70-14,431

SANDERS, Robert Gene, 1933-
THE RELATIONSHIP OF ACHIEVEMENT AND PERSONALITY VARIABLES FOR GRADUATING SENIORS BETWEEN TEST PERFORMANCES ON THE AMERICAN COLLEGE TEST AND THE EDWARDS PERSONALITY PREFERENCE SCHEDULE.

The University of Oklahoma, Ed.D., 1970
Education, psychology

University Microfilms, Inc., Ann Arbor, Michigan

THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

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A DISSERTATION

SUBMITTED TO THE GRADUATE COLLEGE

in partial fulfillment of the requirements for the

degree of

DOCTOR OF EDUCATION

BY

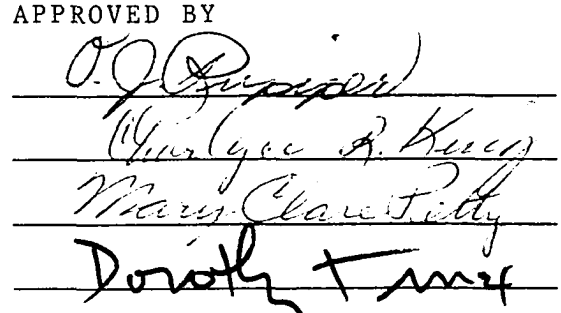
ROBERT GENE SANDERS

Norman, Oklahoma

1969

THE RELATIONSHIP OF ACHIEVEMENT AND PERSONALITY VARIABLES FOR GRADUATING SENIORS BETWEEN TEST PERFORMANCES ON THE AMERICAN COLLEGE TEST AND THE EDWARDS PERSONALITY PREFERENCE SCHEDULE

APPROVED BY



DISSERTATION COMMITTEE

ACKNOWLEDGMENT

The writer wishes to convey with sincere and deepest gratitude the invaluable help received in the direction of this study which was given by Dr. O. J. Rupiper, Chairman of the Dissertation Committee.

To Dr. Lillian Ivey is extended my sincere appreciation for all her help and support during this study.

Sincere appreciation is expressed to Lois Renter, the Librarian of the American College Testing Program, for her cooperation and assistance.

Special acknowledgment is made to my wife, Jean, and two sons, Blake and Brian, for their encouragement and patient tolerance throughout this study.

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CHAPTER I

INTRODUCTION

The changes in ways of thinking, teaching, and administering demanded of college personnel today are partially the result of the rapid changes in the types of students who now comprise the college population--particularly those students from low socioeconomic families. Max Wise (1962) stated that these students bring to college less in the way of academic and social preparation than their middle and upper socioeconomic counterparts. They bring a different type of motivation for college study and a different way of conceptualizing the role of the faculty, the curriculum, and extracurricular activities. Thus, a clear understanding of the values and needs which motivate behavior is important in meeting the social and academic inadequacies of the student in order to help him achieve the goals of the institution which, in turn, helps him achieve his own personal goals.

Because of current social pressures and social change, colleges and universities can no longer refuse admittance to students with poor educational backgrounds and less than

desirable academic preparation for college. Therefore, predictors of academic achievement must be modified to meet the challenge of the current college population.

Educators and researchers (Munday, 1967) concerned with the prediction of college grades are interested in the degree of overlap of present predictors of academic achievement with other possible variables. If the overlap is great, thereby specifying a high correlation, prediction would not be improved by adding variables; if the overlap is slight and thus the correlation low, adding variables, even moderately correlated with college grades, would probably improve prediction. With this in mind, many college and university researchers have studied possible variables which would improve prediction. They have discovered that relationships among generally used predictors of college grades can provide some insight into the predictive and content value of such measures. For example, nonintellective variables can be defined by certain biographical and demographic characteristics of students, such as home town population, family income, part-time work interests, age and marital status as well as by certain attitudinal characteristics, such as career interests and goals (Spencer and Stallings, 1968).

