitude of correlation of the Brown-Holtzman Survey of Study Habits and Attitudes, although low, was significant and was not unique since the purpose of the test is to discriminate the high and low achievers.

The prediction problem involves not only a determination of relationships among single variables but also investigates the values to be obtained through optional weighing of predictive variables in combination and to gain further insight into the nature of factors related to Academic Achievement.

In this study multiple correlational analyses were made in order to determine an optional test battery for predictive purposes and to make a further comparison of the effectiveness of ability and personality variables.

Consideration of time and cost precluded a complete multiple correlational analysis. Instead, a limited number of variables were chosen for inclusion by study of inter-correlations and by consideration of some of Hardy's (7) findings.

These analyses sought to maximize predictive efficiency by combining selected tests. The findings for the ability variables used singly and in combination are reported in Table 18.

Table 18. Correlations of ability variables of second semester achievement of 135 Freshmen Agriculture students.

Predictor Variables	:	Correlation Coefficients
ACE	:	.382
Iowa Test #6	:	.361
ACE & Iowa Test #6	:	.405**

\*\* Coefficient of Multiple Correlation

Although the multiple correlation of the two measures of ability was found to be somewhat greater than the predictive power of either of the single variables, the practical significance of the difference is somewhat questionable.

The findings for non-ability variables used singly and in combination are reported in Table 19. The comparison of Tables 18 and 19 is of some interest; the combination of the three non-ability measures provides a slightly greater predictive value than does the combination of the two ability measures. Thus, it seemed useful to study several possible combinations of personality, interest, and scholastic aptitude in relation to Academic Achievement. The findings are reported in Table 20.

Table 19. Correlation of non-ability variables for prediction of second semester achievement of 135 Freshmen Agriculture students.

Predictor Variables	Correlation Coefficients
Hr	.334
IMS	.211
B-H	.345
B-H / Hr / IMS	.425 <sup>***</sup>

<sup>\*\*\*</sup> Coefficient of Multiple Correlation

Table 20. Multiple correlations of ability and non-ability variables for prediction of second semester achievement of 135 Freshmen Agriculture students.

Predictor Variables	Multiple Correlation Coefficients
ACE / IMS	.417
ACE / Hr	.433
ACE / B-H	.465
ACE / Iowa / IMS	.444
ACE / Iowa / Hr	.439
ACE / Iowa / B-H	.480
ACE / Hr / B-H	.499
ACE / Iowa / Hr / B-H	.501

Only a slightly greater predictive value was obtained by the combination of four of the five variables selected for analysis. The Interest Maturity Scale was not used in combination with the ability, personality and aptitude measures as this added scale causes the correlation coefficients to recede. It

is apparent from inspection of the various combinations that the Brown-Holtzman test is an important predictor to include. Perhaps the most significant result is the finding that two non-ability tests will combine with the ACE to give a marked increase in the prediction of grades from aptitude and ability tests alone.

In conclusion, the analyses indicate that a combination of personality and ability variables give a more substantial prediction of college achievement than does either set of variables alone.

#### Factors Related to Satisfaction

The final phase of this investigation was an examination of the relationships between the measures of scholastic aptitude, ability, interest, personality, and study habits and attitudes and the measures of satisfaction.

This area has been almost totally unexplored; only two investigations have been found which contribute data. Berdie (1) found that the ACE Psychological Examination was correlated with Curriculum Satisfaction to the magnitude of  $\sqrt{.02}$ . The Occupational Level Scale and the Masculinity-Femininity Scale of the Strong correlated with Curriculum Satisfaction .01 and .14, respectively. The Engineer Key of the Strong correlated .10 with Curriculum Satisfaction, while the Cooperative English Test correlated .04. The author concludes that although the correlations are not significant, this might be a profitable field of study; and that a more complete measure of satisfaction, a more heterogeneous group of people, and a longer time interval might provide more conclusive results.

Roy (11) computed a contingency coefficient from a 4 x 2 table in which ACE Psychological Examination scores for 263 arts and sciences students were divided into four categories and their Curriculum Satisfaction scores were

divided into two categories. The resulting coefficient was .14 and was considered by the investigator to be "quite insignificant." A similar analysis for the relationship between General College Satisfaction and ACE scores gave a contingency coefficient of .45 which was interpreted as a "fairly substantial" relationship.

The results in the present study are reported in Table 17. With respect to Curricular Satisfaction, it is evident that the predictors used in this study bear no really appreciable relationship to this aspect of satisfaction. Among the aptitude and ability variables the Iowa Test #6 is significantly but negatively related to Curricular Satisfaction; the correlation is only  $-.192$ .

One interest scale, Vocational Agriculture Teacher, correlated .209 with Curricular Satisfaction. The general lack of significant relationships with interest scales is interesting because Strong (14) finds that there is a marked relationship between the "own" occupational scales and job satisfaction. This, however, does not hold true in the present study.

The personality scale which was found to be significantly related to Grade Point Average was not found to be so related to Curricular Satisfaction. There were, however, seven other CPI scales which did show a significant relationship. The scale indicating the greatest relationship, .343, was that of Academic Achievement. The next greatest relationship, although negative, was found with the Impulsivity scale.

The Brown-Holtzman is found also to be significantly related to Curricular Satisfaction. This finding should be expected since the B-H was significantly correlated with those scales of the California Psychological Inventory which were found to be significantly related to Curricular Satisfaction. For example, it correlates .641 with Academic Achievement from the CPI.

