THE INTERRELATIONSHIP OF COLLEGE PRESS, STUDENT NEEDS
AND ACADEMIC APTITUDES AS MEASURED BY GRADE POINT
AVERAGE IN A SOUTHERN DENOMINATIONAL COLLEGE

APPROVED:

Graduate Committee:

[Signatures]

Chairman of the Committee
Earl W. Kocher

Committee Member

[Signature]

Committee Member
Sydney Hamilton

[Signature]

Dean of the School of Education
Susan Tregony

[Signature]

Dean of the Graduate School
Robert B. Toulon
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By

James W. Bennett, B.A., B.D., M.R.E., M.Ed.

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CHAPTER I

INTRODUCTION

One of the most pressing problems facing college educators today is that of making the most effective use of existing facilities. This problem has become greater as a result of the increasing number of students now applying for admission to institutions of higher learning. It has become more and more imperative that able students be identified, that students needing specialized help receive appropriate assistance, and that students who do not seem to be psychologically equipped to profit from the college experience be given more careful screening.

Despite the best efforts of educators to find ideal predictive instruments, this goal has not yet been attained. Problems for students and for the institutions they attend are likely to be compounded as the numbers of students increase. Wastes of talent and resources that have been problems of the past will likely become more intolerable in the future. Keith, (4) quoting Bricks and Mortarboards of Educational Facilities Laboratories, Inc., notes

American colleges and universities, which now enroll an estimated 4,118,000 degree-credit students, will have to accommodate more than 7,000,000 by 1970
and more than 8,500,000 by 1974. Therein, their crises—and their opportunity... We are asking the colleges to produce not only more, but better prepared graduates... (4, p. 5).

If this estimate is an accurate one, then the problem that faces educators is a challenging one. The fact that inaction at the present time will result in crucial times in the future makes it imperative that the problem not be ignored. Keith notes that, "If higher education in the United States is the key to the country's future, then it must be assured that changes occur in the most desirable way" (4, p. 5). One area of needed research in seeking to provide changes in the right direction would be to find

... better methods of guiding the student into the most desirable educational situation for him. Many students enter colleges in which demands far exceed their academic abilities. Others enroll in specific major areas only to find that they have wasted one, two or more years. These students frequently are round pegs in square holes who would have indeed functioned well had they been guided into areas for which they were best suited by nature and through total development... (4, pp. 5-6).

The American College Testing Program, Incorporated has indicated concern with future efforts to predict academic achievement in a different area. The Program stated in the Technical Report, "... assumes that the investigation should focus on the needs and problems of students in the context of the transition from high school to college" (1, p. 29).

The suggestion that a measure of individual needs be obtained, as a measure of motivation with which to improve
the relationship between academic predictors and academic achievement, seems to be a valid one. It is to be expected that individuals will achieve most where there is a higher need to achieve. If aptitude variables can be correlated with need variables, a still higher relationship between the predictors and the criterion variable should be obtained. If, in addition, the environmental influences upon the individual and the academic relationship can be determined, a still higher relationship should be observed (5).

Statement of the Problem

The problem of this study was to determine the relationship between certain non-intellectual variables and academic achievement.

The sub-problems were

A. To determine the relationship between the Activities Index (AI) Fourth Dimensional factors and grade point average.

B. To determine, by multiple correlation, those AI scales and factors, and the AI-CCI (College Characteristics Index) congruency variables which would significantly increase the relationship between the ACT composite score and grade point average.

A secondary problem of this study was to determine the degree to which freshmen agree with seniors in their perception of the college press patterns.
Hypotheses

The following hypotheses were formulated and investigated by statistical analysis of the data collected.

The four main hypotheses and their sub-hypotheses were

A. There will be a significant relationship between each of the Activities Index fourth dimensional factors and academic achievement, as measured by grade point average.

1. There will be a significant relationship between the AI factor 3, "Intellectual Interests," and grade point average.

2. There will be a significant relationship between the AI factor 4, "Motivation," and grade point average.

3. There will be a significant relationship between the Activities Index factor 5, "Applied Interests," and grade point average.

4. There will be a significant relationship between the AI factor 6, "Orderliness," and grade point average.

5. There will be a significant relationship between the AI factor 6, "Submissiveness," and grade point average.

B. There will be a significant increase in the relationship between the ACT composite score and grade point average when the Activities Index fourth dimensional factor scores and the factor three scale scores, each in turn, are added in a multiple correlation scheme with the ACT and GPA.

1. There will be a significant increase in the relationship between the ACT composite score and grade point
average when AI factor 3, "Intellectual Interests," is added to the multiple correlation.

2. There will be a significant increase in the relationship between the ACT composite score and grade point average when AI factor 4, "Motivation," is added to the multiple correlation.

3. There will be a significant increase in the relationship between the ACT composite score and grade point average when AI factor 5, "Applied Interests," is added to the multiple correlation.

4. There will be a significant increase in the relationship between the ACT composite score and grade point average when AI factor 6, "Orderliness," is added to the multiple correlation.

5. There will be a significant increase in the relationship between the ACT composite score and grade point average when AI factor 7, "Submissiveness," is added to the multiple correlation scheme with the ACT and GPA.

6. There will be a significant increase in the relationship between the ACT composite score and grade point average when AI scale 17, "Humanities, Social Science," is added to the multiple correlation scheme with the ACT and GPA.

7. There will be a significant increase in the relationship between the ACT composite score and grade point average when AI scale 25, "Reflectiveness," is added to the multiple correlation scheme with the ACT and GPA.
8. There will be a significant increase in the relationship between the ACT composite score and grade point average when AI scale 26, "Science," is added to the multiple correlation.

9. There will be a significant increase in the relationship between the ACT composite score and grade point average when AI Scale 30, "Understanding," is added to the multiple correlation.

C. There will be a significant increase in the relationship between the ACT composite score and grade point average when the AI-CCI congruency scores, each in turn, are added in a multiple correlation scheme with the ACT and GPA.

1. There will be a significant increase in the relationship between the ACT composite score and grade point average when the AI F3-CCI F2 congruency I variable is added to the multiple correlation scheme with the ACT and GPA.

2. There will be a significant increase in the relationship between the ACT composite score and grade point average when the AI F4-CCI F5 congruency variable II is added to the multiple correlation scheme with the ACT and GPA.

3. There will be a significant increase in the relationship between the ACT composite score and grade point average when the AI F5-CCI F11 congruency variable III is added to the multiple correlation scheme with the ACT and GPA.

4. There will be a significant increase in the relationship between the ACT composite score and grade point
average when the AI F6-CCI F8 congruency variable IV is added to the multiple correlation scheme with the ACT and GPA.

5. There will be a significant increase in the relationship between the ACT composite score and grade point average when the AI F7-CCI F8 congruency variable V is added to the multiple correlation scheme with the ACT and GPA.

D. There will be no significant differences between the freshman and senior mean scores for any of the thirty College Characteristics Index scales.

Significance of the Study

The importance of finding instruments which will make academic prediction more reliable, and which will make possible better student placement and utilization of talent is one that has been widely recognized and studied. The results, however, have not been altogether fruitful.

The use of aptitude tests and other intellectual variables have met with success in some instances and with complete failure in others. This fact led Keith to say that "There has been a growing realization that other non-intellectual variables must be considered if the margin of predictive error is to be reduced appreciably" (4, p. 11).

Efforts to use non-intellectual methods in academic prediction studies in the past have not been completely successful, however. An example of some of the conflicting results can be seen in the fact that H. G. Gough obtained a
significant relationship between non-intellectual variables and achievement in one study (3, p. 366), and in another found that the only difference was the criterion variable itself (2, p. 76).

Keith concluded that the conflicting evidence did not indicate that researchers were on the wrong track so much as that they were using "scales devised for other predictive problems ... with no ... relationship ... to academic achievement" (4, p. 16). Keith concluded that the Stern indexes "seem well suited to the seeking of such information" (4, p. 95).

Basic Assumptions

Certain basic assumptions were considered necessary in formulating the research design. While some of these assumptions appear to be somewhat questionable, careful consideration determined them to be reasonably sound and justified. These were as follows:

1. It was assumed that students participating in this study were representative of all of the students of the university.

2. It was assumed that students participating in this study had had ample opportunity to assess the environmental press of the university.
Definition of Terms

1. **Press**—a property or attribute of the environment that facilitates or impedes attaining a goal. In this study it was the pressure of the university upon the students to make certain adjustments.

2. **Needs**—a construct (a convenient fiction or hypothetical concept) which stands for a force in the brain region. In this study it was the internal counterpart of press, the way the individual strives to structure the environment for himself.

3. **Scale Score**—one of the thirty variables on each of the indexes.

4. **Factor Score**—one of the twelve personality factors of the AI or one of the eleven environmental factors of the CCI, which were extracted in a principal components equamax analysis devised by Saunders (8, p. 11).

5. **Composite Score**—an average of subscores, in this study, of the ACT "English," "Social Science," "Mathematics," and "Natural Science."

6. **CCI**—College Characteristics Index.

7. **AI**—Activities Index.

8. **GPA**—Grade Point Average, the number of grade points earned and averaged per semester hour. In this study it was averaged on the basis of four points for one semester hour of "A," three points for one semester hour of "B," two for one semester hour of "C," and one for one semester hour of "D" grades.
9. ACT—American College Test.

10. Seniors—students who had begun their college careers at Hardin-Simmons University, who were freshmen in the fall of 1963, and who had attained a minimum of eighty-five semester hours at the time of the study.

11. Freshmen—students who began their college careers at Hardin-Simmons University, who entered college for the first time in the summer or fall of 1966, and who were still enrolled at the time of the study.

Limitations of the Study

1. The subjects for this study were three hundred freshmen and one hundred six seniors.

2. Only students who began their college careers at Hardin-Simmons University and who had completed the ACT were included in this study.

3. Only the first semester grade point averages were used because second semester GPAs were not available.

4. Only the ACT composite score was used in this study.

5. The results of this study apply only to Hardin-Simmons University and should not be generalized to other institutions with different objectives and with different student bodies.
CHAPTER BIBLIOGRAPHY


CHAPTER II

REVIEW OF RELATED LITERATURE

Presented in this chapter are the research findings of literature in two specific areas: first, those studies which have been conducted in an effort to solve the academic prediction problem; and second, those studies which have been concerned with the background, development and research of the predictive instruments. Research findings concerning the prediction of academic achievement were found to be abundant; however, only a limited number of those which were considered relevant to this study were considered here. The research concerning the predictive instruments, while not limited, was less abundant, since the two indexes were not developed until 1958.

Research Using Various Predictive Variables

Prediction of academic achievement has been a problem of continuing interest to psychologists and educators. In the past, predictive instruments have usually been of an academic ability or capacity nature, but more recently there has been a growing conviction that other, non-intellectual variables must be considered if the margin of predictive
error is to be reduced appreciably. The use of non-intellectual variables to predict academic achievement has proved to be a difficult task, however. Stagner, in 1933, correlated the Bernreuter Personality Inventory with grades but found the correlations to vary. A slight positive correlation was found to exist with such traits as introversion, dominance, and self-sufficiency scales, but otherwise there was a slightly negative correlation between personality measures and grades (20, p. 65). Eckert found that attitudes were little better as academic predictors. Only a slight tendency was found for the better students to hold more liberal social attitudes, which suggested that superior students may hold an outlook on life different from that of the inferior students (5, p. 72).

Gladstein (in Stern), in an investigation of the relationship between non-intellectual measures and achievement, found differences between Anti-authoritarians, Authoritarians, and Rationals to be significant at the .001 level (2, p. 314). Heist found significant differences between students from schools which were rated high and low in production of future achievement scholars to be significant at the .01 level for males and at the .02 level for females. Measures used in this study included personality, interest, and value scales. High students were found to score higher on such traits as Originality, Complexity of Outlook, Ego Strength, and Impulse Expression, and were lower, to a significant degree, on such
traits as Social Introversion, Responsibility, and Authoritarianism. They were also higher on Theoretical and Aesthetic values and were lower on Religious values (12, pp. 362-367).

In an earlier study of personality factors related to achievement, Heist (11) found that consistent differences which occurred between high school students and college freshmen were also observed to exist between higher and lower achieving college students. Higher achieving students were observed to make much lower scores on Authoritarianism measures and to score much higher on Thinking Introversion and Originality scales. Heist concluded, as a result of this study, that the diverse complex motivation of students demands continuous study by professional people (11, p. 24).

Centi noted that part of the problem with non-achieving students was that many potential students do not invest themselves academically because they do not see themselves as successful students. Some of the forces Centi listed as being of utmost importance in motivation were the value system of the school as reflected in its programs and policies and through its teachers; the marking system, whether too liberal or too hard, thus killing motivation; the values of the student body, socializing, drinking, or cooperating with the authorities; the program of study, whether too heavy, or too many assignments; the discipline regulations, whether students were allowed to make their own decisions, as they must do, or whether stringent disciplinary policies stifle growth, frustrate
students, and increase antagonisms; the students' roommates and friends. The success of the individual compared with his own friends was considered as significant as success in relation to the total student body (3, p. 100).

The Minnesota Multiphasic Personality Inventory has also been correlated with academic achievement in an effort to improve academic prediction. Owens and Johnson (17), using a shortened form of the MMPI in investigating personality differences between over, under, and normal achievers, found that underachievers were too socially oriented. There appeared to be a slight tendency for underachievers to be depressed, psychic and prone to worry, but this was attributed to the poor achievement record itself (17, p. 43).

Another researcher, attempting to correlate personality scores with academic achievement, was Paul Centi. MMPI scores were correlated with the College Inventory of Academic Adjustment, and the results appeared to indicate that higher ranking students are better adjusted than lower ranking students. This was considered to be evidence that personality variables were significantly related to the academic achievement of college students (4, p. 188).

Gough also investigated the relationship between personality variables and achievement by analyzing the MMPI subscores in search of a solution. The analysis was made by comparing trait scores with Otis IQs, Pintner IQs, Grade Point Average, and Sociometric status. The only significant
differences found between the higher and lower students was grade point average, the selection variable itself (8, pp. 57-76).

In another study, Gough, using the Brown Personality Inventory, found a low but consistently negative correlation with five achievement tests in a study of sixth grade children. There appeared to be a tendency for the maladjusted pupils to make lower achievement scores (9, p. 537).

Other studies using personality measures have met with much of the same inconclusive results as these. The Edwards Personality Preference Schedule was used by Goodstein and Heilbrum in a correlation study with grade point averages. The results indicated an essentially negative relationship (7, pp. 317-320). Goff used the California Personality Inventory and Harrower's Group Rorschach to study a group of freshmen and a group of seniors. The fact that no significant relationships were found in traits that permit prediction of academic achievement led to the conclusion that the complexity of the ego requires intensive investigation beyond trait identification (6, p. 302).

Harris (in Keith) found motivation to be the most important non-intellective factor, in a study of achievement, followed by other personal, social, and economic characteristics (13, p. 13). Griffiths (in Keith) found no significant results in a study of men with brilliant academic records and men on academic probation, using the Bell Adjustment Inventory.
Gough, on the other hand, developed an instrument using personal values, beliefs, and self-definitions, which resulted in a relationship coefficient of .38 with academic achievement (8, p. 366).

The one clear impression that emerged from the conflicting data of these studies was that there has been no final answer discovered to the problem of predicting academic achievement accurately. Neither is there any really good reason to feel that such a final solution will be discovered in the near future. The fact that there have been no consistent findings led Keith to suggest that this inconsistency may be due to the use of scales that were devised for other purposes. Keith made the observation that researchers may not have been on the wrong track so much as that they may have been using the wrong instruments. Keith suggested that the fallacy in these studies may be that they have

... tended to use scale scores from instruments which were devised in other predictive problems, often clinical, with no intended or even casual relationship to the variable related to academic achievement (12, p. 16).

Research Concerning the Predictive Instruments

The instruments used in this study were designed for use as academic predictors. The American College Test (ACT) was specifically designed to be used to predict academic success in college. That the ACT has been succeeding, to some extent, can be seen in the relationship between this variable and
college grades. The coefficient reported in Technical Report was .497. When correlations with high school grades were added to the multiple relationship the coefficient became .644 (1, p. 19).

The Activities Index and the College Characteristics Index were also designed for use in the academic environment and for prediction of achievement. The indexes were also constructed to provide a measure of individual needs and of the college press in the area of academic adjustment (21; 1, pp. 215, 380).

Murray's personality theory (10; 21; 16) furnishes the basis for the construction of both of the Stern indexes. Murray says that personal needs can be inferred on the basis of (a) the effect or end result of the behavior, (b) the particular pattern or mode of behavior involved; (c) the selective attention and response to a particular class of stimulus objects, and (d) the expression of satisfaction when a particular effect is achieved or of disappointment when a particular effect is not achieved (16, pp. 122-124).

Thistlethwaite conducted a research study using the College Characteristics Index early in its development, and correlated its scales with achievement. High correlations were found between CCI scale scores and achievement scores in the area of natural science. Also certain scales were found to be highly correlated with social science and with arts and humanities. Institutional productivity indexes
were equated for initial talent supply so that correlations were clearly dependent on the environmental characteristics (24, p. 90).

Pace and Stern (1958) indicated a feeling that though needs or press might prove useful in academic prediction, the congruence between needs and press might prove to be better academic predictors than any single aspect of either individual needs or of the environmental press (18, pp. 269-277).

Congruency scores have been used in a number of studies. Keith (13), in a doctoral dissertation, studied the relationship of needs and press congruence among the different divisions of the university. A significant, positive relationship between the congruency variables of the alpha press (an objective measure of the academic environment) and individual needs with academic achievement was observed, although there was no significant relationship between the congruency scores and reported personal satisfaction. Keith concluded, however, that the CCI and the AI seemed well suited to the seeking of such information (13, p. 95).

Lauterback and Vielhaber (14) also conducted a study using congruency scores obtained between two groups of freshmen under two conditions and a group of juniors. Juniors were to supply a perception of the environmental press under standard conditions while one group of freshmen were to respond to the scale items as they wished them to be and the
other group was to respond to the items as they perceived them to be.