To implement research in adding variables for prediction, standard American College Test predictors were correlated with measures of intelligence, scholastic aptitude,

English and reading achievement, high school rank, and study habits (Munday, 1966). American College Test scores were found to be moderately high as related to measures of intelligence, scholastic aptitude, and English and reading achievement. American College Test high school scores also were found to be moderately to highly related to high school rank. However, American College Test scores and high school grades were relatively independent of study habits.

The measure of study habits employed by Cronbach (1960) was the Survey of Study Habits and Attitudes. Although this inventory is fakable and thus cannot be used for college admissions purposes, it is useful in educational counseling and remedial work with college students. The test covers study behavior and academic attitudes and thus is helpful in determining what aspects of the American College Test assessment, if any, cover these important student characteristics.

Another factor which has not been controlled in previous studies of the relationship between academic and nonacademic achievement is the effect of a student's interests and aspirations. For example, some bright students have no interest in science yet have the mental capacity to succeed in that field. According to Saunders (1956), interest may be a "moderator variable" of the relationships between two types of achievement. Some students with certain unfavorable personality patterns but with adequate ability

do not perform well in college. Therefore, there must be situations in the college setting which affect these students more adversely than those same situations affect other students. When these situations are identified, the college staff can take appropriate corrective measures. Students who are very bright may need a diverse array of activities to keep them from becoming bored and at the same time need special counseling to enable them to channel a sufficient proportion of their energy into academic pursuits.

Most investigators trying to predict grade performance in college have found correlations between ability scores on tests such as the School and College Ability Test (SCAT) and grades of freshmen averaging about .50 (Fricke, 1958), but this correlation diminishes when one is predicting the grades of upperclassmen. Because ability tests are useful in establishing a minimum score for admissions, it is probable that a substantial proportion of the later unexplained variance is accounted for by nonintellective factors such as personality patterns (Holland, 1960) and sociocultural differences.

Academic potential and achievement have little relationship (Holland and Richards, 1967) to some kinds of nonacademic potential and socially important performance; therefore, measures of academic potential and achievement may have substantial positive correlation with some nonacademic variables. The importance of personality factors in

vocational choice is well established (Roe, 1956; Siegelman and Peck, 1960; Tiedeman and O'Hara, 1963). It is less clearly established how personality and ability influence the choice of career role. However, investigations have revealed that it is usual for a male college freshman to announce his intention of becoming an engineer and that it is rare for the freshman to specify that he intends to work as a teacher or a salesman. An inspection by Elton (1967) of the personality characteristics of the student who is undecided about his career reveals some interesting data about his state of indecision. He has less ability, but he enjoys independence and democratic modes of thought more than the students who choose an engineering vocation. It is evident that an undecided student, for personality reasons, may reject not only an individual vocation but also entire vocational fields. Elton also found that a freshman who chooses a vocation in the field of business or finance is more independent, more tolerant of ambiguity, and more nonauthoritarian than one who chooses a career in the field of science, engineering, or medicine.

Research which reports personality differences between students in different curricular groups has been devoted largely to males. Although social change and the rapid development of technology are abolishing the traditional demarcation between male and female career choices, the choice of occupational career is still a difficult one

for women, for while the law declares them "equal," reality and biology proclaim them different. Thus, there is a need for research which compares the personality traits of women with their vocational choices.

Lehman (1965), when testing ability, found differences among women in various curricular groupings on measures of critical thinking, reading comprehension, general academic aptitude, attitudes, and values. Bereiter and Freedman (1962) reported differences between curricular groups on two dimensions: conventionality and social confidence. Elton and Rose (1967) reported two dimensions which emerged from the discriminant analysis indicating both intellectual and personality differences between the various female vocational choices. The first dimension is strongly influenced by the American College Test and Scholarly Orientation variables. The emphasis in the second dimension is divided among Scholarly Orientation, Masculine Role, and Tolerance and Autonomy. These researchers further state "that other facets of personality besides attitude toward sex role mediate the vocational choices of girls (Elton and Rose, pp. 295-296)."