The measure of College Satisfaction was not found to be related to the ability and aptitude tests or to the interest test. There were seven statistically significant relationships with CPI scales. The most marked relationship, with Academic Achievement, was only .252; Dominance was correlated .225 with College Satisfaction. A possible explanation of this relationship with Dominance is that the College Satisfaction scale is measuring the student's satisfaction with activities on the campus. The Dominance scale is a measure of leadership ability and social initiative. The actual cause of this relationship has not, however, been substantiated.

The Survey of Study Habits and Attitudes correlated significantly with College Satisfaction, the correlation being .233.

Most of the predictors used in this study were not found to be greatly related to General Satisfaction. The Level of Reading Comprehension, a subtest of the Cooperative Reading Test, was found to correlate significantly with General Satisfaction, but the correlation is only .176.

The Strong scales bore no relationship to General Satisfaction, although the Veterinarian key approached significance. This correlation coefficient is .168.

The best psychological measure in regard to relationship to General Satisfaction was found to be the California Psychological Inventory. All correlations were significant with the exception of Flexibility. The scales which showed the greatest relationship to General Satisfaction were Tolerance (.509) and Academic Achievement (.541). Although negative, the Delinquency and Femininity scales also bore a strong relationship to General Satisfaction. The correlation coefficients were -.459 and -.493, respectively.

These relationships seem to indicate that the personality test can be used to predict the General Satisfaction of the Kansas State College Agriculture

Freshmen. However, further analysis of the CPI scales seems to indicate that a third factor probably is contributing to these high correlations. This factor seems to be a response set which causes the individual to distort his responses when taking attitude or personality tests. This hypothesis tends to be pointed up when considering the Good Impression scale of the California Psychological Inventory in relationship to this measure of satisfaction. Although the Good Impression scale correlates only .241 with the measure of General Satisfaction, the inter-correlations of this scale with the other scales of the CPI indicate that these scales are partially measuring the attempt on the part of the individual to create a good impression. The Good Impression scale correlates .60 with Academic Achievement (CPI) and .49 with Tolerance.

Most impressive support of this hypothesis comes from the analysis of the Dissimulation scale. This scale correlates substantially with the measure of General Satisfaction (-.572) and also correlates substantially, or nearly so, with all other scales of the CPI which also correlate with General Satisfaction. The relationship between Good Impression and Dissimulation is of a magnitude of -.62.

The significant relationship between the B-H and General Satisfaction lends weight to the hypothesis of an attempt on the part of the individual to create as favorable an impression as possible when completing attitude and personality questionnaires. The relationship between the B-H and the Good Impression scale is .49, and the B-H and Dissimulation scale correlate -.58.

If this hypothesis were true, it might be expected that Dissimulation would be substantially related to Curricular and College Satisfactions. However, it should be pointed out that these two scales are environment oriented, whereas General Satisfaction refers to the person himself, causing

more ego-involvement and thus a more defensive attitude. This analysis also tends to lend support to the hypothesis of response set.

Of further significance was the absence of a high relationship between the tests of ability and interest and the satisfaction scales. This finding also lends support to the above hypothesis in that ability tests are not so readily faked as are the personality and attitude measures. Although the Strong Vocational Interest Blank does have a certain amount of "fakeability", the method of developing this test was of such a nature that the subject may not be so ego-involved in attempting to do so.

This hypothesis is in need of further research before definite conclusions can be reached.

#### Combination of Relationships

In order to explore more fully the relationships between the measures of personality, study habits and attitudes, and General Satisfaction, multiple correlational analyses were made. Only General Satisfaction was so studied because of the relative absence of relationships with Curricular and College Satisfaction.

Time and cost prohibited a complete multiple correlational analysis. Instead, a limited number of variables were chosen for inclusion by inspection of the inter-correlations in Table 21. Inspection of this table indicates the greatest relationships to General Satisfaction were found when three subscales of the California Psychological Inventory were combined with the Study Habits and Attitudes scale. It should be noted that Dissimulation alone gives nearly as high a relationship ( $-.57$ ) to General Satisfaction as the combination of the four variables. Also interesting was the fact that the

combination of the Study Habits and Attitudes and Dissimulation did not cause a receding of relationship as might be anticipated from the relatively high negative correlation between these two scales (-.58).

Table 21. Multiple correlations of attitude and personality measures for the relationship to General Satisfaction for 135 Freshman Agriculture students.

Variable	:	Multiple Correlation Coefficient
To / Ie	:	.527
Ac / Ie	:	.562
B-H / Ie	:	.576
B-H / To	:	.577
Ac / To	:	.58
Ac / To / Ie	:	.588
Ac / B-H	:	.598
Ds / B-H	:	.60
Ac / B-H / To	:	.613
Ac / B-H / To / Ie	:	.628

It should be stressed again that these findings cannot be utilized to predict General Satisfaction. Further investigation is needed before attempting to do so. These findings, however, might be utilized in further research to determine the prediction of satisfaction. A further word of warning is necessary to future researchers. There is a possibility of a third factor; i.e., the attempt to make a good impression on attitude and personality tests, which might be the underlying trait in these measures, causing these relatively high relationships.