Each of the group responses was then correlated with academic achievement with the following results: The responses of the juniors and the responses of the freshmen who were to respond to the press as they perceived it to be were found to be significantly and positively related to academic achievement. Responses of freshmen who were to respond to the scale items as they wished them to be were also significantly related to achievement, but in a negative direction. This was opposite to that which had been hypothesized. The researchers concluded that congruency variables may be principally cognitive measures (14, p. 971).

McFee conducted a study to determine the relative independence between scale scores of the Activities Index and the College Characteristics Index. No correlations were found on eighty-eight per cent of the three hundred items of the two scales. The conclusion was reached that the two scales were independent of each other (15, p. 28). However, in another study to investigate the relative independence of the two indexes, Striker found that the second order factors of the indexes were significantly related, though to a low degree. Striker concluded, however, that for practical purposes the two scales may be used as independent measures (23, p. 370). It thus appeared that congruence variables would not be artifacts.
One other research, of particular interest to this study, was a doctoral dissertation concerning the Pace College Image using the CCI. Rock (19) included freshmen, seniors, counselors, and faculty members in the study of the college press, and compared the index responses of each of the sub-groups to the responses of the other sub-groups. Of particular interest was the comparison of freshmen responses to those of seniors. Rock found that seniors tended to see the college as more debasing, though not significantly so, than did freshmen. The freshmen tended to perceive the institution as being slightly more charitable and more objective than did seniors. For the most part all of the sub-groups tended to agree in the perception of the environmental press (20, pp. 46-47).
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CHAPTER III

METHODS AND PROCEDURES

Characteristics of Subjects

One hundred thirty-one freshman boys and one hundred sixty-nine freshman girls, a proportion of females somewhat higher than was representative for the university as a whole, participated in the study. Fifty-nine male seniors and forty-seven female seniors also participated in the study in one phase of the research. Freshman students participating in the study were limited to those who had enrolled in Hardin-Simmons University as beginning freshmen in either of the two 1966 summer terms or in the fall semester of 1966. A roster of three hundred eighty-eight student names was made up at the end of the official fall enrollment which included the names of the participating freshmen students. Investigation revealed that eighty-seven of the three hundred eighty-eight persons listed on the roster were not eligible to participate for a variety of reasons. Some of these were transfer students from other institutions; some were special students taking a limited academic load, or admitted on probation with a limited number of hours, some as few as three or six hours. Some students had dropped out of school,
or were suspended before the research was completed, and were not available to participate. A total of three hundred freshman students, who were considered eligible, participated by completing both the Activities Index and the College Characteristics Index. Some of the transfer students and special students who were listed on the roster also completed both of the indexes, but their scores were not used in this study because the students were considered ineligible.

The responses of only one student, who was considered eligible, were not obtained from both indexes; therefore, the scores of this student were not used on the index he did complete. This student failed to complete one index because he commuted from a distant city and was not contacted in time to do so.

Senior students participating in the environmental perception aspect of the study included one hundred six persons from a roster of one hundred sixteen. These students were considered to be eligible if they had entered Hardin-Simmons University as freshmen approximately four years before and had made steady progress since that time. These students were required to have a minimum of eighty-five semester hours credit at the time of the study.

An intense effort was made to secure the participation of every eligible person, in order to increase reliability of the results of the study. However, ten seniors did not participate. Three of these seniors declined to participate.
because the study was not formally required by the university, and seven others could not find the time in their schedules to do so.

**Description of Instruments**

In addition to the *American College Test*, an aptitude test currently being used to predict academic achievement, as measured by grade point average—this study utilized Stern's *Activities Index* (AI) and *College Characteristics Index* (CCI) as the main predictive instruments. The AI has been found to correlate with a variety of forms of behavior including academic performance (1, p. 3). The CCI has been found to be reliable in indicating college press as observed by college participants and observers (1, p. 4). Stern reported research on the indexes including a wide sample of individuals. Samples ranged from psychiatric patients and industrial personnel to nearly 10,000 students from one hundred American colleges and universities (1, p. 3).

Each of the indexes consists of three hundred items with thirty scales of ten items each. The CCI describes the aspects of the college environment which would tend to encourage one particular type of behavior and which would tend to discourage others. The AI describes commonplace activities or feelings for which the individual indicates his like or dislike. Stern has the following to say,
The purpose of the two instruments is to provide a set of parallel yardsticks for measuring the person-situation parameters provided by the conceptual scheme (2, p. 318).

Stern describes the two indexes as follows:

The individual's preference for the representative activities included in the Activities Index provide an estimate of the kinds of things which are sufficiently important to him to be likely to recur in the form of characteristic overt behavior. The College Characteristics Index measures the situational counterpart to these personal needs by asking the students what kinds of representative activities are characteristic of their institution. The CCI describes the situational context in which a given need is apt to find fulfillment (2, p. 318).

The AI consists of thirty ten-item scales corresponding to eighteen unidimensional and twelve bipolar needs adapted from Murray. Each item describes a commonplace daily activity or feeling for which the respondent indicates his like or dislike. As an example, the magnitude of the need for order is determined by the number of preferences an individual indicates among such activities as: "Washing and polishing things like a car, silverware, or furniture," "Keeping an accurate record of the money I spend," "Arranging my clothes neatly before going to bed," and the like (2, pp. 317-318).

A parallel instrument for measuring academic press, the CCI . . . has been constructed as a direct complement to the . . . AI. Corresponding to each need scale of the latter is a scale describing aspects of a college environment which tend to satisfy, support, reward, or reinforce an individual who was characterized by the need in question . . . a Press for order, for example is determined by the number of activities of the following kind which participants in the situation indicate to be applicable to their institutions "In many classes students have an assigned seat," "Professors usually take attendance in class," "Most students' rooms are pretty messy," and the like (2, p. 318).

The need-press scale definitions are the same for both indexes. The descriptions and definitions for the indexes are presented in Appendix C.
Stern statistically analyzed the test responses of 1,076 students in twenty-three schools in developing the factors for the two indexes. The method of statistical analysis in the development of the indexes is described as follows:

The covariance matrix produced from the scale intercorrelations was factored and rotated (normal varimax) first on the AI needs variables above and then in a composite analysis including both the 30 AI scales and the 30 CCI scales as well. Thirteen need factors emerged in the first analysis. The same thirteen reappeared in the second analysis, together with ten new factors produced by the press variables. The two sets of factors are independent of one another, with the exception of one which shows appreciable loadings from both needs and press sources (1, p. 7).

Stern found in later research that the AI contained twelve factors and that the CCI contained eleven factors (4, p. 11).

Both sets of factors are substantially alike in content. It seems evident therefore that the same dimensions are involved in the organization of needs as well as press. It is also evident that these dimensions are not artifacts attributable to the parallel nature of the index forms or the single source of subjects from which both sets of responses were obtained, inasmuch as each instrument accounts only for its own set of the twin groups of factors (1, p. 8).

The mean of the item index coefficient for the CCI was found to be .52 for the thirty scales, according to Stern (2; 3). The mean of the reliability coefficient was .57 based on 425 upper division National Merit Scholars from seventeen colleges. The CCI scales have been analyzed to
identify eleven first order factors and two second order factors or dimensions (2, pp. 319-320; 3, p. 6a).

The Activities Index consists of thirty scales of ten items each, paralleling those of the CCI, and corresponding to the individual's needs as manifested by his behavior. Average Ebel item index discrimination per scale was determined to be .57. Reliability, using Kuder-Richardson Formula 20, was observed to be .67. Twelve first order factors and three second order factors, or dimensions, have been identified (2, p. 320; 3, p. 6a).

The College Characteristics Index "Intellectual Climate" score has been correlated with a number of other measures of academic quality. A coefficient of .80 was observed between this factor and the Knapp-Greenbaum Index of Scholars, an index of the rate at which the students of a particular institution obtain Ph.D.'s and certain other awards and achievements. This factor also correlates with another such index which included the per cent of graduates receiving Ph.D.'s from thirty-seven schools, the coefficient being found to be .76. A coefficient of .49 was observed between the CCI factor 2, "Intellectual Climate," and the per cent of Merit Scholar entrants for forty-one schools. The coefficient rises to .59 for the per cent of Merit Scholars attending the particular schools at all levels, however. A coefficient of .83 was observed between the CCI factor 2, "Intellectual
Climate," score and the College Board Verbal Score (1, p. 13; 5, p. 146).

Stern observed large differences between students from high and low intellectual schools; and, though students from the highly intellectual schools had stronger intellectual interests, the differences between the students were not as great as were the differences between the school environments. Four of the AI scales seem to have outstanding promise of being useful for predictive purposes (1, p. 37). These are the scales investigated in this study. The first is scale 17, "Humanities, Social Science," which differentiated significantly between high and low intellectual persons. The intellectual group obtained a standard score of .65 above the mean while the low group obtained a standard score of -.95 below the mean. This was a difference of 1.60 which is significant at the one-tenth of one per cent level (1, p. 15).

Another scale which seemed to have promise is scale 25, "Reflectiveness." The high group obtained a standard score of .37 as compared to the low group's score of -.85, a difference of 1.22, which is also significant at the .001 level. Scale 26, "Science," differentiated between the high and low groups also. The high group obtained a standard score .48 above the mean as compared to the low group's -.26 which is a difference of .74 and which is observed to be significant at the .001 level. Scale 30, "Understanding," was also found to differ significantly between the two groups at the .001
level. The standard score for the high group was .44 and for the low group -.45 for a difference of .89 (1, p. 15). Stern concludes that these four scales may provide a useful index of student intellectual orientation as an easily obtained supplement to a scholastic aptitude test score for admissions purposes (1, pp. 37-38).

Of particular interest to this study was Stern's observation that "Educability" (made up of the AI factors 3, 4, 5, 6, and 7) was of "intrinsic interest to educators ... insofar as it combines elements of intellectuality and submissiveness." Stern felt that these factors seemed likely to be related, to a significant degree, to academic achievement. Stern describes this dimension as follows:

There is a fourth dimension to be extracted in this second-order space, of considerably less magnitude than the preceding three. It is of intrinsic interest to the educator, however, insofar as it combines elements of both intellectuality and submissiveness. ... it excludes the more self-assertive aspects of Intellectual Orientation on the one hand, and the most self denying inhibited aspects of Dependency Needs. Insofar as scores on this dimension reflect a strong interest in intellectual activities, coupled with orderliness and conformity, it seems likely that this factor is specifically associated with academic achievement. A score for this dimension may be obtained by summing the values for Factor (3) Intellectual Interests, (4) Motivation, (5) Applied Interests, (6) Orderliness, and (7) Submissiveness (4, pp. 17-18).

Stern's description of the AI and GCI factors which are included in this study is presented in Appendix D.
Research Design

Correlation (Pearson's $r$), Multiple correlation, the $F$ test, and the $t$ test were the statistical methods used to test the hypotheses in this study. An attempt was made to obtain both utility and reliability of results by limiting the participating students to specific groups. Entering freshmen who were just beginning their college careers were asked to complete both the Activities Index and the College Characteristics Index. Five factors and four scales were extracted for use from the AI. The factors were those making up the fourth dimension, "Educability," while the four scales were those making up the first of these factors, factor 3.

Four factors were extracted from the CCI, which were those measuring the college press that corresponds with the student needs that were measured by the AI factors used in this study. From the AI factors and the CCI factors were obtained the congruency variables. Congruency scores were obtained by subtracting the AI factor scores from the CCI factor scores, with which they covaried and which corresponded to the environmental counterpart of the AI factors. All congruency scores were treated as positive to determine whether a departure of needs from press, in any direction, would prove to be significantly related to academic achievement.

The Activities Index factors, alone, were selected to be correlated with grade point average. This decision was
made because of the nature of the scales and the nature of the study. The AI factors were suggested for this type of investigation and they seemed to hold promise as individual predictors of academic achievement. The AI factors were long enough and, from their description, seemed applicable to the academic setting in warranting this type of investigation.

The AI scales were not chosen to be correlated with grade point average for three reasons. First, the scales were included in the first of the AI factors and their influence could thus be determined to some extent. Second, the shortness of the scales suggested that they would be limited in value, as lone predictors, even if a significant relationship was found to exist. A third reason, and this was probably the most influential one, was the fact of expediency. The desire to limit the study and the feeling that this would be the most appropriate place to limit it resulted in the scales not being included in the simple correlation aspect of the study.

The congruency variables, also, were not chosen to be correlated with grade point average in the simple relational aspect of the study. The reason for this decision was that of desiring to limit the study. It was felt that the main purpose of the study was to find non-intellectual variables that could be used to increase the relationship between the ACT composite score and grade point average. It was felt
that these congruency variables could contribute most in
this multiple correlation scheme.

The final aspect of the study, and one that grew out of
the study and development of congruency scores, was the
determination of the extent of agreement between freshmen
and seniors in their perception of the college press. The
means of their respective responses, on each of the thirty
CCI scales, were treated by Fisher's t Test. This was a
relationship type of study.

Procedure for Collecting Data

Three hundred freshmen participated in this study by
completing both the Activities Index (AI) and the College
Characteristics Index (CCI). The AI was administered in
eighteen English classes which included all of the sections
of freshman English offered during that semester. Entering
freshmen are required to take a freshman English course
during their first semester in college. Most of the eligible
students were, therefore, contacted and tested in this way.
However, those freshmen who had completed their English
requirement during the preceding summer terms, and those
who were absent from class on the day of the test, were not
contacted in this way. Those students were contacted person-
ally and a special testing session was arranged. Letters,
telephone calls and personal contacts were used to enlist
the participation of the students and to arrange special testing sessions.

The **College Characteristics Index** was administered in twelve Bible classes. Bible is required of all students who attend Hardin-Simmons University; however, it is not mandatory that it be taken in any particular semester. In fact, many students wait until their senior year to meet this requirement. Therefore, a much smaller number of the criterion group were reached in this way. These students, together with those who missed class the day of the test, were contacted in the same way as were those students who missed the AI, and special testing was arranged.

Seniors could not be contacted or tested in any subject matter area, or as a group. Each of the seniors was contacted by letter, telephone, or in person to enlist his participation. The response of these students was considered to be excellent in view of the fact that only eleven out of a total of 418 students, who were considered to be eligible, failed to participate.

Index answer sheets were hand scored by a graduate student who volunteered services for that purpose. The answer sheets were rescoring, as a check for errors, by a laboratory assistant, who was also a graduate student, or by the research director. Scale scores and factor scores which were to be used in this study were obtained for both indexes in accordance with the 1963 **Scoring Instructions** and **College Norms** (4).
Senior and freshman responses were compared on each of the thirty CCI scales, but these responses were not compared on the CCI factors since only four of the eleven CCI factors were extracted for the purposes of this study.

ACT composite scores were obtained from the records of the students, as were the grade point averages. The grade points were those earned through the fall semester of 1966, only, since the spring semester grades were not available at the time that the study was completed. Congruency scores were obtained by subtracting raw CCI factor scores from raw AI factor scores with which they had been paired on the basis of their complementary relationship. No track was kept of the algebraic signs, and the congruency scores were treated as positive. This decision was made because of the desire to test the theory that a departure of press from needs would affect academic achievement regardless of the direction of the departure.

**Treatment of the Data**

Scores from the indexes were recorded so that the 1620 IBM computer at North Texas State University could be used to determine the simple correlations and the multiple correlations and so that tests of significance could be determined. The tenability of the hypotheses was determined by examining the data and treating them statistically according to a standard scheme for computing correlation and multiple
correlation which was available in the North Texas State University Computing Center. Fisher's t Test was computed in the case of Hypothesis D to determine the degree of significance between freshman and senior mean responses on the CCI for each of the thirty scales.

The computational steps employed in computing the correlations were as follows:

1. The means and standard deviations of the independent and dependent variables were computed.

2. Simple correlations (Pearson's r) between AI factors 3, 4, 5, 6 and 7, and grade point average were obtained. The statistical significance of these variables were related to hypothesis A. Simple correlations were also obtained for the scale and congruency variables, these were related to hypotheses B and C, so that these data could be used in further computation.

3. The derived values were entered into a standard scheme for computing the coefficient of multiple correlation. These data supply an F level, which indicates whether or not the addition of an additional variable has significantly increased the overall prediction of the criterion, a coefficient of multiple determination, which is the percentage of the criterion variable being accounted for by the predictors in question, and a coefficient of multiple correlation. The statistical significance of these tests was related to hypotheses B and C. The actual scheme employed was the
program available in the North Texas State University Computing Center, the Stepwise Multiple Linear Regression Analysis for IBM 1620.

4. Mean scores of freshmen and seniors from the CCI scales were treated by Fisher's $t$ Test to determine the extent of agreement between these two groups. The statistical significance of this test was related to hypothesis D.
CHAPTER BIBLIOGRAPHY


2. , "Congruence and Dissonance in the Ecology of College Students," Student Medicine, 8 (April, 1960), 304-399. Reprint.


4. , Scoring Instructions and College Norms, Activities Index, College Characteristics Index, Psychological Research Center, Syracuse, New York, Syracuse University, Psychological Research Center, 1963. Distributed by National Computer Systems, 1015 South 6th Street, Minneapolis, Minnesota.

CHAPTER IV

STATISTICAL RELATIONSHIPS AND INTERRELATIONSHIPS AMONG INDEPENDENT AND DEPENDENT VARIABLES

Analysis of the Data

The purpose of this study was to investigate the relationship and interrelationship between certain non-intellectual variables from the Activities Index and the College Characteristics Index with academic achievement, as it was measured by grade point average, in Hardin-Simmons University.

The statistical methods employed in this study included simple correlation (Pearson's r), multiple correlation (the Stepwise Multiple Linear Regression Analysis for the IBM), the F test and Fisher's t test. Means and standard deviations were obtained for all of the variables. Simple correlation coefficients were obtained for all of the independent variables with grade point average, together with the values needed to calculate the multiple correlations. The program also included appropriate tests of significance. These tests of significance consist of the F test and the t test. The t test was also employed to test the null hypothesis between the mean scores of freshmen and seniors for the thirty scales. The statistical data were analyzed and are presented below.
Simple Correlations

Hypothesis A was tested by computing Pearson's Product Moment correlations between the Activities Index factor scores, which make up the fourth dimensional aspect of the index and which are those used in this study, and academic achievement, as measured by grade point average. The stated hypothesis was rejected for three of these and accepted for two.