Psychoanalytic literature, particularly the writing of Deutsch (1944), suggests a provocative explanation for the different vocational choices which are made by apparently equally feminine women. Deutsch conceives of femininity as the developmental outcome of learning to handle active

aggressive forces. Both sexes must learn how to differentiate aggressive tendencies; however, the feminine task is to partially inhibit aggression. A girl who is successful in integrating aggression into her feminine immanence develops feminine attitudes. The active feminine woman is less artistic and aesthetic and more ethically oriented; in conflicts between erotic interests and cultural values, she chooses values, thus maintaining her cultural heritage. She would be expected to choose occupations which build and organize cultural values. Her passive counterpart is more artistic and aesthetic and less ethically oriented; in erotic-value conflicts she chooses the former most often. Therefore, she would be expected to choose occupations which give free range to her feminine intuition. A woman who is unable to integrate her aggressive tendencies into her feminine immanence develops more masculine interests and would be expected to choose business-finance, scientific, or medical occupations.

Considering the theories which link vocational choice to personality traits and certain intellectual interests, and keeping in mind the rapidly changing meaning and functions of many vocations today, one might think it illogical to measure students on personality dimensions and assign them to a vocational area on such evidence. Yet the career choices can be significantly linked to personality traits. Moreover, perhaps research dealing with successful

men and women in various vocational fields would establish the influence of maturity on those personality characteristics which seem to dictate vocational choice.

Measures of academic potential are among the chief methods used to determine admission of students to college for vocational preparation. However, this emphasis on academic potential has led to neglect of other equally important talents. If a college or university wishes to find students who will excel both in the classroom and in "real life," it should incorporate measures of other important dimensions of potential to remedy this neglect.

CHAPTER II

HISTORY AND REVIEW OF RELATED LITERATURE

Testing, to ascertain achievement, was rooted in the teacher-pupil relationship and dated back to Socrates, whose testing or questioning of his students was an integral part of the learning process, rather than a separate function. The teacher with his small group of dedicated followers gave way, in time, to more formal situations as the teacher-pupil ratio rose to twenty-to-one, or thirty-to-one.

The earliest tests were concerned with whether or not the student had learned what the teacher was teaching, i.e., his achievement. Socrates' tests were questions put to the student to test his assimilation and application of the knowledge offered him. Early recitations and spelling-bees were also tests of achievement.

In the Boston public schools, a step toward standardized achievement tests was taken when Horace Mann substituted a uniform written examination for oral tests given by the school committeemen. His rationale was that all the students

could be given impartial, more complete examinations simultaneously, conserving the time of the examiners and controlling the test situation.

Published at the turn of the century, Thorndike's An Introduction to the Theory of Mental and Social Measurement (1904) has been considered by some educators to mark the beginning of modern testing. From this point the growth of standardized testing was steady. The first battery of achievement tests in elementary school subjects, the Stanford Achievement Test, was published in 1923 by Truman L. Kelley. According to Cronbach (1949) in Essentials of Psychological Testing, several revisions of the Stanford test have been more widely utilized than any other achievement battery. Cronbach has further pointed out that revisions have improved norms and score conversions without radically altering the test content. There are five scores at the primary level on the Stanford Achievement Test and eight at the advanced level. Moreover, Cronbach (1949) pointed out that two-thirds of the reliability coefficients are .88 or better.

Beginning with reading readiness tests in kindergarten through the Graduate Record Examination at the college level, most public and private school students have been evaluated periodically with standardized achievement measuring devices. In fact, measurement of learning has grown from Socrates' questioning his students individually into an entire branch of educational evaluation.

The testing, measuring, and appraising of human growth by standardized instruments designed to measure academic achievement alone leave many questions unanswered about nonintellective factors which they do not evaluate. When the educator has attempted to measure learning, he has done so by the careful selection or construction of valid, reliable, and standardized instruments designed to appraise various specific areas of academic achievement.