The above findings suggest differences in the factors related to achievement and the factors related to satisfaction. The factors which indicate the greatest relationship to grades are those which measure the cognitive characteristics of the subjects; whereas, the factors which display the greatest relationship to the measures of satisfaction are those indices which measure personality characteristics of social inter-action and inter-personal dealings.

There are, however, a number of the personality scales which are significantly related to both achievement and satisfaction, thus implying that it would be possible to construct a scale which would predict Grade Point Average and, at the same time, be a descriptive measure of satisfaction. One such scale which might ascertain both of these variables would be the Academic Achievement scale of the CPI. This scale attempts to:

.....identify the factors of interest and motivation which facilitate academic achievement at the high school level (Gough, 6).

Although this scale was not developed to measure satisfaction, its relationship to the three measures of satisfaction was significant. At the same time it was significantly related to Grade Point Average.

Thus, it seems theoretically possible to construct a personality scale which would predict grades and satisfaction at the same time. A possible method of construction would be to administer the proposed scale to two groups of subjects. One group would be utilized to determine the relationship to Grade Point Average and the other group would be used to ascertain the relationship to satisfaction. Item analysis would then aid in the construction of the final scale which would predict Grade Point Average and satisfaction.

A possible scale for this combined prediction would be the Brown-Holtzman Survey of Study Habits and Attitudes, which has indicated a substantial relationship to Grade Point Average (.345) and to General Satisfaction (.512).

The absence of relationships between grades and Curricular and College Satisfactions, and the finding of a significant relationship between Academic Achievement and General Satisfaction seems to indicate that a more fruitful relationship can be discovered if a broad area of satisfaction is studied than will the more specific areas.

Future research in this area should attempt to discover the magnitude of the "fakeability" of the personality, study habits and attitude, and satisfaction measures. Furthermore, analysis should be made to determine the effect of the form of the statements utilized in satisfaction surveys as indicated by Rundquist and Sletto (12).

#### SUMMARY

An effort was made to determine certain psychological characteristics of an entering freshmen class in the School of Agriculture at Kansas State College and to describe this same population in terms of measures of Curricular, College, and General Satisfactions. In addition, these students were described in terms of Academic Achievement (Grade Point Average). Analyses were made to determine the inter-relationships among the three measures of satisfaction, their relationship to Academic Achievement, and to determine the inter-relationships of the psychological measures and Academic Achievement and the measures of satisfaction, respectively.

The subjects of this investigation were 135 male freshmen enrolled in the School of Agriculture at Kansas State College during 1955-56. This group represented practically all of the entering freshmen in the fall semester who survived through the second semester of their freshman year.

Standardized measures of aptitude, ability, interest, personality, and study habits and attitudes were administered to this group by the staff of

the Student Counseling Center during the enrollment of the first semester of 1955-56. Near the completion of the second semester of the school year, this group completed questionnaires designed to measure three areas of satisfaction. The satisfaction blanks were administered in two groups. The staff of the Student Counseling Center supervised the testing of a group of 61, and the remainder were supervised individually by the staff of the School of Agriculture. A Chi-square analysis was made of the two groups. This analysis showed the group tested by the staff of the School of Agriculture to be somewhat more satisfied on the measure of College Satisfaction. Although this difference was found, the two groups were combined to facilitate computation.

Scholastic Aptitude, English, and Reading Skills were measured by the ACE Psychological Examination, Cooperative English Test, and Cooperative Reading Test, respectively. The Iowa Test #6 - Ability to Interpret Reading Materials in the Natural Sciences was given, since previous studies indicated that an ability of this nature was relevant to success in agriculture curricula. Interests were tested with the Strong Vocational Interest Blank. The California Psychological Inventory was chosen as the personality measure since some of the scales appeared related to Academic Achievement. For the measure of motivation and attitude, the Brown-Holtzman Survey of Study Habits and Attitudes was included. The scores of these measures were obtained from the Student Counseling Center.

The measure of Curricular Satisfaction was a revision of the front page of Hoppock's Job Satisfaction Blank. This was given since it measures a general type of satisfaction instead of specific job duties, thus causing the individual to consider all aspects of the situation. The odd-even reliability of the scale was determined to be .87. College Satisfaction was measured by a revision of Roy's College Satisfaction Index. This test was developed to

measure a number of factors in the college situation. The odd-even reliability of the total score was found to be .83 in this investigation. The measure of General Satisfaction was the morale scale of the Rundquist-Sletto Survey of Opinions. This scale measures the individual's attitude toward life in general. This measure had an odd-even reliability of .90.

In addition, each student completed a biographical information sheet which included age, curriculum, vocational goal, certainty of goal, and father's occupation.

For a criteria of Academic Achievement, the first year's Grade Point Average was used. The mean Grade Point Average for the group was 1.12.

On the three measures of satisfaction, the mean scores for the group were found to be one-to-two standard deviations above the mid-point of the scale. This finding was interpreted to mean that the Freshmen Agriculture students were satisfied with the three areas measured.

The distribution of the scores around the mean point suggested that the feelings of these students had been adequately sampled, with the possible exception of the scale of General Satisfaction. This scale showed a slight negative skewness.

Analysis of the mean scores of this group of 135 male Agriculture Freshmen on the measures of ability indicated that they did not differ significantly from the norm groups of male and female freshmen who entered Kansas State College in the fall of the 1953-54 school year.

From a comparison of the percentile scores on the Iowa Test #6 - Ability to Interpret Reading Materials in the Natural Sciences, it was found that the average Agriculture Freshman was only slightly superior to the average high school senior. They were a select group to some extent at the lower ability levels; however, this selectivity disappeared at the upper ability levels.