The means, standard deviations, and simple correlations of the primary predictors with grade point average and with the ACT composite score, which concern hypothesis A, and the means and standard deviations of the ACT and GPA are presented in Table I. Each of the predictor variables is analyzed and discussed in the order of its appearance rather than in the order of its importance for predictive purposes.

The first variables presented are the GPA and the ACT composite score. The GPA was observed to be 2.2788 and the standard deviation was .8133. While the ACT is not one of the non-intellectual predictors, and is only of secondary interest in this study as it was affected by the addition of the particular non-intellectual predictors in the multiple relationship, it is presented here for informative and comparative purposes. The purpose of this section of the chapter is to determine the relationship of each of the AI factors to the GPA.
### TABLE I

MEANS, STANDARD DEVIATIONS, AND SIMPLE CORRELATIONS
OF THE AI FACTOR VARIABLES WITH GRADE POINT
AVERAGE AND THE ACT COMPOSITE SCORE
(N = 300)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Means</th>
<th>Standard Deviation</th>
<th>GPA Correlation</th>
<th>ACT Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPA</td>
<td>2.2788</td>
<td>0.8133</td>
<td>. .</td>
<td>0.4747**</td>
</tr>
<tr>
<td>ACT composite</td>
<td>20.4833</td>
<td>4.3092</td>
<td>0.4747**</td>
<td>. .</td>
</tr>
<tr>
<td>AI factor 3</td>
<td>22.5100</td>
<td>7.9042</td>
<td>0.1798**</td>
<td>0.2133**</td>
</tr>
<tr>
<td>AI factor 4</td>
<td>24.8800</td>
<td>6.2523</td>
<td>0.1224*</td>
<td>0.1585**</td>
</tr>
<tr>
<td>AI factor 5</td>
<td>16.3500</td>
<td>5.8754</td>
<td>-.0054</td>
<td>-.0340</td>
</tr>
<tr>
<td>AI factor 6</td>
<td>22.8033</td>
<td>4.2116</td>
<td>0.0363</td>
<td>-.0757</td>
</tr>
<tr>
<td>AI factor 7</td>
<td>24.4133</td>
<td>5.5673</td>
<td>0.0766</td>
<td>-.0921</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.
**Significant at or beyond the .01 level.

The ACT composite score was found, as shown in Table I, to be related to the criterion variable with a coefficient of correlation of 0.4747, which was significant beyond the one per cent level. This coefficient was slightly below that which was reported by the American College Testing Program, Inc. in Technical Reports (1, p. 19). It should be noted, however, that the students participating in this study were actually a select group, since a certain category of the present freshman class were not permitted to participate. It must also be noted that the grade point average was obtained
at the end of the fall semester rather than at the end of the year as was true of the ACT research. The coefficient of .4747 was significant beyond the one per cent level, though it was not as high as educators could wish. This variable was observed to have sustained the highest relationship with the criterion variable that was observed in this study.

The statistical data concerning factor 3, "Intellectual Interests," are presented in Table I. An inspection of these data reveals a positive relationship with the criterion variable of .1798, which was significant at the one per cent level. However, the relationship of factor three with the ACT composite score was found to be even more significant with an observed coefficient of .2133. This relationship was the highest to be observed between the AI factors and the ACT. A high relationship between two independent variables suggested that there was an overlapping between them which diminished the multiple predictor relationship. Factor 3 did not appear to be related highly enough to the GPA to make it a good prospect as a lone predictor, though it was significant. However, the hypothesis that there would be a significant relationship between factor 3 and the criterion variable was supported at the one per cent level.

The second AI factor to be presented is factor 4, "Motivation." An inspection of the data reveals a positive correlation of .1242, which was significant at the five per cent level. However, an inspection of the data also reveals
an even higher relationship between factor 4 and the ACT composite score, with an observed coefficient of .1585. The relationship of factor 4 with the criterion variable did not appear to be significant enough to support the hypothesis that it would prove to be helpful as a lone predictor. The hypothesis that this variable would prove to be significantly related to the criterion variable, however, was statistically supported at the five per cent level. The high relationship which factor 4 sustained with the ACT composite score indicated an overlapping between the two variables which makes the use of both of these instruments in the same multiple predictor scheme of questionable value.

Factor 5, "Applied Interests," is the next variable to be presented. An inspection of the data revealed the relationship with the criterion variable to be very low, and also to be the only negative one to be obtained. This coefficient was -.054, and the relationship between factor 5 and the ACT was also observed to be negative, -.0340. This factor was not supported as a lone predictor of academic achievement. Sometimes a negative relationship between two independent variables will serve to increase the multiple relationship to a significant degree. Guilford says of this possibility,

It would seem, at first thought, that any test that correlates zero with a criterion would have no value in predicting the criterion. It is true that alone it has no value whatever for doing so. But it is not true if that test is combined with other tests with which it correlates. . . . Clearly a test with
zero validity may add materially to prediction if it correlates substantially with another test that is valid (3, p. 403).

Factor 6, "Orderliness," is the next variable to be investigated. Inspection of the data reveals a positive, though low, relationship with the criterion variable. The coefficient of .0363 which was observed between factor 6 and grade point average was not statistically significant. The relationship of factor 6 with the ACT was observed to be -.0757, which, also, was not significant. The low correlation observed with the criterion variable did not support this variable as a lone predictor. The outlook for the variable in a multiple predictor scheme was viewed more optimistically. However, the hypothesis that factor 6 would be significantly related to the criterion variable was not supported by the data.

Factor 7, "Submissiveness," is the last of the AI factors to be presented. This variable was observed to be positively related to the criterion variable with a coefficient of .0766, which was not significant. Factor 7 was also observed to be negatively related to the ACT composite score with a coefficient of -.0921, which also was not significant, but which was observed to be higher than that with grade point average. The relationship of factor 7 with the criterion variable did not support it as a lone predictor, but the negative relationship observed with the ACT, which
was just below the significant level, suggested a more optimistic outlook in the multiple correlation scheme.

The data reveals that only factors 3 and 4 were significantly related to the criterion variable, as had been hypothesized. However, it does not appear that either factor was highly enough related to be used as a lone predictor. None of the other three factors were significantly related with grade point average and, therefore, were not highly enough related to be considered as lone predictors. However, these three factors, 5, 6, and 7, were observed to be related negatively with the ACT, suggesting possible improvement of the multiple relationship, with the most likely increase being with factor 7 because of its higher coefficients.

The means, standard deviations, and simple correlation coefficients were also obtained for the AI scale scores as the first step in securing data for the multiple correlation scheme. The data are presented in Table II for information and for comparative and analytic purposes. Each of these predictor variables is discussed in the order of its importance for predictive purposes rather than in the order of its appearance. Scale 17, "Humanities, Social Science," is the first variable presented, and it is the most important variable from the standpoint of having sustained the highest relationship with the criterion variable. The coefficient was observed to be .2286, which was significant beyond the
one per cent level. This scale not only obtained the highest relationship with the criterion variable that was observed with the index variables, but it was the only one of the index variables to sustain a lower relationship with the ACT composite score than was observed with the criterion variable, .1690. AI scale 17 gave promise of contributing to the significance of the relationship between the ACT and GPA. The relationship of scale 17 with GPA was high enough to warrant optimism, but the significant relationship sustained with the ACT diminished the significance to some extent.

The only other scale found to be significantly related to the criterion variable was scale 30, "Intellectuality." The coefficient was observed to be .2260, which was significant beyond the one per cent level. However, the relationship of scale 30 to the ACT was observed to be .3077, which was the highest relationship observed between any of the index variables and the ACT. The fact that the relationship between scale 30 and the ACT was observed to be higher than that between scale 30 and the grade point average suggested that the use of both scale 30 and the ACT in the same predictor scheme would not be helpful.

Scale 25, "Reflectiveness," was the next variable to be presented. Inspection of the data reveals a positive relationship, .1071, which was not quite high enough to be significant. However, this variable, too, sustained an even
higher relationship with the ACT, .1125. This variable appeared to be overlapping with the ACT while proving to be non-significantly related with GPA. The data did not optimistically support scale 25 as a predictor with the ACT although the relationship of scale 25 bordered on being significantly related with GPA.

### TABLE II

**MEANS, STANDARD DEVIATIONS, AND SIMPLE CORRELATIONS OF THE AI SCALE VARIABLES WITH GRADE POINT AVERAGE AND THE ACT COMPOSITE SCORE**

(N = 300)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Means</th>
<th>Standard Deviation</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>GPA</td>
</tr>
<tr>
<td>AI scale 17</td>
<td>5.5133</td>
<td>2.7525</td>
<td>.2288**</td>
</tr>
<tr>
<td>AI scale 25</td>
<td>7.0633</td>
<td>2.0670</td>
<td>.1071</td>
</tr>
<tr>
<td>AI scale 26</td>
<td>4.1400</td>
<td>3.2156</td>
<td>.0221</td>
</tr>
<tr>
<td>AI scale 30</td>
<td>5.8533</td>
<td>2.2176</td>
<td>.2260**</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

**Significant at the .01 level, or beyond.

Scale 26, "Science," is shown to have the lowest relationship with the criterion variable in Table II. The coefficient was observed to be .0221 whereas the correlation with the ACT was found to be .0918. The fact that this variable correlated to a higher degree with the ACT did not indicate that the relationship between the ACT and GPA would
be increased to a significant degree with the addition of this variable.

In summary, the data seem to indicate that scale 17, "Humanities, Social Science," is significantly related to grade point average and that this relationship is high enough to perhaps contribute to the multiple correlation, since the relationship between this variable and the ACT was lower than that with the GPA.

Scale 30, "Understanding," on the other hand, while observed to be almost as significantly related with grade point average as was scale 17, sustained a higher relationship with the ACT than with the GPA. Therefore, the outlook for a significant increase in the multiple relationship between the ACT and GPA with the addition of scale 30 was not an optimistic one.

Scale 25, "Reflectiveness," was significantly related with the ACT but not with GPA and, therefore, the outlook for this variable in the multiple correlation was not an optimistic one, although the relationship with GPA was on the border of significance.

Scale 26, "Science," was not significantly related either with the GPA or with the ACT, but the relationship with the ACT was found to be much higher. The outlook for this variable in the multiple relationship was not an optimistic one.
One of the particular interests in this study was the investigation of the relationship existing among congruency variables, the ACT composite score and grade point average. Specifically, the interest was concerned with the degree to which the relationship between the ACT and GPA would be increased with the addition of the congruency scores.

Congruency scores are constructed on the basis of subtracting need scores from press scores. The closer the two scores are, theoretically, the more congruent the need-press relationship. If it is true that the achiever is the one whose needs best mesh with the environmental press, then educators may be in a position to make better individual predictions and, also, to help the individual make the most of his educational opportunity.

Table III presents the data obtained for the congruency variables including means, standard deviations, and simple correlations both with the ACT and with the GPA. The first of the congruency variables to be considered, because it was the most important for predictive purposes, was congruency IV, "AI F6-CCI F8," "Orderliness-Academic Organization." This variable was found to be related with the GPA with a coefficient of .0636, which was not significant. The relationship with the ACT, however, was .1146, which was significant at the five per cent level. The remaining congruency variables were insignificant. The correlation coefficient of congruency V, "Submissiveness-Academic
Organization," was .0311, but the relationship with the ACT was .1412, which was significant at the five per cent level.

**TABLE III**

MEANS, STANDARD DEVIATIONS, AND SIMPLE CORRELATIONS OF THE CONGRUENCY VARIABLES WITH GRADE POINT AVERAGE AND WITH THE ACT COMPOSITE SCORE (N = 300)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Correlations</th>
<th>GPA</th>
<th>ACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruency I</td>
<td>7.8866</td>
<td>5.6435</td>
<td>.0121</td>
<td>.0752</td>
<td></td>
</tr>
<tr>
<td>Congruency II</td>
<td>7.4933</td>
<td>5.5229</td>
<td>.0075</td>
<td>-.0289</td>
<td></td>
</tr>
<tr>
<td>Congruency III</td>
<td>17.6633</td>
<td>7.2771</td>
<td>.0197</td>
<td>.0212</td>
<td></td>
</tr>
<tr>
<td>Congruency IV</td>
<td>15.6033</td>
<td>6.3195</td>
<td>.0636</td>
<td>.1146*</td>
<td></td>
</tr>
<tr>
<td>Congruency V</td>
<td>14.0200</td>
<td>6.8239</td>
<td>.0311</td>
<td>.1412*</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

The coefficients of .0197, .0121, and .0075 were obtained with congruency variables III, I, and II, respectively, and are presented in Table III. None of the congruency variables appeared promising as potential predictors, as they were constructed in this study.

**Multiple Correlations**

"Multiple correlation is related to the intercorrelation of independent variables as well as to their correlation with the dependent variable" (3, p. 392). After the
computation has been completed, however, the multiple correlation is subject to the same kinds of interpretation as are simple correlations (3, p. 397). The multiple correlation squared ($R^2$), also called the coefficient of multiple determination, indicates the percentage of variance in the criterion variable that is being accounted for by that particular variable. The coefficient of multiple determination eliminates the common factors being measured from duplication or double consideration (3, p. 397). A test of whether the addition of a variable significantly increases the multiple correlation is available. Guilford says that

We often want to know whether the multiple $R$ with more independent variables included is significantly greater than the $R$ with a smaller number of variables. There is available an $F$ test for such a difference (3, p. 400).

One of the major objectives of this study was to identify non-intellectual variables that would, when entered into a multiple correlation scheme, contribute to the relationship between an aptitude test, such as the ACT, and academic achievement. In this phase of the study the ACT composite score relationship with grade point average was the initial relationship for the multiple correlation scheme. In Table IV the statistical relationship between each of the predictor variables and the grade point average is presented. The statistical data include $F$ level, multiple determination ($R^2$), and multiple correlation ($R$). Each of the predictor
variables is presented in the order of its appearance in Table IV rather than in the order of its importance for predictive purposes.

TABLE IV

MULTIPLE CORRELATION DATA OF THE AI FACTORS AFTER ADDITION OF EACH VARIABLE TO THE MULTIPLE RELATIONSHIP SCHEME, SHOWING THE F LEVEL, $R^2$ AND $R$ ($N = 300$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>$F$ Level</th>
<th>$R^2$</th>
<th>$R**$</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT composite</td>
<td>86.705**</td>
<td>.22538</td>
<td>.4747**</td>
</tr>
<tr>
<td>AI factor 3</td>
<td>2.502</td>
<td>.23185</td>
<td>.4816</td>
</tr>
<tr>
<td>AI factor 4</td>
<td>.946</td>
<td>.22784</td>
<td>.4773</td>
</tr>
<tr>
<td>AI factor 5</td>
<td>.044</td>
<td>.22549</td>
<td>.4748</td>
</tr>
<tr>
<td>AI factor 6</td>
<td>2.028</td>
<td>.23063</td>
<td>.4802</td>
</tr>
<tr>
<td>AI factor 7</td>
<td>5.706*</td>
<td>.23998</td>
<td>.4899</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.
**Significant at the .01 level.
***All of the Rs are significant but not all of the variables contributed to the $R$ significantly.

The first of the variables presented, however, was not one of the non-intellectual variables. The ACT composite score is presented only for comparative purposes. The following data are presented concerning the ACT. The $F$ level was 86.705, which was significant beyond the one per cent level. The correlation coefficient, which is not an $R$, was .4747.
The ACT $R^2$ was observed to be .22538, which indicated that the ACT composite score, alone, was accounting for slightly less than twenty-three per cent of the variance in the criterion variable. Multiple correlation, as Guilford indicated, is to be interpreted as though it were a simple correlation coefficient (3, p. 297). In actuality the ACT coefficient, .4747, was a simple correlation coefficient since the ACT was the only independent variable involved in the relationship.

The first of the non-intellectual variables presented in Table IV is AI factor 3, "Intellectual Interests." The $F$ level was observed to be 2.502, which was not significant. The $F$ level, it has been noted, is the statistic from which the level of the significance of the contribution of the extra independent variable to the multiple relationship can be determined. The $F$ test tells the difference between the contribution of the extra independent variable versus a smaller number of independent variables (3, p. 400). The $F$ level of the present study with two hundred degrees of freedom necessitates a coefficient of 3.89 to reach the five per cent level of significance, and a coefficient of 6.76 to reach the one per cent level of significance.

The coefficient of multiple correlation was observed to be .4816 with factor 3 added to the scheme. This was also observed to be a small increase over that with the ACT alone.
Since factor 3 was observed to be significantly related to the GPA at the one per cent level, it appeared that the significant relationship, between factor 3 and the ACT, represented a substantial overlapping between these two variables that makes the use of both predictors, in the same multiple correlation scheme, of questionable value. The hypothesis that there would be a significant increase in the relationship between the ACT composite score and the GPA with the addition of factor 3 was not statistically supported by the data.

The second of the non-intellectual variables to be presented in Table IV is factor 4, "Motivation." An F level of .946 was observed, which was not significant. The multiple correlation coefficient was .4773. "Motivation" was significantly related to the GPA; therefore, the relationship of this factor with the ACT appeared to indicate a substantial overlapping between the two variables that makes the use of both variables in the same predictor scheme of questionable value. The hypothesis that factor 4 would significantly contribute to the relationship between the ACT and grade point average was not statistically supported by the data.

Factor 5, "Applied Interests," is next presented in the multiple scheme. An inspection of the data revealed an F level of .044, which was not significant. The multiple correlation coefficient was observed to be .4748. The data suggested that the use of factor 5 in the multiple correlation
with the ACT would actually be detrimental to the predictive scheme. The hypothesis, therefore, that there would be a significant increase in the relationship between the ACT and GPA with the addition of factor 5 was rejected.