In order for examiners to evaluate achievement tests properly, they have insisted that the instruments possess certain statistical properties which would be helpful in providing information as to the validity and reliability of the instrument that has been selected for use. Katz (1961) has described the four types of validity which should be taken into consideration when basic standards are being employed to evaluate a test. Furthermore, norms have provided a means of group comparison in a way that test performance may be described in a meaningful way. Martin Katz (1961) of Educational Testing Service has stated that no single achievement test or test battery is best for all pupil populations and curriculums. Katz has further stated that the recommended procedure for achievement test selection consists of three phases:

1. Study of our own school characteristics and testing needs;
2. Analysis of characteristics and capabilities of available tests;

3. Matching (a) the population of norms groups, of reliability samples, and of validity studies for each test to our own pupil population, (b) the content of each test to our own curriculum content and objectives, (c) the validity evidence, reliability data, scoring system, and interpretive material for each test to our own testing purposes and prospective uses of test scores (p. 31).

The American College Testing Program, since its inception in 1959, has placed great emphasis on collecting information about the reliability of the sub-tests. In 1965 The American College Testing Program published a report designed to give a technical critique of the American College Test battery. The reliability of the American College Test was examined by three different approaches: internal consistency, parallel forms, and test-retest.

The results of the Technical Report have provided ample evidence that the tests have substantial reliability. In order to test the internal consistency of an instrument, the odds-evens procedure has been used. The Technical Report (1965) for the American College Test battery has provided information that the median reliability of the American College Tests ranged from .84 for a single test to .95 for the composite score. Another study reported that when parallel forms were completed by several hundred high school students "the corrected retest reliabilities for the four tests range from .78 to .87 (ACT Technical Report, 1965 edition, p. 16)." A study by Munday and Hoyt (1964) showed test-retest correlations for a two-year interval involving

63 students to range from .67 on the Social Studies sub-test to .84 for the composite.

> The figures reflect variations in test performance due to any unreliability of a given form, any differences in parallel forms, and the effects of two years of higher education. Under these conditions the test results were reasonably stable (ACT Technical Report, 1965 edition, p. 16).

Researchers and educators (Clifford Abe, 1966; George D. Demos and Merrill J. Weijola, 1966; and Philip Himelstein, 1965) have long been interested in testing the aspects of personality and isolating personality variables. The first personality tests were individual subjective tests developed to aid in diagnosing clinical problems rather than isolating personality needs as related to the process of learning.

In the Himelstein (1965) study, the Minnesota Multiphasic Personality Inventory sub-scales were used in predicting college achievement. The study results indicated that five of the seven scales have correlations of academic achievement significant beyond the .01 level of probability. The seven scales were: Academic Achievement, College Achievement, Graduate School Potential, Honor Point Ratio, Intellectual Efficiency, Originality, and Underachievement. "It would appear, then, that these subscales have validity as predictors of success in school (p. 1126)."

Regardless of the sophistication of professional personality testing techniques in determining individual

differences pertinent to learning, the technique most frequently used in the public school has been teacher-observation. From the time a child has entered kindergarten, teachers have dutifully entered on his permanent record form information and observations about his personality, home life, classroom behavior and/or misbehavior, which have a bearing on his personal development and educational achievement. By the time the pupil has reached junior high school, the comments have narrowed to observations concerning the student's personality.

Subjective evaluation of the student's personality in the field of education has long been a subject of controversy. Many teachers have found it difficult to remain objective when describing the personality traits of their students. Even as far back as 1936 Harry N. Rivlin, in his book Educating for Adjustment, recognized the significance of the well-adjusted classroom teachers. Rivlin has pointed out that

> within the four walls of her room, the teacher is a despot whose word may not be questioned, and few people can be despots gracefully. Freed from the challenge of constant criticism, she develops points of view that are unjustifiable (p. 399).

Student permanent record folders contain rating charts whereon the teacher indicates the degree to which the student possesses various personality characteristics. These accumulative records are maintained from kindergarten through high school. Though both subjective and

objective in nature, when records are kept by different teachers over a period of twelve years, they give some indication of the student's personality characteristics as well as his academic ability. However, when the student enters college, entrance requirements include only his high school grade-point average, his class standing, and the scores of his college entrance examination, be it School and College Ability Tests, Scholastic Aptitude Test, or the American College Test. With the expense of higher education at an all-time high and the demand for availability of higher education for the many rather than the few, colleges have necessarily made an attempt to admit those students who have the greater chance for academic success.