On the Strong Vocational Interest Blank the Agriculture Freshmen group had a distinctive pattern of interests. High scores on the Farmer, Veterinarian and Vocational Agriculture Teacher scales indicated that their interests were similar to persons successfully engaged in farming or in occupations related to agriculture. According to the standards of the three non-occupational scales, in interests they were immature, similar to semi-skilled workmen, and more characteristically masculine than feminine.

On the California Psychological Inventory, visual analysis of the means indicated that the Agriculture Freshmen differed from a male twelfth grade norm group on 12 of 18 scales. They were below the average of the norm group on the Delinquency and Impulsivity scales, as well as on two of the Validation scales. They were higher on the Good Impression, Social Responsibility, Tolerance, Social Status, Intellectual Efficiency, Academic Achievement, Honor Point Ratio, and Psychological Interest scales. When the Agriculture Freshmen were graphically compared to a norm group composed of men in all college levels, they fell below the average on all of the scales, with the exception of the Validation scales.

No difference between a norm group of college students and the Agriculture Freshmen was noted on the measurement of study habits and attitudes.

The three measures of satisfaction were found to be significantly correlated with one another. However, the inter-correlations were of a relatively low magnitude.

The measure of General Satisfaction was the only satisfaction index which correlated significantly with Academic Achievement. A finding of this nature should be expected on the basis of industrial studies where job satisfaction does not necessarily imply high production; apparently, extraneous events are acting to determine performance of the individual, whereas a measure of

General Satisfaction is attempting to measure as many of these extraneous events as possible. Because it is virtually impossible to measure all determinate factors (of which satisfaction is only one), high relationships should not necessarily be expected.

An analysis of the measured psychological characteristics showed that among the measures of aptitude and ability, Level of Comprehension, a sub-test of the Cooperative English Test, offered the best predictive device for the first two semesters of college work. The next best predictor of Academic Achievement was Mechanics of Expression. This was thought to be understandable since a great portion of the first two semesters of college work is composed of written and oral communication and a great deal of reading. However, the ACE predicted Grade Point Average almost equally well.

The Strong Vocational Interest Blank provided the greatest predictive value by use of the Forest Service Man key.

The Honor Point Ratio scale of the CPI was found to be significantly predictive of Academic Achievement.

Prediction of Academic Achievement by use of the Brown-Holtzman was significant although relatively low.

Multiple correlations of predictive indices of Academic Achievement were made. The greatest predictive value was obtained by the combination of measures of ability and aptitude, a selected personality scale, and study habits and attitudes. The combination of the ACE and Hr yielded nearly as much predictive power as did the previously cited combination.

None of the ability and aptitude measures were found to bear an appreciable relationship to the three measures of satisfaction.

One scale of the Interest test was found to correlate significantly with Curricular Satisfaction. None of the Interest test scales were related to the

other two measures of satisfaction. This was noted as interesting, since the author of the scale stated that a high "own" occupation scale score is related to job satisfaction.

The factors which showed the greatest relationship to satisfaction were personality characteristics and the Survey of Study Habits and Attitudes. These correlations with Curricular and College Satisfaction were quite low; they were fairly substantial with General Satisfaction. These findings may not, however, indicate a direct relationship between personality, attitude and General Satisfaction. The possibility of the attempt on the part of the individual to create as good an impression as possible on personality, attitude and General Satisfaction scales, causing this "high" relationship, was discussed.

The multiple correlation of factors related to the measure of General Satisfaction tended to substantiate this theory. Further basis for this was found in the relatively low correlations obtained from the comparison of the measures of ability and interest with satisfaction. It was pointed out that the measures of ability and interest are not as easily faked as the measures of satisfaction, personality and attitude. This hypothesis of the attempt to put oneself in the best possible light when taking tests of satisfaction, personality and attitude is in need of further research before definite conclusions can be reached.