The statistical data for factor 6, "Orderliness," is the next variable presented. An F level of 2.028, which was not statistically significant, was observed. The multiple correlation was not substantially increased above that of the ACT alone, being observed to be .4802. The negative relationship of this factor with the ACT was responsible for the increase in the relationship between the ACT and GPA, since the relationship between this variable and the GPA was found to be .0363, which was quite low. The hypothesis that there would be a significant increase in the relationship between the ACT composite score and the GPA with the addition of factor 6 was not statistically supported by the data.

Factor 7, "Submissiveness," is the last of the AI factor variables to be presented in Table IV. Inspection of the data revealed an F level of 5.706, which was significant at the five per cent level. To reach the five per cent level of significance, an F level of 3.89 is essential with two hundred degrees of freedom. The multiple correlation coefficient was observed to be .4899, which indicated that the addition of this variable significantly increased the multiple correlation between the GPA and the ACT. The fact that factor 7 did result in an increase in the multiple correlation may be
surprising since it was not significantly related with grade point average. However, the relationship of this variable with the ACT was \(-0.0921\), which was the highest negative relationship observed between any of the non-intellectual variables and the ACT. This negative relationship was responsible for the increase in the multiple correlation coefficient since the addition of factor 7 resulted in the second highest F level observed in this study. The hypothesis that there would be a significant increase in the relationship between the ACT composite score and grade point average, with the addition of factor 7, was supported at the five percent level.

The data reveal something of a paradox when they are compared to the simple correlation data. Factors 3 and 4, though found to be significantly related to grade point average, were not observed to contribute significantly to the relationship between the ACT and GPA. Factor 7, on the other hand, though found to be not significantly related with the GPA, significantly contributed to the relationship between the ACT and GPA.

It was concluded that factors 3 and 4 did not contribute to the relationship between the ACT and GPA to a significant degree because of the higher relationship which each variable sustained with the ACT. This relationship seemed to indicate an overlapping between independent variables in the multiple correlation. Factor 7, however, was negatively related with
the ACT, and this negative relationship was responsible for the significant increase in the multiple relationship. Although factors 5 and 6 were also negatively related with the ACT, the relationship of both of these variables was lower with both the ACT and the GPA than was found to exist with factor 7.

On the basis of the observed data it was concluded that only factor 7 of the AI factors investigated had promise for a significant contribution in a multiple predictor scheme with the ACT. The increase in the relationship was not as high as it had been hoped, but the results obtained promise to contribute to better understanding of academic prediction. It appeared that the ACT was measuring some aspects of both intellectual interests and motivation, either directly or indirectly. It appeared that applied interests were not significantly related to academic achievement, in the present population. Orderliness, too, seemed from the present study to be a trait that was of little importance for academic prediction purposes.

The multiple correlation data for the AI scales are presented in Table V. The first of the AI scales to be presented is scale 17, "Humanities, Social Science." The F level was found to be 8.982, which was significant at the one per cent level. To reach this level an F of 6.67 is necessary with two hundred degrees of freedom. In this study the F level which resulted when scale 17 was added to
the multiple correlation was found to be the highest attained with the index variables. The multiple correlation coefficient was .4981, which was the highest such coefficient presented in the study.

**TABLE V**

MULTIPLE CORRELATION DATA OF THE AI SCALES AFTER ADDITION OF EACH VARIABLE TO THE MULTIPLE RELATIONSHIP SCHEME, SHOWING THE F LEVEL, $R^2$ AND R ($N = 300$)

<table>
<thead>
<tr>
<th>Variable</th>
<th>F Level</th>
<th>$R^2$</th>
<th>R**</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI scale 17</td>
<td>8.982*</td>
<td>.24812</td>
<td>.4981</td>
</tr>
<tr>
<td>AI scale 25</td>
<td>1.126</td>
<td>.22630</td>
<td>.4778</td>
</tr>
<tr>
<td>AI scale 26</td>
<td>1.778</td>
<td>.22584</td>
<td>.4752</td>
</tr>
<tr>
<td>AI scale 30</td>
<td>2.733</td>
<td>.23244</td>
<td>.4821</td>
</tr>
</tbody>
</table>

*Significant at the .01 level.
**All of the Rs are significant but not all of the variables contributed to the R significantly.

AI scale 17 was the only one of the non-intellectual predictors to sustain a higher relationship with the GPA than with the ACT. Although the relationship with the ACT, .1690, indicated an overlapping between these two variables, the relationship with the GPA, .2288, appeared to be high enough to compensate for it. Therefore, in spite of the significant relationship between scale 17 and the ACT, scale 17 appeared to contribute significantly to the multiple relationship. The hypothesis that there would be a
significant increase in the relationship between the ACT and GPA with the addition of scale 17 was statistically supported at the one percent level.

The next of the non-intellectual predictors to be presented is scale 25, "Reflectiveness." The F level was found to be 1.126, which was not significant. The multiple correlation coefficient was .4778. This variable was observed to be not significantly related with the GPA in simple correlation. Also, the relationship with the ACT was observed to be significant. Therefore, the relationship which scale 25 sustained with GPA was obviously diminished by the overlapping in the relationship of scale 25 with the ACT. The hypothesis that there would be an increase in the relationship between the ACT composite score and the grade point average with the addition of scale 25 was not statistically supported by the data.

Scale 26, "Science," is the next variable to be presented. An F level of 1.778, which was not significant, was observed. The multiple correlation was .4752. The data suggest that scale 26 may even have been detrimental to the multiple relationship. The relationship with the ACT, which was observed to be .0918, as opposed to .0221 with the GPA, was responsible for the lack of significance in the multiple relationship scheme. The hypothesis that there would be a significant increase in the relationship between the ACT and
the GPA with the addition of scale 26 was not statistically supported by the data in this study.

The last of the scales to be presented in Table V was scale 30, "Understanding." The $F$ level of this variable was observed to be 2.733, which is not significant. The multiple correlation was observed to be .4621. The simple correlation revealed scale 30 to be related significantly with the GPA with a coefficient of .2260, which was significant at the one per cent level. However, the relationship between scale 30 and the ACT was observed to be .3077, the highest obtained between two independent variables in the study. It appeared that this relationship represented such a high degree of overlapping with the ACT that the use of both of these independent variables in the same predictive scheme would be of very doubtful value. The hypothesis that the relationship between the ACT and GPA would be significantly increased with the addition of scale 30 was not statistically supported by the data.

The data concerning the AI scale contributions to the multiple correlation were puzzling in some respects, but there appeared to be some reasonable explanations for the results found. Scale 17 was observed to be related significantly to the GPA, and, as was hypothesized, it contributed to the multiple relationship to a significant degree. It was concluded that interest in the humanities, arts, and
social sciences did hold promise as a predictor of GPA in a multiple prediction scheme with the ACT.

On the other hand scale 30, in spite of the fact that it was related with the GPA almost as highly as was scale 17, did not contribute significantly to the multiple correlation. This was explained by the fact that scale 30 sustained a very significant relationship with the ACT, representing a significant overlapping between the two independent variables. It did not, consequently, give promise of contributing significantly in a multiple predictor scheme with the ACT.

Scale 25, though not as highly related with the ACT as were scales 17 and 30, also sustained a much lower relationship with the GPA. However, since the multiple relationship was not increased significantly by the addition of scale 25, it was assumed that "Reflectiveness" was not highly enough related with grade point average to be of value in a multiple predictor scheme with the ACT.

Scale 26, though not highly related to GPA, was negatively related with the ACT to a higher degree. It was not clear why scale 26, "Science," was not related to the GPA, since it seemed to be similar in many ways to scale 17 which was not related. If interests in the humanities, arts and social sciences were significantly related to achievement, it seemed that interests in the natural sciences should also obtain the same or similar results. It appeared from examination of the data that the difference lay in the students
who completed the indexes. The fact seemed to be that only a comparatively small number of students in this study were interested in natural science.

Congruency variables from the AI-CCI have been suggested as possibly supplying the missing key in academic prediction. If it could be determined that the interaction between needs and press is both ascertainable and highly related to academic achievement, such knowledge would give more reliability to academic prediction. Furthermore, this knowledge would enable educators to place students in the academic setting where they could best develop their potential.

The AI and CCI factors selected for the construction of the congruency scores were selected because they represented certain aspects of both needs and press which are related to the fourth dimension of the Activities Index. In this study the congruency variables were all treated as positive, no record being kept of the algebraic signs of the differences.

Table VI contains the multiple correlation data for the congruency variables after each of the variables was added to the multiple relationship scheme. Congruency score I, "AI F3-CCI F2" ("Intellectual Interests-Intellectual Climate"), is the first of the congruency variables to be presented.

Inspection of the data revealed an F level of 1.926, which was not significant. The multiple correlation coefficient was found to be .4752. The data suggested that the use of
congruency I in the multiple correlation may actually have been detrimental, since the \( R \) was only slightly increased. Since the relationship of congruency I with the ACT was not high enough to indicate a high degree of overlapping, it must be concluded that this congruency variable, as it was constructed in the present study, was not significantly related to grade point average. The hypothesis that there would be a significant increase in the relationship between the ACT and GPA with the addition of congruency variable I was not statistically supported.

TABLE VI
MULTIPLE CORRELATION DATA OF THE AI-CCI CONGRUENCY SCORES AFTER ADDITION OF EACH VARIABLE TO THE MULTIPLE RELATIONSHIP SCHEME, SHOWING THE \( F \) LEVEL, \( R^2 \) AND \( R \) (\( N = 300 \))

<table>
<thead>
<tr>
<th>Variable</th>
<th>( F ) Level</th>
<th>( R^2 )</th>
<th>( R^* )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruency score I</td>
<td>1.926</td>
<td>.22588</td>
<td>.4752</td>
</tr>
<tr>
<td>Congruency score II</td>
<td>1.739</td>
<td>.22563</td>
<td>.4752</td>
</tr>
<tr>
<td>Congruency score III</td>
<td>.036</td>
<td>.22547</td>
<td>.4748</td>
</tr>
<tr>
<td>Congruency score IV</td>
<td>.033</td>
<td>.22546</td>
<td>.4746</td>
</tr>
<tr>
<td>Congruency score V</td>
<td>.504</td>
<td>.22669</td>
<td>.4760</td>
</tr>
</tbody>
</table>

*All of the Rs are significant beyond the .01 level but none of the congruency variables contributed significantly to this relationship.
Congruency score II, "AI F4-CCI F5" ("Motivation-Academic Achievement"), is the next congruency variable presented. The F level was observed to be 1.736, which was not significant. The multiple correlation coefficient was found to be .4752. The data suggested that this variable may actually have been detrimental to the multiple relationship. The hypothesis that the relationship between the ACT and GPA would be significantly increased with the addition of congruency variable II was not statistically supported by the data.

Congruency score III, "AI F5-CCI F11" ("Applied Interests-Vocational Climate"), is the next variable to be presented. The F level was .036, which was both non-significant and was the second lowest such coefficient to be obtained in this study. The coefficient of R was .4748. The data suggested that this variable was actually detrimental to the multiple relationship. The hypothesis that the relationship between the ACT and the GPA would be significantly increased by the addition of congruency variable III was rejected.

Congruency score IV, "AI F6-CCI F8" ("Orderliness-Academic Organization"), is next presented in Table VI. Inspection of the data revealed an F level which was the lowest obtained in the study, the coefficient being .033. The multiple correlation coefficient was found to be .4748. The data suggested that this congruency variable was detrimental to the multiple relationship. This congruency variable,
as it was presently constructed, was not supported for use in academic prediction. The hypothesis that the relationship between the ACT and GPA would be significantly increased with the addition of congruency score IV was rejected.

The last of the congruency variables to be presented is congruency score V, "AI F7-CCI F8" ("Submissiveness-Academic Organization"). The F level was found to be .504, which was not significant. The multiple correlation coefficient was .4760. The data suggested that this variable, too, may be more detrimental than contributory to the multiple relationship. The hypothesis that the relationship between the ACT and GPA would be significantly increased with the addition of congruency variable V was not statistically supported by the data.

The data that were obtained concerning the congruency variables suggested several possibilities, or conclusions. Although some of these appear to be rather clearly indicated, others are more obscure. First, the congruency variables, as they were presently constructed, did not appear to be related to academic achievement to a significant degree. Second, the relationship observed with the ACT suggests that these variables would not be useful in an academic predictor scheme with the ACT. Third, the use of the congruency scores with the present population seemed to indicate a wide range of responses, especially on AI factor 3, "Intellectual
Interests," which was subtracted from CCI factor 2, "Intellectual Climate."

Comparison of Freshman and Senior CCI Scores

One of the objectives of this study, which grew out of the use of the CCI by freshmen in the construction of congruency scores, was the comparison of freshmen responses to those of seniors for each of the thirty CCI scales. The CCI was not standardized on freshmen, but on juniors and seniors. Nevertheless, the use of the CCI with freshmen is not without precedent.

Rock, in a study of the college environment, used several different groups, including seniors and freshmen. In comparing the responses of the two groups, Rock found that freshmen and seniors did differ in their perceptions of the environment, but not to a significant degree. Freshmen were found to perceive the environment as slightly more charitable and objective whereas the seniors saw it as slightly more debasing (5, pp. 46-47).

Lauterback and Vielhaber also used the CCI with freshmen, obtaining congruency scores that for one group were significantly related to academic achievement. However, with a second group of freshmen, the results were significant but opposite to that which had been hypothesized. In the first instance, freshmen were asked to respond to the index items as the environment was perceived to be, and in the
second freshmen were to respond as the environment was desired to be. The authors concluded that the discrepancy in results may be due to the fact that congruency scores are principally cognitive measures (4, p. 971).

The purpose of comparing freshman responses to senior responses was to determine whether freshmen, especially at Hardin-Simmons University, perceived the environment as seniors did. Even though the freshmen were not engaged in precisely the same activities as were the seniors, and though they had not had as much experience with the college press, it was conjectured that the perceived environment for both groups would be approximately the same. It was believed that the policies, practices, philosophies, and rules and regulations, which were advanced, advocated, believed, or professed by peer groups, professors, administrators, and others would be much the same throughout the university and would result in the same perception regardless of the particular group that experienced them. In summary, it was believed that the press was so general and so pervasive that it would be experienced in much the same way throughout the university.

The statistical data concerning hypothesis D—that there would be no significant differences between the mean scores of freshmen and seniors for any of the thirty scales—are presented in Table VII. The hypothesis was not supported for fifteen of the thirty scales. Twelve of these were found
TABLE VII
MEANS, STANDARD DEVIATIONS, AND FISHER t FOR THE FRESHMEN AND SENIOR CCI
SCALE MEANS PLUS THE CCI SCALE NORMS (T)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Seniors</th>
<th>Freshmen</th>
<th>Norm Mean</th>
<th>Fisher's t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>1. Abasement</td>
<td>5.6226</td>
<td>1.9736</td>
<td>5.2491</td>
<td>1.9067</td>
</tr>
<tr>
<td>2. Achievement</td>
<td>4.0283</td>
<td>2.5195</td>
<td>5.5083</td>
<td>2.3927</td>
</tr>
<tr>
<td>5. Aggression</td>
<td>3.0660</td>
<td>1.7309</td>
<td>3.2458</td>
<td>1.7309</td>
</tr>
<tr>
<td>7. Conjunctivity</td>
<td>5.6415</td>
<td>2.5073</td>
<td>6.3920</td>
<td>2.2395</td>
</tr>
<tr>
<td>8. Counteraction</td>
<td>3.8018</td>
<td>1.6958</td>
<td>4.1029</td>
<td>1.7096</td>
</tr>
<tr>
<td>10. Dominance</td>
<td>5.5660</td>
<td>1.5541</td>
<td>5.8737</td>
<td>1.8110</td>
</tr>
<tr>
<td>11. Ego Achievement</td>
<td>4.8207</td>
<td>2.0037</td>
<td>5.1229</td>
<td>2.0625</td>
</tr>
<tr>
<td>Variables</td>
<td>Seniors</td>
<td>Freshmen</td>
<td>Norm Mean</td>
<td>Fisher's t</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>-----------</td>
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</tr>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>13. Energy</td>
<td>3.7358</td>
<td>2.0572</td>
<td>4.4219</td>
<td>1.9507</td>
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<tr>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>15. Fantasied Achievement</td>
<td>4.0754</td>
<td>1.6636</td>
<td>4.6544</td>
<td>1.6344</td>
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<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>16. Harm Avoidance</td>
<td>5.8301</td>
<td>1.3630</td>
<td>5.5681</td>
<td>1.4783</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>17. Humanities, Social Service</td>
<td>3.6981</td>
<td>2.1964</td>
<td>4.4651</td>
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<td></td>
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<tr>
<td>18. Impulsive</td>
<td>4.9622</td>
<td>1.7152</td>
<td>4.8272</td>
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<td>19. Narcissism</td>
<td>5.7169</td>
<td>1.8364</td>
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<tr>
<td>21. Objectivity</td>
<td>4.9150</td>
<td>2.3193</td>
<td>5.7076</td>
<td>2.3229</td>
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<td></td>
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<tr>
<td>23. Play</td>
<td>6.2169</td>
<td>1.5781</td>
<td>5.7774</td>
<td>1.6864</td>
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</tr>
<tr>
<td>24. Practicalness</td>
<td>6.4520</td>
<td>1.0940</td>
<td>6.4684</td>
<td>1.7262</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>Variables</td>
<td>Seniors</td>
<td></td>
<td>Freshmen</td>
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<tr>
<td>----------------</td>
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</tr>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>25. Reflectiveness</td>
<td>4.1226</td>
<td>2.0998</td>
<td>5.0465</td>
<td>2.0967</td>
</tr>
<tr>
<td>27. Sensuality</td>
<td>3.0188</td>
<td>1.7319</td>
<td>2.9601</td>
<td>1.7210</td>
</tr>
<tr>
<td>28. Sexuality</td>
<td>4.7075</td>
<td>1.7907</td>
<td>5.2857</td>
<td>1.9267</td>
</tr>
<tr>
<td>29. Supplication</td>
<td>6.7075</td>
<td>1.6765</td>
<td>6.2956</td>
<td>1.7124</td>
</tr>
<tr>
<td>30. Understanding</td>
<td>4.0660</td>
<td>2.0843</td>
<td>5.3023</td>
<td>2.1142</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

**Significant at the .01 level.
to differ significantly at the one per cent level, and three others were found to differ at the five per cent level. However, an inspection of the data also revealed that, with the exception of scale 16, "Harm Avoidance," which was not one of those found to be significant, freshmen and seniors did respond in the same general pattern, in regard to scale means, though they did not deviate from the mean to the same degree. This fact was apparent when the data was examined in profile form as it is presented in Appendix G.