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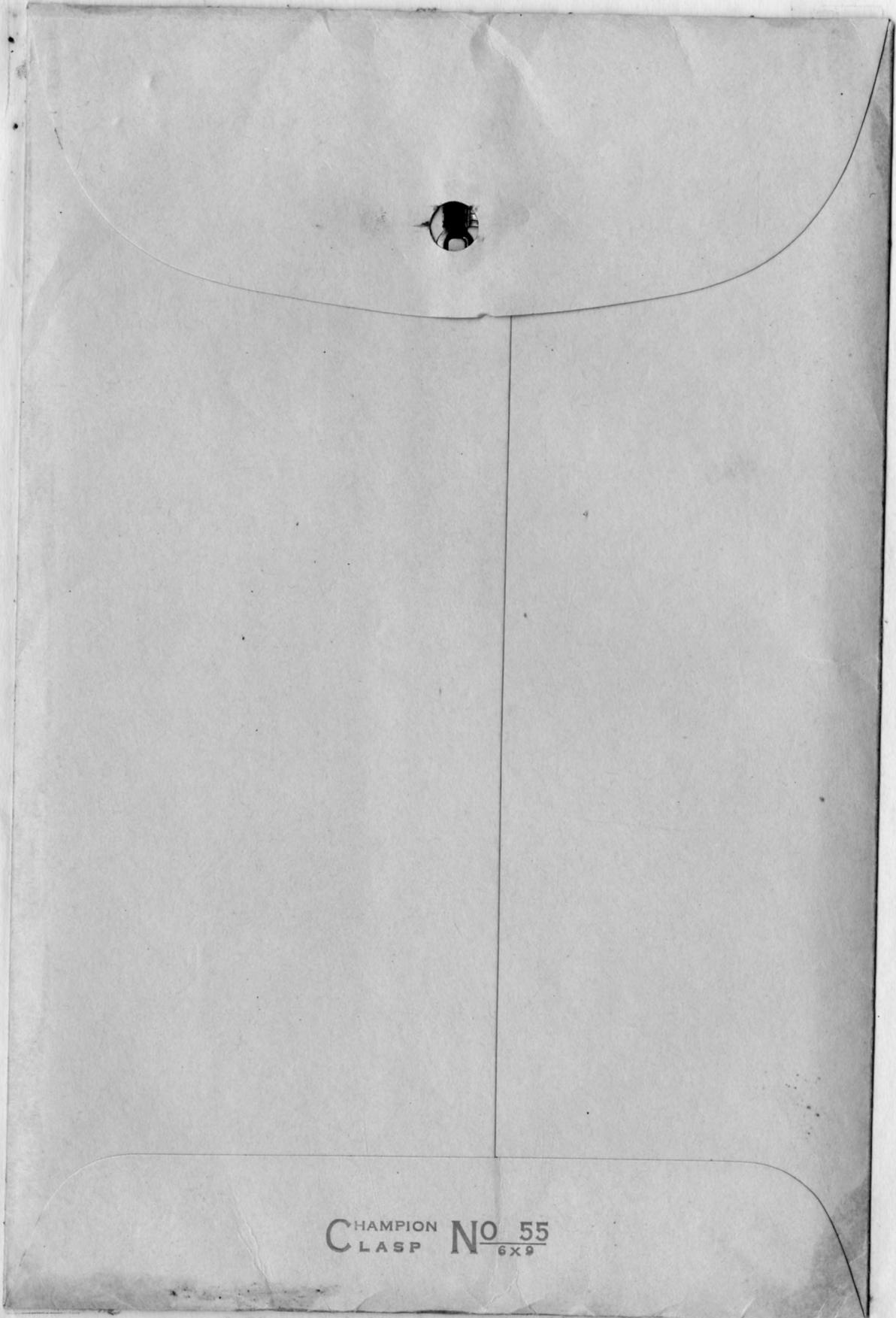
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APPENDIX



**C**HAMPION **NO 55**  
**CLASP** 6x9

College Opinion Survey Questionnaire

COLLEGE OPINION SURVEY

What is your present curriculum? (e.g., Ag. Education, Animal Husbandry, Dairy Mfg., Feed. Tech., Agronomy, Ag. Administration, etc.) \_\_\_\_\_

GENERAL DIRECTIONS: Read each of the following statements carefully and decide which ONE best expresses the way you feel. There are no right or wrong answers. Work rapidly. Your first impressions are desired. Be sure to answer every question. Place a check mark ( ) in front of the ONE statement which best expresses how you feel.

1. How well do you like your present curriculum?
  - a. I hate it.
  - b. I dislike it.
  - c. I don't like it.
  - d. I am indifferent to it.
  - e. I like it.
  - f. I am enthusiastic about it.
  - g. I like it better than I could possibly like anything else.
2. How much of the time do you feel satisfied with your curriculum?
  - a. All of the time.
  - b. Most of the time.
  - c. A good deal of the time.
  - d. About half of the time.
  - e. Occasionally.
  - f. Seldom.
  - g. Never.
3. How do you think you compare with other people in your feelings about your curriculum?
  - a. No one likes his curriculum better than I like mine.
  - b. I like my curriculum much better than most people like theirs.
  - c. I like my curriculum better than most people like theirs.
  - d. I like my curriculum about as well as most people like theirs.
  - e. I dislike my curriculum more than most people dislike theirs.
  - f. I dislike my curriculum much more than most people dislike theirs.
  - g. No one dislikes his curriculum more than I dislike mine.
4. How do you feel about changing your curriculum?
  - a. I am going to change to another curriculum.
  - b. I would change to almost any other curriculum if it were practical to do so.
  - c. I would change my curriculum for another similar to it.
  - d. I am not eager to change my curriculum but I would consider it.
  - e. I would rather keep the curriculum I have than change to another.
  - f. I can not think of any curriculum for which I would exchange mine.
  - g. I would not exchange my curriculum for any other.
5. Considering all the instructors you have had at KSC, how do you feel about them?
  - a. I like all of my instructors.
  - b. I like all but one of my instructors.
  - c. I like most of my instructors.
  - d. I like about half of my instructors.
  - e. I like few of my instructors.
  - f. I like only one of my instructors.
  - g. I like none of my instructors.
6. How much of the time do you feel satisfied with the majority of your instructors?
  - a. Never.
  - b. Seldom.
  - c. Occasionally.
  - d. About half of the time.
  - e. A good deal of the time.
  - f. Most of the time.
  - g. All of the time.

7. How well satisfied are you with your present faculty adviser?
- a. I am completely satisfied.
  - b. I am very well satisfied.
  - c. I am satisfied.
  - d. I am indifferent.
  - e. I am dissatisfied.
  - f. I am very much dissatisfied.
  - g. I am completely dissatisfied.
8. How do you feel about continuing the present system of faculty advising?
- a. Positive it should be discontinued.
  - b. Very sure it should be discontinued.
  - c. Fairly sure it should be discontinued.
  - d. Don't know whether or not it should be continued.
  - e. Fairly sure it should be continued.
  - f. Very sure it should be continued.
  - g. Positive it should be continued.
9. How do you feel about the administrators (deans, department heads, and other officials) in your School with whom you have come in contact?
- a. I like all of them.
  - b. I like all but one of them.
  - c. I like most of them.
  - d. I like about half of them.
  - e. I like few of them.
  - f. I like only one of them.
  - g. I like none of them.
10. How much change in the rules and regulations of your School would you like to see made?
- a. Complete.
  - b. Great Deal.
  - c. Quite a bit.
  - d. Some.
  - e. Little.
  - f. Very little.
  - g. No change.
11. How do you feel about this College as a place in which to make friends and to participate in extra-curricular activities and social life?
- a. I hate it.
  - b. I dislike it very much.
  - c. I dislike it.
  - d. I am indifferent to it.
  - e. I like it.
  - f. I like it very much.
  - g. I like it better than I could possibly like anything else.
12. How much of the time do you feel satisfied with your social life?
- a. All of the time.
  - b. Most of the time.
  - c. A good deal of the time.
  - d. About half of the time.
  - e. Occasionally.
  - f. Seldom.
  - g. Never.

13. How do you feel about the opportunities for cultural development in this College? (consider all phases of your College experience - concerts, plays, assemblies, lectures, Union activities, curriculum, faculty, etc.).

- a. I am enthusiastic about the opportunities.
- b. I am well satisfied with the opportunities.
- c. I am mildly satisfied with the opportunities.
- d. I am neither satisfied nor dissatisfied with the opportunities.
- e. I am mildly dissatisfied with the opportunities.
- f. I am very much dissatisfied with the opportunities.
- g. I am extremely dissatisfied with the opportunities.

14. Where do you think this College ranks with other institutions of higher education in regard to opportunities for cultural development.

- a. At the bottom.
- b. Among the lowest.
- c. Below average.
- d. Average.
- e. Above average.
- f. Among the highest.
- g. At the top.

15. How do you feel about the quality of your professional training?

- a. I am being excellently trained for my profession.
- b. I am being very well trained for my profession.
- c. I am being well trained for my profession.
- d. I am being trained about as well as the average for my profession.
- e. I am being poorly trained for my profession.
- f. I am being very poorly trained for my profession.
- g. I am being extremely poorly trained for my profession.

16. What do you think of your chances for success in the world as a result of your professional training at this College.

- a. Hopeless.
- b. Very poor.
- c. Poor.
- d. Average.
- e. Good.
- f. Very good.
- g. Excellent.

17. How well do you like the place where you are living while attending this College?

- a. I hate it.
- b. I dislike it.
- c. I don't like it.
- d. I am indifferent to it.
- e. I like it.
- f. I am enthusiastic about it.
- g. I like it better than I could possibly like anything else.

18. How has the total situation in which you live while attending this College affected your school work?

- a. Been a very great help.
- b. Been a great help.
- c. Been a help.
- d. Had no effect on my work.
- e. Been a hindrance.
- f. Been a great hindrance.
- g. Been a very great hindrance.

19. By and large, how much have you learned from your college courses?

- a. Not very much.
- b. Somewhat less than average.
- c. Ordinary amount.
- d. Somewhat more than average.
- e. Surprisingly large amount.

20. By and large, to what extent have your College courses stimulated intellectual curiosity in you?

- a. Arouse strong curiosity.
- b. Often stimulate curiosity.
- c. Arouse some curiosity.
- d. Little effect on my curiosity.
- e. Tend to destroy curiosity.

21. By and large, how much thinking have your College courses demanded from you?

- a. Demand much original thought.
- b. Often demand thinking.
- c. Occassionally demand thinking.
- d. Little thinking required - memorization mostly.
- e. Original thinking discouraged.

22. By and large, how difficult have your College courses been?

- a. Mostly a snap.
- b. On the easy side.
- c. Moderately difficult.
- d. On the tough side.
- e. Very difficult.

23. How do you feel about transferring to another college or university to complete your undergraduate work?

- a. I am going to transfer to another institution.
- b. I am considering a transfer to another institution.
- c. I might transfer to another institution if it were practical to do so.
- d. I would just as soon be here as at some other institution.
- e. I would rather be here than at some other institution.
- f. I would be very reluctant to transfer to another institution.
- g. I would not even consider transferring to another institution.

24. How do you feel about dropping out of college to work or go in the service next year?

- a. I am going to drop out of college.
- b. I am considering dropping out of college.
- c. I might drop out.
- d. There is a fifty-fifty chance that I will drop out.
- e. I probably will continue here next year.
- f. I wouldn't very seriously consider dropping out.
- g. I'll be back next year, for sure.

## SURVEY OF OPINIONS

This blank contains twenty-two statements of opinions. You are to cross out the phrase below each statement which best describes how you feel about the statement. There are no right or wrong answers. We would like your honest opinion on each one of the statements.