No extreme differences between the means of the scales were observed for the two groups. In most instances there was a smaller difference between freshman and senior means than there was between the means for either of these groups and the mean of the CCI scales. In only two scales was there as much as one CCI standard score difference between the means for seniors and freshmen. These were scale 2, "Achievement," and scale 30, "Understanding." The means and standard deviations for seniors and freshmen are presented in Table VII, plus a test of significance and the means for the CCI scales.

An analysis of the data reveals that freshmen achieved higher scores than did seniors on the following scales: 2, "Achievement," striving for success through personal effort; 6, "Change-Sameness," flexibility versus routine; 7, "Conjunctivity-Disjunctivity," planfulness versus disorganization; 12, "Emotionality-Placidity," expressiveness
versus restraint; 13, "Energy-Passivity," effort versus inertia; 14, "Exhibition-Inferiority Avoidance," attention-seeking versus shyness; 15, "Fantasied Achievement," daydreams of extraordinary public recognition; 17, "Humanities, Social Science," interests in the humanities and the social sciences; 21, "Objectivity-Projectivity," detachment versus superstition (AI) or suspicion (EI); 25, "Reflectiveness," introspective contemplation; 26, "Science," interests in the Natural Sciences; 28, "Sexuality-Prudishness," heterosexual interests versus their inhibition; and 30, "Understanding," intellectuality. The seniors, on the other hand, scored higher on two scales: 23, "Play-Work," pleasure-seeking versus purposefulness; and 29, "Supplication-Autonomy," dependency versus self-reliance. Differences were found to be significant at the five per cent level for scales 14, 23, and 29. The remaining twelve scales were significant at or beyond the one per cent level.

The data seem to support the finding of Rock (5) that freshmen tended to perceive the college environment in a more charitable light than did seniors. Freshmen responses tended not to depart from the scale norms as far as did those of seniors and this fact was reflected in their generally more favorable responses, or less unfavorable responses, as the case may be. The difference between freshman and senior responses may be summarized in the following way. Freshmen, more than seniors, perceived the university to be providing
more press toward students achieving through their own personal effort, and also to be providing more press toward development of personal initiative, attainment of flexibility, attention seeking rather than shyness, daydreams of extraordinary public attention, and interests in the humanities, arts, and social sciences.

Freshmen also perceived more press than did seniors toward the development of a sense of detachment rather than of suspiciousness. They perceived more press toward purposefulness, introspective contemplation, and development of interests in both the natural sciences and in heterosexual interests. Freshmen also perceived more press toward developing intellectuality than did seniors. Seniors, on the other hand, perceived more press toward dependency. Seniors perceived less press toward developing self reliance and good habits of work.

Freshmen and seniors tended to perceive the environment in the same way, as compared to the CCI scale means. Freshmen and seniors, as compared to the scale norms, were observed to be higher on the following CCI scales: 1, "Abasement-Assurance," self-depreciation versus self-confidence; 3, "Adaptability-Defensiveness," acceptance of criticism versus resistance to suggestion; 9, "Deference-Restiveness," respect for authority versus rebelliousness; 10, "Dominance-Tolerance," ascendancy versus forbearance; 19, "Narcissism," vanity; 20, "Nurturance-Rejection," helping others versus indifference;

Hardin-Simmons University students, compared to the CCI scale means, were observed to have scored lower on the following scales: 2, "Achievement," striving for success through personal effort; 4, "Affiliation-Rejection," friendliness versus unfriendliness; 5, "Aggression-Blame Avoidance," hostility versus its inhibition; 6, "Change-Sameness," flexibility versus routine; 7, "Conjunctivity-Disjunctivity," planfulness versus disorganization; 8, "Counteraction-Inferiority Avoidance," restriving after failure versus withdrawal; 11, "Ego Achievement," striving for power through social action; 12, "Emotionality-Placidity," expressiveness versus restraint; 13, "Energy-Passivity," effort versus inertia; 14, "Exhibitionism-Inferiority Avoidance," attention-seeking versus shyness; 15, "Fantasied Achievement," daydreams of extraordinary public recognition; 17, "Humanities, Social Science," interests in the humanities and the social sciences; 18, "Impulsiveness-Deliberation," impetuosity versus superstition (AI) or suspicion (EI); 25, "Reflectiveness," introspective contemplation; 26, "Science," interests in the natural sciences; 27, "Sensuality-Puritanism," interest in sensory and esthetic experiences; 28, "Sexuality-
Prudishness," heterosexual interests versus their inhibition; and 30, "Understanding," intellectuality. Hardin-Simmons University students perceived about average press on scale 16, "Harm Avoidance-Risktaking," fearfulness versus thrill-seeking. Seniors scored slightly above average and freshmen scored just below the mean.

The differences between Hardin-Simmons University student perception of the environmental press and the CCI scale norms may be summarized as follows. Both seniors and freshmen perceived less press than was shown in the scale norms in the development of the following traits: achievement, friendliness, hostility, flexibility, planning, restricting after failure, striving for power through social action, expressiveness, effort, attention-seeking; and perceived slightly less press in the development of daydreams and of fearfulness.

There is also less press perceived by both freshmen and seniors, in comparison with the CCI scale means, toward developing interests in the humanities and the social sciences, impetuousness, detachment, introspective contemplation, interests in the natural sciences, interests in sensory and aesthetic experiences, heterosexual interests, and intellectuality. On the other hand, in comparison with the CCI scale norm, freshmen and seniors agreed that there was more press toward the development of the following traits: self-depreciation in students, acceptance of criticism, respect
for authority, pleasure seeking, ascendancy, vanity, helping others, compulsive organization of details, interests in practical activities, and dependency.

Scale 30, "Understanding," intellectuality, revealed that freshmen scored more than one CCI standard score below the scale norms, and that seniors scored more than one standard deviation below the scale 30 norm. Concerning these differences in perception of intellectual interests, Stern (6) notes that the particular character of the school in question is determined by the ideals and goals of the particular school. Not all American colleges are oriented toward the same ideals. State universities have obligations and responsibilities to the public which supports them, and denominational colleges also have ideals, goals, and responsibilities that determine the character of these schools. These are different, and "no school should try to be another Harvard" (6, p. 42).

Summary of Findings

The statistical data concerning the simple correlations between the predictor variables and the grade point average were presented and each predictor scale was treated individually. Four of the predictor test scales were found to be significantly related to the grade point average and one other scale was found to be related to the GPA at a level that was just below significance. A sixth variable also sustained a positive, though not significant, relationship
with the GPA. The remaining eight predictors, however, were considered to be insignificant because the obtained relationship coefficients were so low. One of these was found to be slightly negative. The ACT composite score sustained a higher relationship with the criterion variable than any of the index scale, factor, or congruency variables. The coefficients ranged from .4747 for the ACT to -.0054 for AI factor 5, "Applied Interests," which was both the lowest coefficient and the only negative coefficient observed.

Since factor 5 was observed to have sustained such a low relationship with the criterion variable, this variable does not appear to hold promise as a predictor of academic achievement. This conclusion applies only to studies similar to the present one and with students such as those who attend Hardin-Simmons University. The data suggest that most students at Hardin-Simmons University have practical interests, a fact which makes it very difficult for practical interests to differentiate among the different groups.

Scale score 17, "Humanities, Social Science," achieved the highest relationship with grade point average which was obtained with the index variables, and this coefficient was second only to that achieved with the ACT. This variable was also found to contribute more to the multiple relationship than did any of the other non-intellectual variables. The addition of this variable resulted in the highest F level
to be obtained with the primary predictors. The ACT relationship with the criterion variable was the only relationship which resulted in a higher F level.

The second highest relationship observed between the AI index predictors and the grade point average was obtained with scale 30, "Understanding." However, the data also revealed the relationship between this variable and the ACT to be even higher, a fact which indicated that since there was a substantial overlap between the two variables, one of them was unnecessary in the multiple correlation scheme.

In multiple correlation the best predictors are those which have a higher correlation with the criterion variable and which have zero or negative correlations with other independent variables. Most of the predictor variables in the present study had a higher relationship with the ACT composite score than was sustained with the criterion variable. The only exception was scale 17.

The addition of scale 17, "Humanities, Social Science," to the multiple correlation resulted in the highest multiple correlation coefficient in the study. The addition of factor 7 to the multiple correlation resulted in the second highest F level obtained by the AI factors. Strangely, factor 7, "Submissiveness," was not found to be related to the criterion variable to a significant degree, but the F level of this variable was found to be significant at the five per cent level. The relationship with the ACT composite
score, however, was a negative one and was almost high enough to be significant. This negative relationship, it was concluded, was responsible for the significance which was found in the multiple relationship, although the simple correlation with the GPA was not significant.

Variables that obtained significant correlations with the criterion variable were factors 3 and 4, which proved to be significantly related to the criterion variable, but which did not significantly increase the multiple correlation. It was concluded that this resulted from the relationship which existed between these variables and the ACT. The preceding comments apply, to an even greater extent, to scale 30 which sustained the highest relationship between any of the index variables and the ACT and was related with GPA at a much lower level. None of the other variables were successful in increasing the significance of the multiple correlation.

In summary, hypothesis A1, which postulated that factor 3 would prove to be significantly related to GPA, was statistically supported at the one per cent level. Hypothesis A2, which postulated that factor 4 would prove to be significantly related to GPA, was statistically supported by the data at the five per cent level. Hypotheses A3, A4, and A5, which postulated that these variables, factors 5, 6, and 7, would prove to be significantly related to GPA, were not statistically supported.
Hypotheses B1, B2, B3, and B4, which postulated that there would be a significant increase in the relationship between the ACT composite score and grade point average with the addition of each of the AI factor variables—factors 3, 4, 5, and 6—were not statistically supported. Hypothesis B5, which postulated that there would be a significant increase in the relationship between the ACT composite score and GPA with the addition of factor 7, was statistically significant at the five per cent level. Hypothesis B6, which postulated that there would be a significant increase in the relationship between the ACT composite score and GPA with the addition of scale 17, was statistically significant at the one per cent level.

Hypotheses B7, B8, B9, C1, C2, C3, C4, and C5, which postulated that there would be a significant increase in the relationship between the ACT composite score and GPA with the addition of the non-intellectual predictor variables, each in turn, AI scales 25, 26, and 30 and the AI-CCI congruency variables I, II, III, IV, and V, were not statistically supported.

Hypothesis D, that there would be no significant differences between the scale means for freshmen and the scale means for seniors on any of the thirty CCI scales, was not supported for fifteen of the thirty scales. It should be noted, however, that both freshmen and seniors did perceive
the same general pattern of press to exist, since they were found to vary from the mean of the scales in the same direction, though not always to the same degree. In fifteen of the thirty scales the difference was observed to be significant, twelve at the one per cent level and three at the five per cent level. The hypothesis of no differences for any of the thirty CCI scales was not supported.
CHAPTER BIBLIOGRAPHY


7. ______________, Scoring Instructions and College Norms, Activities Index, College Characteristics Index, Syracuse, New York, Syracuse University, Psychological Research Center, 1963. Distributed by National Computer Systems, 1015 South 6th Street, Minneapolis, Minnesota.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purposes of this chapter were to summarize the findings of the study, to draw conclusions based on those findings, and to make recommendations pertinent to the problem of predicting academic achievement in college admissions.

Summary

The purpose of this study was to investigate the effectiveness of certain non-intellectual measures for predicting academic success and for contributing to the relationship between academic aptitude tests and academic achievement. Another aspect of the study was the study of the degree to which freshmen and seniors were in agreement in their perception of the college environmental press.

The following major hypotheses were formulated and investigated by statistical analysis of the data collected:

Hypothesis A. There will be a significant relationship between the Activities Index fourth dimensional factors and academic achievement, as it is measured by grade point average. Each of the factor variables were investigated for relationship with the criterion variable.
Hypothesis B. There will be a significant increase in the relationship between the ACT composite score and the criterion variable with the addition of the Activities Index factor and scale scores to the predictive scheme in multiple correlation.

Hypothesis C. There will be a significant increase in the relationship between the ACT composite score and the criterion variable with the addition of each of the congruency variables from the AI and CCI in a multiple correlation scheme.

Hypothesis D. There will be no significant differences between the mean scores for freshmen and seniors on any of the thirty CCI scales.

Three hundred freshmen students participated in the study by completing both the Activities Index and the College Characteristics Index during the spring semester of 1967. Also included in one aspect of the study were one hundred six seniors who participated by completing only the CCI as a measure with which to compare freshmen responses.

From the freshman responses to the AI were extracted five factors and four scales, and from the CCI were extracted four factors with which to construct the congruency scores. Thirty scale scores were also extracted, for both freshmen and seniors, from the CCI. The CCI scales were selected as a basis of comparison between freshmen and seniors, so that the exact differences between the two groups would be more clearly apparent. The five factors extracted from the AI
are those which make up the fourth dimension, "Educability"; namely factors 3, 4, 5, 6, and 7. The four scales extracted are those which make up the first of these factors, factor 3, "Intellectual Interests," and include scales 17, 25, 26, and 30. The four CCI factor scores are those which represent certain aspects of environmental counterpart of the individual needs which are represented in the five AI factors, and which are found to co-vary with the needs factors. The five AI factors and the four CCI factors furnished the basis for the construction of the five congruency variables which were used in this study.

The five AI factor variables were treated by simple correlation (Pearson's r) with grade point averages to determine the relationship of the factors to academic achievement. Simple correlations were also obtained for the other predictors in order to provide data for further statistical computation. The raw data were then entered, from each independent and dependent variable, into a standard scheme for computing the coefficient of multiple correlation. The actual scheme employed was the program available at the North Texas State University Computing Center, the Stepwise Multiple Linear Regression Analysis for the IBM 1620.

Simple correlations of the predictor tests with the criterion variable revealed the following relationships:

1. AI factors 3 and 4, "Intellectual Interests" and "Motivation," were significantly related to the criterion
variable. Factor 3 was significant at the one per cent level, and factor 4 was significant at the five per cent level.

2. AI factors 5, 6, and 7, "Applied Interests," "Orderliness," and "Submissiveness," were not significantly related with the criterion variable. Factor 5 was both very low and negative.

3. AI scale 17 and 30, "Humanities, Social Science" and "Understanding," were significantly related with the criterion variable at the one per cent level.

4. AI scales 25 and 26, "Reflectiveness" and "Science," were not significantly related with the criterion variable, although scale 25 was on the border of being significant.

5. None of the congruency variables, AI F3-CCI F2, "Intellectual Interests"-"Intellectual Climate"; AI F4-CCI F5, "Motivation"-"Academic Achievement"; AI F5-CCI F11, "Applied Interests"-"Vocational Climate"; AI F6-CCI F8, "Orderliness"-"Academic Organization"; AI F7-CCI F8, "Submissiveness"-"Academic Organization," were significantly related to the criterion variable.

Multiple correlation was employed to determine the relationship between the ACT composite score and grade point average with each of the index variables. This aspect of the study was an investigation of the degree to which the relationship between the ACT composite score and grade point
average would be increased by the addition in turn of each of the predictor variables.

The following results were observed concerning the multiple correlations: The ACT composite score coefficient was obtained for comparison purposes, to determine whether the non-intellectual variables were increasing the relationship between the ACT and GPA. The ACT was positively related with the criterion variable, a coefficient of .4747 being obtained, which was significant beyond the one per cent level.

AI scale 17, "Humanities, Social Science," obtained the highest relationship of the non-intellectual variables in the multiple correlation scheme. The F level was observed to be 8.982, which was significant at the one per cent level, and the multiple correlation was .4981, the highest to be observed in the study. The second highest correlation was obtained with factor 7, "Submissiveness," which was observed to be .4898, and the F level was 5.706, which was significant at the five per cent level.

The multiple correlation coefficients and F levels were not significant with the addition of the other predictor variables. In decreasing order of importance, however, the statistical data for the more important remaining variables were scale 30, "Understanding," .4821 and 2.733 for the R and F, respectively; factor 3, "Intellectual Interests," .4815 and 2.502 for R and F level, respectively; factor 6, "Orderliness," .4802 for R and 2.028 for the F level. None of the
rest of the variables were deemed to be of enough importance to rank them.

The analysis of the results by hypotheses was as follows. Hypothesis A, which postulated a significant relationship between the AI factors and grade point average, was partly accepted and partly rejected; factors 3 and 4, which were sub-hypotheses A1 and A2, were significant at the one and five per cent levels and were, therefore, retained. Factors 5, 6, and 7, sub-hypotheses A3, A4, and A5, were not significantly related with the criterion variable and were rejected.

Hypothesis B, which postulated that the relationship between the ACT and GPA would be increased with the addition each in turn of the AI factors and scales, was partly supported and partly rejected. Factors 3, 4, 5, and 6, which were sub-hypotheses B1, B2, B3, and B4, did not contribute significantly to the relationship between the ACT and GPA and, therefore, were not retained. Factor 7 and scale 17, which were sub-hypotheses B5, and B6, did increase the relationship between the ACT and GPA at the five per cent level and at the one per cent level of significance, respectively; therefore, sub-hypotheses B5 and B6 were retained. Scale 25, 26, and 30, which were sub-hypotheses B7, B8, and B9, did not increase the relationship between the ACT and the criterion variable to a significant degree. These sub-hypotheses, therefore, were not retained.
Hypothesis C, which postulated that the relationship between the ACT and GPA would be improved by the addition of each of the five AI-CCI congruency scores in order, was not accepted for any of the sub-hypotheses since no statistically significant increase in the relationship was found to exist between the ACT and the grade point average with the addition of the congruency variables.