1. THE FUTURE IS TOO UNCERTAIN FOR A PERSON TO PLAN ON MARRYING.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
2. IT IS DIFFICULT TO THINK CLEARLY THESE DAYS.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
3. THE FUTURE LOOKS VERY BLACK.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
4. LIFE IS JUST ONE WORRY AFTER ANOTHER.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
5. MOST PEOPLE CAN BE TRUSTED.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
6. TIMES ARE GETTING BETTER.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
7. IT DOES NOT TAKE LONG TO GET OVER FEELING GLOOMY.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
8. THE DAY IS NOT LONG ENOUGH TO DO ONE'S WORK WELL AND HAVE ANY TIME FOR FUN.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
9. NO ONE CARES MUCH WHAT HAPPENS TO YOU.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
10. ANY MAN WITH ABILITY AND WILLINGNESS TO WORK HARD HAS A GOOD CHANCE OF BEING SUCCESSFUL.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
11. IT IS GREAT TO BE LIVING IN THESE EXCITING TIMES.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
12. THESE DAYS ONE IS INCLINED TO GIVE UP HOPE OF AMOUNTING TO SOMETHING.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
13. THERE IS LITTLE CHANCE FOR ADVANCEMENT IN INDUSTRY AND BUSINESS UNLESS A MAN HAS UNFAIR PULL.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
14. THE YOUNG MAN OF TODAY CAN EXPECT MUCH OF THE FUTURE.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
15. THIS GENERATION WILL PROBABLY NEVER SEE SUCH HARD TIMES AGAIN.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree

16. REAL FRIENDS ARE AS EASY TO FIND AS EVER.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
17. LIFE IS JUST A SERIES OF DISAPPOINTMENTS.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
18. ONE SELDOM WORRIES SO MUCH AS TO BECOME VERY MISERABLE  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
19. A MAN DOES NOT HAVE TO PRETEND HE IS SMARTER THAN HE REALLY IS TO "GET BY".  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
20. SUCCESS IS MORE DEPENDENT ON LUCK THAN ON REAL ABILITY.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
21. A PERSON CAN PLAN HIS FUTURE SO THAT EVERYTHING WILL COME OUT ALL RIGHT IN THE  
 LONG RUN.  
 Strongly agree    Agree    Undecided    Disagree    Strongly disagree
22. THERE IS REALLY NO POINT IN LIVING.  
 Strong agree    Agree    Undecided    Disagree    Strongly disagree

GO RIGHT ON TO THE NEXT PAGE

College Opinion Survey,

If you were to seriously consider a curriculum change, what would you consider changing to? \_\_\_\_\_

In order to correlate the results of this survey with other information it is necessary to have some identifying information. Be assured, however, that all replies will be held in strict confidence and will remain the property of the research team.

My class is: \_\_\_\_\_ Freshman  
\_\_\_\_\_ Sophomore  
\_\_\_\_\_ Junior  
\_\_\_\_\_ Senior

My name is (please print first and last name) \_\_\_\_\_  
(first) (last)

THANK YOU FOR YOUR COOPERATION!

ACADEMIC ACHIEVEMENT AND SATISFACTION AMONG  
SCHOOL OF AGRICULTURE FRESHMEN

by

LOVITT WADE HENDERSON

B. A., Drake University, 1953

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AN ABSTRACT OF A THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Psychology

KANSAS STATE COLLEGE  
OF AGRICULTURE AND APPLIED SCIENCE

1957

An effort was made to determine certain psychological characteristics of an entering freshmen class in the School of Agriculture at Kansas State College and to describe this same population in terms of measures of Curricular, College, and General Satisfaction. In addition, these students were described in terms of Academic Achievement (Grade Point Average). Analyses were made to determine the inter-relationships among the three measures of satisfaction, their relationship to Academic Achievement, and to determine the inter-relationships of the psychological measures and Academic Achievement and the measures of satisfaction, respectively.

The subjects of this investigation were 135 male freshmen enrolled in the School of Agriculture at Kansas State College during 1955-56. This group represented practically all of the entering freshmen in the fall semester who survived through the second semester of their freshman year.

Standardized measures of aptitude, ability, interest, personality, and study habits and attitudes were administered to this group by the staff of the Student Counseling Center during the enrollment of the first semester of 1955-56. Near the completion of the second semester of the school year, this group completed questionnaires designed to measure three areas of satisfaction. The satisfaction blanks were administered in two groups. The staff of the Student Counseling Center supervised the testing of a group of 61, and the remainder were supervised individually by the staff of the School of Agriculture. A Chi-square analysis was made of the two groups. This analysis showed the group tested by the staff of the School of Agriculture to be somewhat more satisfied on the measure of College Satisfaction. Although this difference was found, the two groups were combined to facilitate computation.

Scholastic Aptitude, English, and Reading Skills were measured by the ACE Psychological Examination, Cooperative English Test, and Cooperative

Reading Test, respectively. The Iowa Test #6 - Ability to Interpret Reading Materials in the Natural Sciences was given, since previous studies indicated that an ability of this nature was relevant to success in agriculture curricula. Interests were tested with the Strong Vocational Interest Blank. The California Psychological Inventory was chosen as the personality measure since some of the scales appeared related to Academic Achievement. For the measure of motivation and attitude, the Brown-Holtzman Survey of Study Habits and Attitudes was included. The scores of these measures were obtained from the Student Counseling Center.