Hypothesis D, which postulated that there would be no significant differences between the response of freshmen and the response of seniors, was not supported for fifteen of the thirty scales. The responses of the two groups were significantly different at the one per cent level for twelve of the CCI scales, and at the five per cent level for three others. The hypothesis was, therefore, rejected.

Conclusions

On the basis of the data which were obtained and analyzed, the following conclusions were drawn.

1. None of the index variables were related with the criterion variable highly enough to make them of much value as lone predictors of academic achievement.

2. Only factor 7 and scale 17 contributed to the relationship between the ACT and GPA highly enough to be optimistically considered for use in a multiple correlation scheme with the ACT.
3. Scale 17, "Humanities, Social Science," may contribute to academic prediction and understanding in a number of ways.

4. The environmental press in the present study was directed more toward developing humility and self-deprecation in students and toward achieving recognition of authority than in developing interests in the arts, humanities, social sciences, natural sciences and intellectuality. The students in the present study tended to have higher needs to develop in these areas than the environment provided press to develop there.

5. Students in the present study tended to have higher levels of control based on social conformity and other directedness. Those who accept criticism more readily, who depreciate themselves more, who have more respect for authority, and who are interested in helping others tend to make higher grades than students who do not have these traits.

6. The environmental press for order, in the present study, was less one of long range planning and high time perspective than it was of the maintenance of ritual and routine and of avoiding impulsive behavior. The press is one toward slightly less flexibility and organization with more press toward compulsive organization of details. Students without a high need for this order and practical activities may find it more difficult to adjust to environmental press which is similar to that found in the present
study. This is especially true if the students have high intellectual needs and high needs to develop interests in the areas of the arts, humanities, social sciences and natural sciences.

7. Students who have more than moderately high needs in the areas listed above, interests in the arts, sciences, humanities, social sciences and intellectual interests, especially if they do not have correspondingly high needs to be helpful to others and to develop self-confidence, and have low needs to respect authority and to accept criticism, would do well to look for an environmental press more compatible with those needs. An environmental press similar to the one found in the present study would not be friendly to these students.

Recommendations

During the analysis of the data in this research some implications and suggestions emerged. Some of these implications and suggestions which give promise of being of value both to the institution and to its students are presented as follows:

1. Although the two indexes in this study, the AI and CCI, failed to reveal as much information concerning academic prediction as could be wished, consideration should be given to their use in further investigation to determine the relationship of needs and press to academic achievement.
2. One of the areas for consideration in the use of the indexes is that of giving the Activities Index early, perhaps as part of the college entrance requirement, in order to determine a number of questions: namely, what effect does education have upon individual needs? Are there differences in the patterns of responses between students who persist in school and those who do not? Are there differences in the patterns of responses between those who are suspended and those who are not? Are there patterns of responses that would allow educators to identify potential problem areas in time to prevent serious problems from occurring?

3. The College Characteristics Index should be given toward the end of the first semester, after sufficient time has elapsed for students to become well enough acquainted with the environment to respond accurately, but before drop-outs and suspensions have weeded out the least successful students. Answers are needed as to the effect of the college environment upon different patterns of individual adjustment both academically and socially.

4. One area that needs investigation at Hardin-Simmons University is that concerning the degree to which the environment meets the expectations of incoming students. As students should know what is expected of them, so the university needs to know more precisely what students expect of the academic environment. Answers are needed as to whether the college does what students think it should and whether the failure
to do so results in disillusionment and discouragement.

What types of press are most productive and deal with individual need patterns in the most successful and productive way?

5. Although the congruency variables investigated in this study were disappointing, consideration should be given toward further research concerning congruency variables to determine the effects of the need-press relationship upon a variety of behavior and particularly the effect upon academic achievement.

6. Congruency variables should be constructed which keep track of the signs of the differences in order to determine whether the direction of the differences between needs and press does make a difference.

7. Scale 17, "Humanities, Social Science," should be investigated more extensively, perhaps in relation with such measures as the ACT subscores "English" and "Social Science." The investigation might also include a study of the differences between English or social science majors and non-majors.

8. Scale 26, "Science," was a disappointment in this study. However, consideration should be given to further study with this scale, perhaps in some investigation between majors and non-majors with the ACT subscore, "Natural Science."

9. Consideration should be given to obtaining congruency scores from the AI-CCI scale scores, especially with such scales as 17, "Humanities, Social Science," and 26, "Science."
Other scales that suggest themselves for study of this type include scales 1, "Abasement"; 2, "Achievement"; 9, "Defen-
ence"; 16, "Harm Avoidance"; 24, "Practicalness"; 25,
"Reflectiveness"; 27, "Sensuality"; and 30, "Understanding."

10. A total score should be obtained for the fourth dimension, "Educability." This could be done by summing up all of the fourth dimensional factor scores. This dimensional factor should then be investigated for relationship with the GPA and for significance in a multiple correlation with the ACT.
APPENDICES

A. Activities Index.
B. College Characteristics Index.
C. Definition and Description of Index Scales.
D. Definition and Description of Factors Used.
E. Profile of AI Factors Used.
F. Profile of CCI Factors Used.
G. Profile of Freshman and Senior Scale Means.
H. Profile of Freshmen and Seniors on Fifteen Scales Where Significant Differences Were Observed.
This booklet contains a number of brief statements describing many different kinds of activities. You will like some of these things. They will seem more pleasant than unpleasant to you, perhaps even highly enjoyable. There will be others that you will dislike, finding them more unpleasant than pleasant. The activities listed in this booklet have been obtained from a great many different persons. People differ in the kinds of things they enjoy, like to do, or find pleasant to experience. You are to decide which of these you like and which you dislike.

DIRECTIONS

Print the information called for at the top of the special answer sheet: your name, the date, your age and sex, etc. Then, as you read each item, blacken space

L — if the item describes an activity or event that you would like, enjoy, or find more pleasant than unpleasant.

D — if the item describes an activity or event that you would dislike, reject, or find more unpleasant than pleasant.

DIRECTIONS FOR USING NCS ANSWER SHEET

The rows of response circles are numbered to correspond to the items in the Test Booklet. Each question may be answered either © or ©

In marking your answers on the Answer Sheet, make sure that the number of the Statement is the same as the number on the Answer Sheet. Be sure to answer either © or © for every Statement.

* Be sure to use a #2½ or softer writing pencil.
* Do Not Use Ball Point or Ink.
* Keep your Answer Sheet Clean.
* Do not make stray marks.
* Erase errors completely.
* Fill the circle completely.
Legend:  
L — if the item describes an activity or event that you would like, enjoy, or find more pleasant than unpleasant.

D — if the item describes an activity or event that you would dislike, reject, or find more unpleasant than pleasant.

1. Taking the blame for something done by someone I like.
2. Setting difficult goals for myself.
3. Concealing a failure or humiliation from others.

4. Having other people let me alone.
5. Getting what is coming to me even if I have to fight for it.

7. Scheduling time for work and play during the day.
8. Working twice as hard at a problem when it looks as if I don’t know the answer.
9. Seeing someone make fun of a person who deserves it.

10. Persuading a group to do something my way.
11. Being a newspaperman who crusades to improve the community.
12. Listening to music that makes me feel very sad.

13. Taking up a very active outdoor sport.
14. Keeping in the background when I’m with a group of wild, fun-loving, noisy people.
15. Toughening myself, going without an overcoat, seeing how long I can go without food or sleep, etc.

16. Diving off the tower or high board at a pool.
17. Learning about the causes of some of our social and political problems.
18. Doing something crazy occasionally, just for the fun of it.

19. Imagining what I would do if I could live my life over again.
20. Feeding a stray dog or cat.
21. Taking special precautions on Friday, the 13th.

22. Washing and polishing things like a car, silverware, or furniture.
23. Making my work go faster by thinking of the fun I can have after it’s done.
24. Being good at typewriting, knitting, carpentry, or other practical skills.

25. Understanding myself better.

26. Learning how to prepare slides of plant and animal tissue, and making my own studies with a microscope.
27. Holding something very soft and warm against my skin.
28. Talking about how it feels to be in love.

29. Belonging to a close family group that expects me to bring my problems to them.
31. Suffering for a good cause or for someone I love.

32. Working for someone who will accept nothing less than the best that’s in me.
33. Defending myself against criticism or blame.
34. Going to the park or beach with a crowd.

35. Shocking narrow minded people by saying and doing things of which they disapprove.
36. Getting up and going to bed at the same time each day.
37. Planning a reading program for myself.

38. Returning to a task which I have previously failed.
39. Doing what most people tell me to do, to the best of my ability.
40. Having other people depend on me for ideas or opinions.

41. Being an important political figure in a time of crisis.
42. Crying at a funeral, wedding, graduation, or similar ceremony.
43. Exerting myself to the utmost for something unusually important or enjoyable.

44. Wearing clothes that will attract a lot of attention.
45. Working until I’m exhausted, to see how much I can take.
46. Being careful to wear a raincoat and rubber boots when it rains.

47. Studying the music of particular composers, such as Bach, Beethoven, etc.
48. Acting impulsively just to blow off steam.
49. Thinking about ways of changing my name to make it sound striking or different.

50. Discussing with younger people what they like to do and how they feel about things.
Legend:  L — if the item describes an activity or event that you would like, enjoy, or find more pleasant than unpleasant.
D — if the item describes an activity or event that you would dislike, reject, or find more unpleasant than pleasant.

51. Waiting for a falling star, white horse, or some other sign of success before I make an important decision.
52. Keeping my bureau drawers, desks, etc., in perfect order.
53. Spending most of my extra money on pleasure.
54. Learning how to repair such things as the radio, sewing machine, or car.
55. Thinking about different kinds of unusual behavior, like insanity, drug addition, crime, etc.
56. Studying wind conditions and changes in atmospheric pressure in order to better understand and predict the weather.
57. Eating after going to bed.
58. Watching a couple who are crazy about each other.
59. Working for someone who always tells me exactly what to do and how to do it.
60. Finding the meaning of unusual or rarely used words.
61. Being polite or humble no matter what happens.
62. Setting higher standards for myself than anyone else would, and working hard to achieve them.
63. Admitting when I'm in the wrong.
64. Leading an active social life.
65. Doing something that might provoke criticism.
66. Rearranging the furniture in the place where I live.
67. Putting off something I don't feel like doing, even though I know it has to be done.
68. Having to struggle hard for something I want.
69. Listening to a successful person tell about his experience.
70. Getting my friends to do what I want to do.
71. Taking an active part in social and political reform.
72. Avoiding excitement or emotional tension.
73. Staying up all night when I'm doing something that interests me.
74. Speaking at a club or group meeting.
75. Imagining myself president of the United States.
76. Crossing streets only at the corner and with the light.
77. Listening to TV or radio programs about political and social problems.
78. Being in a situation that requires quick decisions and action.
79. Pausing to look at myself in a mirror each time I pass one.
80. Helping to collect money for poor people.
81. Paying no attention to omens, signs, and other forms of superstition.
82. Keeping an accurate record of the money I spend.
83. Dropping out of a crowd that spends most of its time playing around or having parties.
84. Helping to direct a fund drive for the Red Cross, Community Chest, or other organizations.
85. Imagining life on other planets.
86. Reading articles which tell about new scientific developments, discoveries, or inventions.
87. Chewing on pencils, rubber bands, or paper clips.
88. Talking about who is in love with whom.
89. Being a lone wolf, free of family and friends.
90. Spending my time thinking about and discussing complex problems.
91. Trying to figure out how I was to blame after getting into an argument with someone.
92. Competing with others for a prize or goal.
93. Being ready with an excuse or explanation when criticized.
94. Meeting a lot of people.
95. Arguing with an instructor or superior.
96. Being generally consistent and unchanging in my behavior.
97. Going to a party where all the activities are planned.
98. Doing a job under pressure.
99. Going along with a decision made by a supervisor or leader rather than starting an argument.
100. Organizing groups to vote in a certain way in elections.
Legend: L — if the item describes an activity or event that you would like, enjoy, or find more pleasant than unpleasant.

D — if the item describes an activity or event that you would dislike, reject, or find more unpleasant than pleasant.

101. Living a life which is adventurous and dramatic.
102. Having someone for a friend who is very emotional.
103. Sleeping long hours every night in order to have lots of rest.
104. Playing music, dancing, or acting in a play before a large group.
105. Thinking about what I could do that would make me famous.
106. Riding a fast and steep roller coaster.
107. Comparing the problems and conditions of today with those of various times in the past.
108. Doing whatever I’m in the mood to do.
109. Daydreaming about what I would do if I could live my life any way I wanted.
110. Comforting someone who is feeling low.
111. Avoiding things that might bring bad luck.
112. Arranging my clothes neatly before going to bed.
113. Getting as much fun as I can out of life, even if it means sometimes neglecting more serious things.
114. Learning how to make such things as furniture or clothing myself.
115. Trying to figure out why the people I know behave the way they do.
116. Doing experiments in physics, chemistry or biology in order to test a theory.
117. Sleeping in a very soft bed.
118. Seeing love stories in the movies.
119. Having someone in the family help me out when I’m in trouble.
120. Working crossword puzzles, figuring out moves in checkers or chess, playing anagrams or scrabble, etc.
121. Admitting defeat.
122. Taking examinations.
123. Being corrected when I’m doing something the wrong way.
124. Belonging to a social club.
125. Teasing someone who is too conceited.
126. Moving to a new neighborhood or city, living in a different country, etc.
127. Finishing something I’ve begun, even if it is no longer enjoyable.
128. Staying away from activities which I don’t do well.
129. Following directions.
130. Being able to hypnotize people.
131. Playing an active part in community affairs.
132. Going on an emotional binge.
133. Walking instead of riding whenever I can.
134. Doing something that will create a stir.
135. Thinking about winning recognition and acclaim as a brilliant military figure.
136. Standing on the roof of a tall building.
137. Studying different types of government, such as the American, English, Russian, German, etc.
138. Doing things on the spur of the moment.
139. Having lots of time to take care of my hair, hands, face, clothing, etc.
140. Having people come to me with their problems.
141. Being especially careful the rest of the day if a black cat should cross my path.
142. Recopying notes or memoranda to make them neat.
143. Finishing some work even though it means missing a party or dance.
144. Working with mechanical appliances, household equipment, tools, electrical apparatus, etc.
145. Thinking about what the end of the world might be like.
146. Studying the stars and planets and learning to identify them.
147. Listening to the rain fall on the roof, or the wind blow through the trees.
148. Flirting.
149. Knowing an older person who likes to give me guidance and direction.
150. Being a philosopher, scientist, or professor.
Legend: L — if the item describes an activity or event that you would like, enjoy, or find more pleasant than unpleasant.

D — if the item describes an activity or event that you would dislike, reject, or find more unpleasant than pleasant.

151. Having people laugh at my mistakes.
152. Working on tasks so difficult I can hardly do them.
153. Keeping my failures and mistakes to myself.

154. Going to parties where I'm expected to mix with the whole crowd.
155. Annoying people I don't like, just to see what they will do.
156. Leading a well-ordered life with regular hours and an established routine.

157. Planning ahead so that I know every step of a project before I get to it.
158. Avoiding something at which I have once failed.
159. Turning over the leadership of a group to someone who is better for the job than I.

160. Being an official or a leader.
161. Actively supporting a movement to correct a social evil.
162. Letting loose and having a good cry sometimes.

163. Taking frequent rest periods when working on any project.
164. Being the only couple on the dance floor when everyone is watching.
165. Imagining situations in which I am a great hero.

166. Driving fast.
167. Talking about music, theater or other art forms with people who are interested in them.
168. Controlling my emotions rather than expressing myself impulsively.

169. Catching a reflection of myself in a mirror or window.
170. Lending my things to other people.
171. Carrying a good luck charm like a rabbit's foot or a four-leaf clover.

172. Making my bed and putting things away every day before I leave the house.
173. Going to a party or dance with a lively crowd.
174. Managing a store or business enterprise.

175. Seeking to explain the behavior of people who are emotionally disturbed.

176. Going to scientific exhibits.
177. Chewing or popping gum.
178. Reading novels and magazine stories about love.

179. Having others offer their opinions when I have to make a decision.
180. Losing myself in hard thought.
181. Accepting criticism without talking back.

182. Doing something very difficult in order to prove I can do it.
183. Pointing out someone else's mistakes when they point out mine.
184. Having lots of friends who come to stay with us for several days during the year.

185. Playing practical jokes.
186. Doing things a different way every time I do them.
187. Keeping to a regular schedule, even if this sometimes means working when I don't really feel like it.

188. Quitting a project that seems too difficult for me.
189. Listening to older persons tell about how they did things when they were young.
190. Organizing a protest meeting.

191. Getting my friends to change their social, political, or religious beliefs.
192. Yelling with excitement at a ball game, horse race, or other public event.
193. Having something to do every minute of the day.

194. Speaking before a large group.
195. Imagining how it would feel to be rich and famous.
196. Playing rough games in which someone might get hurt.

197. Finding out how different languages have developed, changed, and influenced one another.
198. Letting my reasoning be guided by my feelings.
199. Dressing carefully, being sure that the colors match and the various details are exactly right.

200. Taking care of youngsters.
Legend:  L — if the item describes an activity or event that you would like, enjoy, or find more pleasant than unpleasant.

D — if the item describes an activity or event that you would dislike, reject, or find more unpleasant than pleasant.

201. Having a close friend who ignores or makes fun of superstitious beliefs.
202. Shining my shoes and brushing my clothes every day.
203. Giving up whatever I'm doing rather than miss a party or other opportunity for a good time.
204. Fixing light sockets, making curtains, painting things, etc., around the house.
205. Reading stories that try to show what people really think and feel inside themselves.
206. Collecting data and attempting to arrive at general laws about the physical universe.
207. Sketching or painting.
208. Daydreaming about being in love with a particular movie star or entertainer.
209. Having people fuss over me when I'm sick.
210. Engaging in mental activity.
211. Making a fuss when someone seems to be taking advantage of me.
212. Choosing difficult tasks in preference to easy ones.
213. Apologizing when I've done something wrong.
214. Going to the park or beach only at times when no one else is likely to be there.
215. Questioning the decisions of people who are supposed to be authorities.
216. Eating my meals at the same hour each day.
217. Doing things according to my mood, without following any plan.
218. Doing something over again, just to get it right.
219. Disregarding a supervisor's directions when they seem foolish.
220. Talking someone into doing something I think ought to be done.
221. Trying to improve my community by persuading others to do certain things.
222. Skiing on steep slopes, climbing high mountains, or exploring narrow underground caves.
223. Learning more about the work of different painters and sculptors.
224. Speaking or acting spontaneously.
225. Imagining the kind of life I would have if I were born at a different time in a different place.
226. Talking over personal problems with someone who is feeling unhappy.
227. Going ahead with something important even though I've just accidentally walked under a ladder, broken a mirror, etc.
228. Keeping my room in perfect order.
229. Being with people who are always joking, laughing, and out for a good time.
230. Being treasurer or business manager for a club or organization.
231. Imagining what it will be like when rocket ships carry people through space.
232. Reading scientific theories about the origin of the earth and other planets.
233. Eating so much I can't take another bite.
234. Listening to my friends talk about their love-life.
235. Receiving advice from the family.
236. Solving puzzles that involve numbers or figures.
237. Taking the part of a servant or waiter in a play.
238. Sacrificing everything else in order to achieve something outstanding.
239. Having my mistakes pointed out to me.
240. Going on a vacation to a place where there are lots of people.
241. Fighting for something I want, rather than trying to get it by asking.
242. Avoiding any kind of routine or regularity.
243. Organizing my work in order to use time efficiently.
244. Avoiding some things because I'm not sure I'll be successful at it.
245. Carrying out orders from others with snap and enthusiasm.
246. Directing other people's work.
<table>
<thead>
<tr>
<th>Legend: <strong>L</strong> — if the item describes an activity or event that you would like, enjoy, or find more pleasant than unpleasant.</th>
<th><strong>D</strong> — if the item describes an activity or event that you would dislike, reject, or find more unpleasant than pleasant.</th>
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</thead>
<tbody>
<tr>
<td>251. Being a foreign ambassador or diplomat.</td>
<td>276. Staying in the same circle of friends all the time.</td>
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<tr>
<td>252. Seeing sad or melodramatic movies.</td>
<td>277. Striving for precision and clarity in my speech and writing.</td>
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<td>253. Avoiding things that require intense concentration.</td>
<td>278. Giving up on a problem rather than doing it in a way that may be wrong.</td>
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<td>254. Telling jokes or doing tricks to entertain others at a large gathering.</td>
<td>279. Having friends who are superior to me in ability.</td>
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<tr>
<td>255. Pretending I am a famous movie star.</td>
<td>280. Influencing or controlling the actions of others.</td>
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<tr>
<td>256. Swimming in rough, deep water.</td>
<td>281. Converting or changing the views of others.</td>
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<tr>
<td>257. Studying the development of English or American literature.</td>
<td>282. Being unrestrained and open about my feelings and emotions.</td>
</tr>
<tr>
<td>258. Being guided by my heart rather than by my head.</td>
<td>283. Doing things that are fun but require lots of physical exertion.</td>
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<td>259. Making my handwriting decorative or unusual.</td>
<td>284. Doing things which will attract attention to me.</td>
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<tr>
<td>260. Taking care of someone who is ill.</td>
<td>285. Thinking about how to become the richest and cleverest financial genius in the world.</td>
</tr>
<tr>
<td>261. Finding out which days are lucky for me, so I can hold off important things to do until then.</td>
<td>286. Being extremely careful about sports that involve some danger like sailing, hunting, or camping.</td>
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<td>262. Having a special place for everything and seeing that each thing is in its place.</td>
<td>287. Reading editorials or feature articles on major social issues.</td>
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<td>263. Doing something serious with my leisure time instead of just playing around with the crowd.</td>
<td>288. Making up my mind slowly, after considerable deliberation.</td>
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<tr>
<td>264. Learning how to raise attractive and healthy plants, flowers, vegetables, etc.</td>
<td>289. Trying out different ways of writing my name, to make it look unusual.</td>
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<tr>
<td>265. Thinking about the meaning of eternity.</td>
<td>290. Providing companionship and personal care for a very old helpless person.</td>
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<tr>
<td>266. Reading about how mathematics is used in developing scientific theories, such as explanations of how the planets move around the sun.</td>
<td>291. Going to a fortune-teller, palm reader or astrologer for advice on something important.</td>
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<tr>
<td>267. Walking along a dark street in the rain.</td>
<td>292. Keeping a calendar or notebook of the things I have done or plan to do.</td>
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<tr>
<td>268. Being romantic with someone I love.</td>
<td>293. Limiting my pleasures so that I can spend all of my time usefully.</td>
</tr>
<tr>
<td>269. Having people talk to me about some personal problem of mine.</td>
<td>294. Being efficient and successful in practical affairs.</td>
</tr>
<tr>
<td>270. Following through in the development of a theory, even though it has no practical applications.</td>
<td>295. Concentrating so hard on a work of art or music that I don’t know what’s going on around me.</td>
</tr>
<tr>
<td>271. Telling others about the mistakes I have made and the sins I have committed.</td>
<td>296. Studying rock formations and learning how they developed.</td>
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<tr>
<td>272. Picking out some hard task for myself and doing it.</td>
<td>297. Reading in the bathtub.</td>
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<tr>
<td>273. Concealing my mistakes from others whenever possible.</td>
<td>298. Reading about the love affairs of movie stars and other famous people.</td>
</tr>
<tr>
<td>274. Inviting a lot of people home for a snack or party.</td>
<td>299. Being with someone who always tries to be sympathetic and understanding.</td>
</tr>
<tr>
<td>275. Proving that an instructor or superior is wrong.</td>
<td>300. Working out solutions to complicated problems, even though the answers may have no apparent, immediate usefulness.</td>
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</table>
APPENDIX B

COLLEGE CHARACTERISTICS INDEX

There are 300 statements in this booklet. They are statements about college life. They refer to the curriculum, to college teaching and classroom activities, to rules and regulations and policies, to student organizations and activities and interests, to features of the campus, etc. The statements may or may not be characteristic of your college, because colleges differ from one another in many ways. You are to decide which statements are characteristic of your college and which are not. Your answers should tell us what you believe the college is like rather than what you might personally prefer. You won't know the answer to many of these statements, because there may not be any really definite information on which to base your answer. Your response will simply mean that in your opinion the statement is probably true or probably false about your college. Do not omit any item.

DIRECTIONS

On the special answer sheet print your name, and the other information requested. Then, as you read each statement in the booklet, blacken space

T—when you think the statement is generally TRUE or characteristic of the college, is something which occurs or might occur, is the way people tend to feel or act.

F—when you think the statement is generally FALSE or not characteristic of the college, is something which is not likely to occur, is not the way people typically feel or act.

DIRECTIONS FOR USING NCS ANSWER SHEET

The rows of response circles are numbered to correspond to the items in the Test Booklet. Each question may be answered either (T) or (F).

In marking your answers on the Answer Sheet, make sure that the number of the Statement is the same as the number on the Answer Sheet. Be sure to answer either (T) or (F) for every Statement.

* Be sure to use a #2½ or softer writing pencil.
* Do Not Use Ball Point or Ink.
* Keep your Answer Sheet Clean.
* Do not make stray marks.
* Erase errors completely.
* Fill the circle completely.
Legend: T — True. Generally true or characteristic of the college, is something which occurs or might occur, is the way people tend to feel or act.

F — False. Generally false or not characteristic of the college, is something which is not likely to occur, is not the way people typically feel or act.

1. Students are encouraged to criticize administrative policies and teaching practices.
2. The competition for grades is intense.
3. In many courses grade lists are publicly posted.
4. There are no fraternities or sororities.
5. Students are conscientious about taking good care of school property.
6. The students here represent a great variety in nationality, religion and social status.
7. Most courses are very well organized and progress systematically from week to week.
8. Professors often try to provoke arguments in class, the livelier the better.
9. Students address faculty members as "professor" or "doctor."
10. There is a recognized group of student leaders on this campus.
11. Student pep rallies, parades, dances, carnivals or demonstrations occur very rarely.
12. Students here learn that they are not only expected to develop ideals but also to express them in action.
13. Discussions get quite heated, with a lot of display of feeling.
14. There is a lot of interest here in student theatrical groups.
15. Many famous people are brought to the campus for lectures, concerts, student discussions, etc.
16. There is an extensive program of intramural sports and informal athletic activities.
17. Many of the social science professors are actively engaged in research.
18. In most classes there is very little joking and laughing.
19. Receptions, teas, or formal dances are seldom given here.
20. Many upperclassmen play an active role in helping new students adjust to campus life.
21. No one needs to be afraid of expressing extreme or unpopular viewpoints in this school.
22. In many classes students have an assigned seat.
23. Students really get excited at an athletic contest.
24. It's important socially here to be in the right club or group.
25. Books dealing with psychological problems or personal values are widely read and discussed.
26. The library is exceptionally well equipped with journals, periodicals, and books in the natural sciences.
27. On nice days many classes meet outdoors on the lawn.
28. There is lots of informal dating during the week — at the library, snack bar, movies, etc.
29. Students often help one another with their lessons.
30. There is a lot of emphasis on preparing for graduate work.
31. Resident students must get written permission to be away from the campus overnight.
32. It is fairly easy to pass most courses without working very hard.
33. Student organizations are closely supervised to guard against mistakes.
34. There is a lot of group spirit.
35. Most people here seem to be especially considerate of others.
36. Courses, examinations, and readings are frequently revised.
37. Instructors clearly explain the goals and purposes of their courses.
38. When students do not like an administrative decision, they really work to get it changed.
39. Many students try to pattern themselves after people they admire.
40. Student elections generate a lot of intense campaigning and strong feeling.
41. Students and faculty are proud of their toughness and their resistance to pleaders for special causes.
42. Most students get extremely tense during exam periods.
43. Students put a lot of energy into everything they do — in class and out.
44. When students run a project or put on a show everybody knows about it.
45. Students spend a lot of time planning their careers.
46. Initiations and class rivalries sometimes get a little rough.
47. The school offers many opportunities for students to understand and criticize important works in art, music, and drama.
48. New fads and phrases are continually springing up among the students.
49. Students take a great deal of pride in their personal appearance.
50. There are courses which involve field trips to slum areas, welfare agencies, or similar contact with underprivileged people.
Legend: T — True. Generally true or characteristic of the college, is something which occurs or might occur, is the way people tend to feel or act.

F — False. Generally false or not characteristic of the college, is something which is not likely to occur, is not the way people typically feel or act.

51. The values most stressed here are open-mindedness and objectivity.
52. Students must have a written excuse for absence from class.
53. The big college events draw a lot of student enthusiasm and support.
54. There are psychology courses which deal in a practical way with personal adjustment and human relations.
55. There would be a capacity audience for a lecture by an outstanding philosopher or theologian.
56. When students get together they seldom talk about science.
57. The college has invested very little in drama and dance.
58. Student gathering places are typically active and noisy.
59. There is a student loan fund which is very helpful for minor emergencies.
60. The school is outstanding for the emphasis and support it gives to pure scholarship and basic research.
61. Students are seldom kept waiting when they have appointments with faculty members.
62. Most courses require intensive study and preparation out of class.
63. Students are expected to play bridge, golf, bowl together, etc., regardless of individual skill.
64. There are many opportunities for students to get together in extra-curricular activities.
65. Most students show a good deal of caution and self-control in their behavior.
66. There are many students from widely different geographic regions.
67. A lot of students who get just passing grades at midterm really make an effort to earn a higher grade by the end of the term.
68. People here really play to win, not just for the fun of the game.
69. Religious worship here stresses service to God and obedience to His laws.
70. Students are expected to report any violation of rules and regulations.
71. Many students here develop a strong sense of responsibility about their role in contemporary social and political life.
72. The way people feel around here is always pretty evident.
73. Few students here would ever work or play to the point of exhaustion.
74. Students have many opportunities to develop skill in organizing and directing the work of others.
75. Most students would regard mountain-climbing, rugged camping trips, or driving a car all night as pretty pointless.
76. Fire drills are held in student dormitories and residences.
77. A lecture by an outstanding literary critic would be poorly attended.
78. Many informal student activities are unplanned and spontaneous.
79. Poise and sophistication are highly respected by both students and faculty.
80. Most students here would not want pets (dogs, cats, etc.) even if they were allowed to have them.
81. Most faculty members are liberal in interpreting regulations and treat violations with understanding and tolerance.
82. Student papers and reports must be neat.
83. There are lots of dances, parties, and social activities.
84. Many courses stress the speculative or abstract rather than the concrete and tangible.
85. There are many facilities and opportunities for individual creative activity.
86. A lecture by an outstanding scientist would be poorly attended.
87. Student rooms are more likely to be decorated with pennants and pin-ups than with paintings, carvings, mobiles, fabrics, etc.
88. Most students here really enjoy dancing.
89. The person who is always trying to "help out" is likely to be regarded as a nuisance.
90. Most students have very little interest in round tables, panel meetings, or other formal discussions.
91. If a student wants help, he usually has to answer a lot of embarrassing questions.
92. Personality, pull, and bluff get students through many courses.
93. In many courses there are projects or assignments which call for group work.
94. The professors seem to have little time for conversation with students.
95. The faculty and administration are often joked about or criticized in student conversations.
96. Everyone here has pretty much the same attitudes, opinions, and beliefs.
97. Activities in most student organizations are carefully and clearly planned.
98. Channels for expressing students' complaints are readily accessible.
99. Students almost always wait to be called on before speaking in class.
100. Personal rivalries are fairly common.
Legend: T — True. Generally true or characteristic of the college, is something which occurs or might occur, is the way people tend to feel or act.

F — False. Generally false or not characteristic of the college, is something which is not likely to occur, is not the way people typically feel or act.

101. Boy-girl relationships in this atmosphere tend to be practical and uninvolved, rarely becoming intensely emotional or romantic.

102. There is a lot of excitement and restlessness just before holidays.

103. There are so many things to do here that students are busy all the time.

104. Most students here would not like to dress up for a fancy ball or a masquerade.

105. Most students are more concerned with the present than the future.

106. Many students drive sports cars.

107. Few students are planning post-graduate work in the social sciences.

108. Dormitory raids, water fights and other student pranks would be unthinkable here.

109. Most students here enjoy such activities as dancing, skating, diving, gymnastics.

110. Students often run errands or do other personal services for the faculty.

111. Many students have special good luck charms and practices.

112. Campus architecture and landscaping stress symmetry and order.

113. There is very little studying here over the weekends.

114. Students are more interested in specialization than in general liberal education.

115. Modern art and music get little attention here.

116. Few students are planning careers in science.

117. This is mainly a meat and potatoes community, with little interest in gourmets or anything unusual.

118. Students spend a lot of time talking about their boy or girl friends.

119. Students here are encouraged to be independent and individualistic.

120. A lot of students like chess, puzzles, double-crostics, and other abstract games.

121. For a period of time freshmen have to take orders from upperclassmen.

122. Students who work hard for high grades are likely to be regarded as odd.

123. In most classes every student can expect to be called on to recite.

124. The school helps everyone get acquainted.

125. Many students seem to expect other people to adapt to them rather than trying to adapt themselves to others.

126. Many students travel or look for jobs in different parts of the country during the summer.

127. Assignments are usually clear and specific, making it easy for students to plan their studies effectively.

128. People around here seem to thrive on difficulty — the rougher things get, the harder they work.

129. In talking with students, faculty members often refer to their colleagues by their first names.

130. The important people at this school expect others to show proper respect for them.

131. There are practically no student organizations actively involved in campus or community affairs.

132. Most students respond to ideas and events in a pretty cool and detached way.

133. There seems to be a lot of interest here in health diets, vitamin pills, anti-histamines, etc.

134. There are a good many colorful and controversial figures on the faculty.

135. Education here tends to make students more practical and realistic.

136. Students are frequently reminded to take preventive measures against illness.

137. A student who insists on analyzing and classifying art and music is likely to be regarded as a little odd.

138. Students often start projects without trying to decide in advance how they will develop or where they may end.

139. Students who are not properly groomed are likely to have this called to their attention.

140. The college regards training people for service to the community as one of its major responsibilities.

141. A well reasoned report can rate an A grade here even though its viewpoint is opposed to the professor’s.

142. Professors usually take attendance in class.

143. New jokes and gags get around the campus in a hurry.

144. Family social and financial status may not be talked about but everyone knows who’s who.

145. The student newspaper rarely carries articles intended to stimulate discussion of philosophical or ethical matters.

146. Course offerings and faculty in the natural sciences are outstanding.

147. There is a lot of interest here in poetry, music, painting, sculpture, architecture, etc.

148. Bermuda shorts, pin-up pictures, etc., are common on this campus.

149. There is a high degree of respect for nonconformity and intellectual freedom.

150. “Alma Mater” seems to be more important than “subject matter” at this school.
Legend: T — True. Generally true or characteristic of the college, is something which occurs or might occur, is the way people tend to feel or act.

F — False. Generally false or not characteristic of the college, is something which is not likely to occur, is not the way people typically feel or act.