The measure of Curricular Satisfaction was a revision of the front page of Hoppock's Job Satisfaction Blank. This was given since it measures a general type of satisfaction instead of specific job duties, thus causing the individual to consider all aspects of the situation. The odd-even reliability of the scale was determined to be .87. College Satisfaction was measured by a revision of Roy's College Satisfaction Index. This test was developed to measure a number of factors in the college situation. The odd-even reliability of the total score was found to be .83 in this investigation. The measure of General Satisfaction was the morale scale of the Rundquist-Sletto Survey of Opinions. This scale measures the individual's attitude toward life in general. This measure had an odd-even reliability of .90.

In addition, each student completed a biographical information sheet which included age, curriculum, vocational goal, certainty of goal, and father's occupation.

For a criteria of Academic Achievement, the first year's Grade Point Average was used. The mean Grade Point Average for the group was 1.12.

On the three measures of satisfaction, the mean scores for the group were found to be one-to-two standard deviations above the mid-point of the

scale. This finding was interpreted to mean that the Freshmen Agriculture students were satisfied with the three areas measured.

The distribution of the scores around the mean point suggested that the feelings of these students had been adequately sampled, with the possible exception of the scale of General Satisfaction. This scale showed a slight negative skewness.

Analysis of the mean scores of this group of 135 male Agriculture Freshmen on the measures of ability indicated that they did not differ significantly from the norm groups of male and female freshmen who entered Kansas State College in the fall of the 1953-54 school year.

From a comparison of the percentile scores on the Iowa Test #6 - Ability to Interpret Reading Materials in the Natural Sciences, it was found that the average Agriculture Freshman was only slightly superior to the average high school senior. They were a select group to some extent at the lower ability levels; however, this selectivity disappeared at the upper ability levels.

On the Strong Vocational Interest Blank the Agriculture Freshmen group had a distinctive pattern of interests. High scores on the Farmer, Veterinarian and Vocational Agriculture Teacher scales indicated that their interests were similar to persons successfully engaged in farming or in occupations related to agriculture. According to the standards of the three non-occupational scales, in interests they were immature, similar to semi-skilled workmen, and more characteristically masculine than feminine.

On the California Psychological Inventory, visual analysis of the means indicated that the Agriculture Freshmen differed from a male twelfth grade norm group of 12 of 18 scales. They were below the average of the norm group on the Delinquency and Impulsivity scales, as well as on two of the Validation scales. They were higher on the Good Impression, Social Responsibility,

Tolerance, Social Status, Intellectual Efficiency, Academic Achievement, Honor Point Ratio, and Psychological Interest scales. When the Agriculture Freshmen were graphically compared to a norm group composed of men in all college levels, they fell below the average on all of the scales, with the exception of the Validation scales.

No difference between a norm group of college students and the Agriculture Freshmen was noted on the measurement of study habits and attitudes.

The three measures of satisfaction were found to be significantly correlated with one another. However, the inter-correlations were of a relatively low magnitude.

The measure of General Satisfaction was the only satisfaction index which correlated significantly with Academic Achievement. A finding of this nature should be expected on the basis of industrial studies where job satisfaction does not necessarily imply high production; apparently, extraneous events are acting to determine performance of the individual, whereas a measure of General Satisfaction is attempting to measure as many of these extraneous events as possible. Because it is virtually impossible to measure all determinate factors (of which satisfaction is only one), high relationships should not necessarily be expected.

An analysis of the measured psychological characteristics showed that among the measures of aptitude and ability, Level of Comprehension, a sub-test of the Cooperative English Test, offered the best predictive device for the first two semesters of college work. The next best predictor of Academic Achievement was Mechanics of Expression. This was thought to be understandable since a great portion of the first two semesters of college work is composed of written and oral communication and a great deal of reading. However, the ACE predicted Grade Point Average almost equally well.

The Strong Vocational Interest Blank provided the greatest predictive value by use of the Forest Service Man key.

The Honor Point Ratio scale of the GPI was found to significantly predict Academic Achievement.

Prediction of Academic Achievement by use of the Brown-Holtzman was significant although relatively low.

Multiple correlations of predictive indices of Academic Achievement were made. The greatest predictive value was obtained by the combination of measures of ability and aptitude, a selected personality scale, and study habits and attitudes. The combination of the ACE and Hr yielded nearly as much predictive power as did the previously cited combination.

None of the ability and aptitude measures were found to bear an appreciable relationship to the three measures of satisfaction.

One scale of the Interest test was found to correlate significantly with Curricular Satisfaction. None of the Interest test scales were related to the other two measures of satisfaction. This was noted as interesting, since the author of the scale stated that a high "own" occupation scale score is related to job satisfaction.

The factors which showed the greatest relationship to satisfaction were personality characteristics and the Survey of Study Habits and Attitudes. These correlations with Curricular and College Satisfactions were quite low; they were fairly substantial with General Satisfaction. These findings may not, however, indicate a direct relationship between personality, attitude and General Satisfaction. The possibility of the attempt on the part of the individual to create as good an impression as possible on personality, attitude and General Satisfaction scales, causing this "high" relationship was discussed.

The multiple correlation of factors related to the measure of General Satisfaction tended to substantiate this theory. Further basis for this was found in the relatively low correlations obtained from the comparison of the measures of ability and interest with satisfaction. It was pointed out that the measures of ability and interest are not as easily faked as the measures of satisfaction, personality and attitude. This hypothesis of the attempt to put oneself in the best possible light when taking tests of satisfaction, personality and attitude is in need of further research before definite conclusions can be reached.