151. No one is expected to suffer in silence if some regulation happens to create a personal hardship.

152. Examinations here provide a genuine measure of a student's achievement and understanding.

153. Students' mid-term and final grades are reported to parents.

154. Students almost never see the professors except in class.

155. Students occasionally plot some sort of escapade or rebellion.

156. Most students dress and act pretty much alike.

157. Faculty advisers or counselors are pretty practical and efficient in the way they dispatch their business.

158. If a student fails a course he can usually substitute another one for it rather than take it over.

159. A lot of students here will do something even when they know they will be criticized for it.

160. There are no favorites at this school — everyone gets treated alike.

161. Students are actively concerned about national and international affairs.

162. An open display of emotion would embarrass most professors.

163. Students get so absorbed in various activities that they often lose all sense of time or personal comfort.

164. It is easy to obtain student speakers for clubs or meetings.

165. There is little sympathy here for ambitious daydreams about the future.

166. Drinking and late parties are generally tolerated, despite regulations.

167. When students get together they seldom talk about trends in art, music or the theater.

168. There seems to be a jumble of papers and books in most faculty offices.

169. There are no mirrors in any of the public rooms or halls.

170. There is a great deal of borrowing and sharing among the students.

171. Some of the professors react to questions in class as if the students were criticizing them personally.

172. The campus and buildings always look a little unkempt.

173. Everyone has a lot of fun at this school.

174. Many students enjoy working with their hands and are pretty efficient about making or repairing things.

175. Special museums or collections are important possessions of the college.

176. Laboratory facilities in the natural sciences are excellent.

177. The library has paintings and phonograph records which circulate widely among the students.

178. There are several popular spots where a crowd of boys and girls can always be found.

179. Most of the faculty are not interested in students' personal problems.

180. Very few students here prefer to talk about poetry, philosophy, or mathematics as compared with motion pictures, politics, or inventions.

181. Faculty members are impatient with students who interrupt their work.

182. Students set high standards of achievement for themselves.

183. Students quickly learn what is done and not done on this campus.

184. Faculty members rarely or never call students by their first names.

185. When students dislike a faculty member they make it evident to him.

186. There are many foreign students on the campus.

187. In most classes, the presentation of material is well planned and illustrated.

188. Everyone knows the "snap" courses to take and the tough ones to avoid.

189. Professors seem to enjoy breaking down myths and illusions about famous people.

190. Anyone who knows the right people in the faculty or administration can get a better break here.

191. Students are encouraged to take an active part in social reforms or political programs.

192. Graduation is a pretty matter-of-fact, unmotional event.

193. Faculty members put a lot of energy and enthusiasm into their teaching.

194. There is a lot of fanfare and pageantry in many of the college events.

195. Nearly all students expect to achieve future fame or wealth.

196. All undergraduates must live in university approved housing.

197. Humanities courses are often elected by students majoring in other areas.

198. Students who tend to say or do the first thing that occurs to them are likely to have a hard time here.

199. There are definite times each week when dining is made a gracious social event.

200. A good deal of enthusiasm and support is aroused by fund drives for Campus Chest, CARE, Red Cross, refugee aid, etc.
Legend:  T — True. Generally true or characteristic of the college, is something which occurs or might occur, is the way people tend to feel or act.

F — False. Generally false or not characteristic of the college, is something which is not likely to occur, is not the way people typically feel or act.

201. There always seem to be a lot of little quarrels going on.
202. Most student rooms are pretty messy.
203. It's easy to get a group together for card games, singing, going to the movies, etc.
204. The academic atmosphere is practical, emphasizing efficiency and usefulness.
205. Tutorial or honors programs are available for qualified students.
206. A student who spends most of his time in a science laboratory is likely to be regarded as a little odd.
207. There are paintings or statues of nudes on the campus.
208. Students frequently go away for football games, skiing weekends, etc.
209. Students commonly share their problems.
210. Most of the professors are dedicated scholars in their fields.
211. The school administration has little tolerance for student complaints and protests.
212. Standards set by the professors are not particularly hard to achieve.
213. Frequent tests are given in most courses.
214. Students spend a lot of time together at the snack bars, taverns, and in one another's rooms.
215. Students are sometimes noisy and inattentive at concerts or lectures.
216. The history and traditions of the college are strongly emphasized.
217. Most students follow a systematic schedule for studying and recreation.
218. No one gets pushed around at this school without fighting back.
219. Faculty members and administrators see students only during scheduled office hours or by appointment.
220. Students exert considerable pressure on one another to live up to the expected codes of conduct.
221. National elections generate a lot of intense campaigning and strong feeling on the campus.
222. Students rarely get drunk and disorderly.
223. Course offerings and faculty in the social sciences are outstanding.
224. Spontaneous student rallies and demonstrations occur frequently.
225. Proper social forms and manners are important here.
226. Many church and social organizations are especially interested in charities and community services.
227. The faculty tend to be suspicious of students' motives and often make the worst interpretations of even trivial incidents.
228. Classrooms are kept clean and tidy.
229. There isn't much to do here except go to classes and study.
230. The college offers many really practical courses such as typing, report writing, etc.
231. Long, serious intellectual discussions are common among the students.
232. Many of the natural science professors are actively engaged in research.
233. In papers and reports, vivid and novel expressions are usually criticized.
234. Some of the most popular students have a knack for making witty, subtle remarks with a slightly sexy tinge.
235. The professors are dedicated to helping you.
236. Learning what is in the textbook is enough to pass most courses.
237. The professors go out of their way to help you.
238. In class discussions, papers, and exams, the main emphasis is on breadth of understanding, perspective and critical judgment.
239. Students don't argue with the professor; they just admit they are wrong.
240. The campus religious program tends to emphasize the importance of acting on personal conviction, rather than the acceptance of tradition.
241. Students pay little attention to rules and regulations.
242. The campus religious program tends to emphasize the importance of acting on personal conviction, rather than the acceptance of tradition.
243. Old grads are always pleased to discover that few things have changed.
244. The professors regularly check up on the students to make sure that assignments are being carried out properly and on time.
245. It is hard to prepare for examinations because students seldom know what will be expected of them.
246. The campus religious program tends to emphasize the importance of acting on personal conviction, rather than the acceptance of tradition.
247. Student publications never lampoon dignified people or institutions.
248. The professors regularly check up on the students to make sure that assignments are being carried out properly and on time.
249. People here are always trying to win an argument.
Legend:  T — True. Generally true or characteristic of the college, is something which occurs or might occur, is the way people tend to feel or act.

F — False. Generally false or not characteristic of the college, is something which is not likely to occur, is not the way people typically feel or act.

251. There are a number of prominent faculty members who play a significant role in national or local politics.
252. Students tend to hide their deeper feelings from each other.
253. Class discussions are typically vigorous and intense.
254. The college tries to avoid advertising and publicity.
255. The future goals for most students emphasize job security, family happiness, and good citizenship.
256. Few students bother with rubber, hats, or other special protection against the weather.
257. The library is exceptionally well equipped with journals, periodicals, and books in the social sciences.
258. There are frequent informal social gatherings.
259. Society orchestras are more popular here than jazz bands or novelty groups.
260. Chapel services on or near the campus are well attended.
261. The school has an excellent reputation for academic freedom.
262. Campus buildings are clearly marked by signs and directories.
263. Students are very serious and purposeful about their work.
264. Education for leadership is strongly emphasized.
265. Students who are concerned with developing their own personal and private system of values are likely to be regarded as odd.
266. Introductory science or math courses are often elected by students majoring in other areas.
267. To most students here art is something to be studied rather than felt.
268. This college's reputation for marriages is as good as its reputation for education.
269. Students are expected to work out the details of their own program in their own way.
270. Most of the professors are very thorough teachers and really probe into the fundamentals of their subjects.
271. There is a lot of apple-polishing around here.
272. Most courses are a real intellectual challenge.
273. Students have little or no personal privacy.
274. The professors really talk with the students, not just at them.
275. Students ask permission before deviating from common policies or practices.
276. Most students look for variety and novelty in summer jobs.
277. It is easy to take clear notes in most courses.
278. It is very difficult to get a group decision here without a lot of argument.
279. A controversial speaker always stirs up a lot of student discussion.
280. The student leaders here have lots of special privileges.
281. The expression of strong personal belief or conviction is pretty rare around here.
282. Very few things here arouse much excitement or feeling.
283. The professors really push the students' capacities to the limit.
284. Student parties are colorful and lively.
285. Quite a few faculty members have had varied and unusual careers.
286. Rough games and contact sports are an important part of intramural athletics.
287. In many courses the broad social and historical setting of the material is not discussed.
288. Students frequently do things on the spur of the moment.
289. Students think about dressing appropriately and interestingly for different occasions—classes, social events, sports, and other affairs.
290. This school has a reputation for being very friendly.
291. Many faculty members seem moody and unpredictable.
292. Classes meet only at their regularly scheduled time and place.
293. Every year there are carnivals, parades, and other festive events on the campus.
294. Most students are interested in careers in business, engineering, management, and other practical affairs.
295. There is considerable interest in the analysis of value systems, and the relativity of societies and ethics.
296. There is a lot of interest in the philosophy and methods of science.
297. Concerts and art exhibits always draw big crowds of students.
298. Nearly everyone here has a date for the weekends.
299. Counseling and guidance services are really personal, patient, and extensive.
300. Careful reasoning and clear logic are valued most highly in grading student papers, reports, or discussions.
APPENDIX C

DEFINITION AND DESCRIPTION OF INDEX SCALES

2. **Achievement**: striving for success through personal effort.
3. **Adaptability-Defensiveness**: acceptance of criticism versus resistance to suggestion.
4. **Affiliation-Rejection**: friendliness versus unfriendliness.
5. **Aggression-Blame Avoidance**: hostility versus its inhibition.
6. **Change-Sameness**: flexibility versus routine.
7. **Conjunctivity-Disjunctivity**: planfulness versus organization.
8. **Counteraction-Inferiority Avoidance**: restricting after failure versus withdrawal.
9. **Deference-Restiveness**: respect for authority versus rebelliousness.
10. **Dominance-Tolerance**: ascendancy versus forbearance.
11. **Ego Achievement**: striving for power through social action.
12. **Emotionality-Placidity**: expressiveness versus restraint.
13. **Energy-Placidity**: effort versus inertia.
15. **Fantasied Achievement:** daydreams of extraordinary public recognition.

16. **Harm Avoidance-Risktaking:** fearfulness versus thrill-seeking.

17. **Humanities, Social Science:** interests in the humanities and social sciences.

18. **Impulsiveness-Deliberation:** impetuousness versus reflection.

19. **Narcissism:** vanity.

20. **Nurturance-Rejection:** helping others versus indifference.

21. **Objectivity-Projectivity:** detachment versus superstition (AI) or suspicion (EI).

22. **Order-Disorder:** compulsive organization of details versus carelessness.

23. **Play-Work:** pleasure-seeking versus purposefulness.

24. **Practicalness-Impracticalness:** interest in practical activities versus indifference.

25. **Reflectiveness:** introspective contemplation.

26. **Science:** interests in the natural sciences.

27. **Sensuality-Puritanism:** interest in sensory and esthetic experiences.

28. **Sexuality-Prudishness:** heterosexual interests versus their inhibition.

29. **Supplication-Autonomy:** dependence versus self-reliance.

30. **Understanding:** intellectuality.
APPENDIX D

DEFINITION AND DESCRIPTION OF FACTORS USED

Activities Index

Factor 3. Intellectual Interests. The factors with the highest loadings in this dimension are based on items involving various forms of intellectual activities. These include interests in the arts as well as the sciences, both abstract and empirical. Score Sum: Reflectiveness, Humanities-Social Sciences, Understanding, Science.

Factor 4. Motivation. This factor, like 1 and 2, represents another form in which need achievement may be expressed. Here, however, are the more conventional forms of striving most recognizable among students, involving elements of competitiveness and perseverance as well as of intellectual aspiration. Score Sum: Achievement, Counter-action, Understanding, Energy.

Factor 5. Applied Interests. A high score on this factor suggests an interest in achieving success in concrete, tangible, socially acceptable activities. The items involve orderly and conventional applications in business and science. Score Sum: Practicalness, Science, Order.
Factor 6. Orderliness. People with high scores on this factor have indicated a marked interest in activities stressing personal organization and deliberativeness. Although some of the items are concerned with long range planning and relatively high level time perspective, the major emphasis here is on the maintenance of ritual and routine and the avoidance of impulsive behavior. Score Sum: Conjunctivity, Sameness*, Order, Deliberation*.

Factor 7. Submissiveness. The preceding factor suggests a strong defensive system, based on rigid internal controls, for guarding against the expression of impulses. The submissiveness factor also implies a high level of control, but one which is based on social conformity and other-directedness. The items emphasize humility, deference, getting along with others, keeping in one's place, etc. It is of interest that the Nurturance scale items should appear in this context, suggesting that the submissive individual's interest in supportive activities is based to a considerable extent on his own unexpressed need for such help. Score Sum: Adaptability, Abasement, Nurturance, Deference.

*Denotes a reversal of the scale by subtracting the original raw score from ten. Scales requiring this treatment include: AI F6: Sameness = 10 - Aggression, Deliberation = 10 - Impulsiveness; CCI F8: Blame Avoidance = 10 - Aggression, Deliberation = 10 - Impulsiveness; F11: Puritanism = 10 - Sensuality.
College Characteristics Index

Factor 2. Intellectual Climate. All of the various items contributing to this factor reflect the qualities of staff and plant specifically devoted to scholarly activities in the humanities, arts, and social sciences. Score Sum: Reflectiveness, Humanities-Social Sciences, Sensuality, Understanding, Fantasied Achievement.

Factor 5. Academic Achievement. Schools high in this factor set high standards of achievement for their students. Course work, examinations, honors, and similar devices are employed for this purpose. Score Sum: Achievement, Energy, Understanding, Counteraction, Conjunctivity.

Factor 8. Organization. The various components of this factor may be regarded as the environmental counterparts of the needs for orderliness and submissiveness in the individual. High scores on this factor are achieved by institutions which stress a high degree of organization and structure in the academic environment. Score Sum: Blame Avoidance*, Conjunctivity, Deliberation*, Deference, Narcissism.

Factor 11. Vocational Climate. The last of the non-intellectual factors is also shared with the intellectual climate area. The items of Factor 11 emphasize practical, applied activities, the rejection of aesthetic experience, and a high level of orderliness and conformity in the
student's relations to the faculty, his peers, and his studies. **Score Sum:** Practicalness, Puritanism*, Deference, Order, Adaptiveness.

*Denotes a reversal of the scale by subtracting the original raw score from ten. Scales requiring this treatment include: AI F6: Sameness = 10 - Aggression, Deliberation = 10 - Impulsiveness; CCI F8: Blame Avoidance = 10 - Aggression, Deliberation = 10 - Impulsiveness; F11: Puritanism = 10 - Sensuality.
APPENDIX E

PROFILE OF AI FACTORS USED
APPENDIX F

PROFILE OF CCI FACTORS USED
APPENDIX G

PROFILE OF FRESHMAN AND SENIOR SCALE MEANS
APPENDIX H

PROFILE OF FRESHMEN AND SENIORS ON FIFTEEN SCALES
WHERE SIGNIFICANT DIFFERENCES WERE OBSERVED
SCALE SCORE PROFILE—COLLEGE ENVIRONMENT (CCI)
NORMS BASED UPON 1993 JUNIORS AND SENIORS ENROLLED IN 32 COLLEGES.

NEED—PRESS SCALE

1. ABASEMENT—ASSURANCE
2. ACHIEVEMENT
3. ADAPTABILITY—DEFENSIVENESS
4. AFFILIATION—REJECTION
5. AGGRESSION—BLAME AVOIDANCE
6. CHANGE—SAMENESS
7. CONJUNCTIVITY—DISJUNCTIVITY
8. COUNTERACTION—INFERIORITY AVOIDANCE
9. DEFERENCE—RESTIVENESS
10. DOMINANCE—TOLERANCE
11. EGO ACHIEVEMENT
12. EMOTIONALITY—PLACIDITY
13. ENERGY—PASSIVITY
14. EXHIBITIONISM—INFERIORITY AVOIDANCE
15. FANTASIED ACHIEVEMENT
16. HARM AVOIDANCE—RISK TAKING
17. HUMANITIES, SOCIAL SCIENCE
18. IMPULSIVENESS—DELIBERATION
19. NARCISISM
20. NURTURANCE—REJECTION
21. OBJECTIVITY—PROJECTIVITY
22. ORDER—DISORDER
23. PLAY—WORK
24. PRACTICALNESS—IMPRacticalNESS
25. REFLECTIVENESS
26. SCIENCE
27. SENsUALITY—Puritanism
28. SEXUALITY—PRUDISHNESS
29. SUPPLICATION—AUTONOMY
30. UNDERSTANDING

1. ABASEMENT—ASSURANCE
2. ACHIEVEMENT
3. ADAPTABILITY—DEFENSIVENESS
4. AFFILIATION—REJECTION
5. AGGRESSION—BLAME AVOIDANCE
6. CHANGE—SAMENESS
7. CONJUNCTIVITY—DISJUNCTIVITY
8. COUNTERACTION—INFERIORITY AVOIDANCE
9. DEFERENCE—RESTIVENESS
10. DOMINANCE—TOLERANCE
11. EGO ACHIEVEMENT
12. EMOTIONALITY—PLACIDITY
13. ENERGY—PASSIVITY
14. EXHIBITIONISM—INFERIORITY AVOIDANCE
15. FANTASIED ACHIEVEMENT
16. HARM AVOIDANCE—RISK TAKING
17. HUMANITIES, SOCIAL SCIENCE
18. IMPULSIVENESS—DELIBERATION
19. NARCISISM
20. NURTURANCE—REJECTION
21. OBJECTIVITY—PROJECTIVITY
22. ORDER—DISORDER
23. PLAY—WORK
24. PRACTICALNESS—IMPRacticalNESS
25. REFLECTIVENESS
26. SCIENCE
27. SENsUALITY—Puritanism
28. SEXUALITY—PRUDISHNESS
29. SUPPLICATION—AUTONOMY
30. UNDERSTANDING

Freshmen
Seniors
BIBLIOGRAPHY

Books


Hall, Calvin S., and Lindzey, Gardner, Theories of Personality, New York, John Wiley and Sons, Inc., 1957.


Articles


"The Relationship of Socio-economic Status of Personality Inventory and Achievement Test Scores," *Journal of Educational Psychology*, 37 (December, 1946), 527-540.


Thistilthwaite, Donald L., "College Press and Student Achievement," Journal of Educational Psychology, 50 (October, 1959), 183-191.

Publication of Learned Organizations


Unpublished Materials


__________, Scoring Instructions and College Norms, Activities Index, College Characteristics Index, Syracuse, New York, Syracuse University, Psychological Research Center, 1963. Distributed by National Computer Systems, 1015 South 6th Street, Minneapolis, Minnesota.