The American College Test, Scholastic Aptitude Test, and School and College Ability Tests have been generally considered adequate predictors of academic success in college. Munday (1967) correlated the ACT predictors, which include the four sub-test scores; a composite; the four corresponding high school grades; the HSA, the ACT T Index, H Index, and the TH Index with measures of intelligence (Henmon-Nelson, Otis Mental Ability Tests, Gamma Test); scholastic aptitude (Scholastic Aptitude Test, School and College Ability Tests, and MSAT); and, finally, English and reading tests (Cooperative English Test 1960 ed., Purdue English Test, Nelson-Denny Reading Test.) Munday's results indicated so high

a degree of correlation that the value of combining additional predictors seemed doubtful.

The American College Testing Program has repeatedly stressed the value of considering all four sub-tests in making academic predictions. The 1965 edition of the ACT Technical Report has stated that the median predictive validity of the four sub-tests ranges from .37 to .50. These data were based on a twenty percent random sample of those colleges participating in the 1962, 1963, and 1964 research services programs.

The American College Testing Program has used two four-variable multiple-regression equations for predicting grade-point averages. The first equation has been obtained from the four sub-tests of the ACT battery and is described as the T Index. The second equation has been based on the four self-reported high school grades given by the students when he writes the examination. The grade-point average predictions based on this equation are referred to as the H Index. The concept known as the TH Index is the average of the T and H indices. This procedure--the averaging of the T and H indices--has arbitrarily given equal weight to ACT test scores and to self-reported high school grades. The substantial increase in predictive validity due to this procedure has been shown in Table 1, where TH correlations range from .52 to .64.

TABLE 1

PREDICTIVE VALIDITY OF THE TH INDEX[a]

Criterion	Number of Colleges	Number of students	Median r
English GPA	574	255, 644	.616
Mathematics GPA	393	119,116	.521
Social Studies GPA	596	186,411	.590
Natural Sciences GPA	475	170,418	.584
Overall GPA	590	286,121	.644

[a]American College Testing Program, Technical Report, 1965 Edition, p. 18.

Himelstein (1965) used seven sub-scales of the Minnesota Multiphasic Personality Inventory to determine the relationship of each subscale to a measure of scholastic achievement (grade-point average) and to scholastic aptitude (American College Test or ACT). All of the sub-scales were correlated significantly with the measure of scholastic aptitude used in the study (ACT). He has assumed that the non-cognitive predictors of school performance employed may not be independent of intellectual factors and may be, in reality, indirect measures of intelligence.

According to research, much speculation has been offered as to the possibility of specific personality factors having an impact on various types of success (including

overachievement and underachievement) on every level of educational development. The underachiever has also come to the attention of the social scientist in the last few years because his dropout potential has created more possible unemployment problems necessitating further training centers.

In a study by Lang, Sferra, and Seymour (1962) at Fairleigh Dickinson University in Teaneck, New Jersey, some significant research related the psychological needs of Fairleigh Dickinson University freshmen, as measured by the Edwards Personal Preference Schedule, to their level of academic achievement. The conclusions of the study provided evidence that certain Edwards Personal Preference Schedule variables differentiate significantly between low- and high-achieving female and male Fairleigh Dickinson University freshmen. The authors concluded:

> Thus, it is conceivable that the Edwards Personal Preference Schedule, complementing other non-intellective measures, may be employed to identify potential underachievers early in their freshman year (p. 360).

Demos and Weijola (1966) provided some research that again related the achievement and personality criteria as it relates to the selection of students to participate in special honors programs. The Demos and Weijola study has been designed to address the general question "of the use of achievement and personality criteria to predict the success of students selected to participate in honors programs (p. 187)." The achievement variables used in the study were

the American College Test composite scores with high school academic and non academic A and B grades that were obtained in high school courses. The academic grades referred to solid subject and non-academic grades included all other courses with the exception of physical education and military training. The personality variables for the study were several scales from the California Psychological Inventory. The inference obtained by consideration of the motivations and personality characteristics of the participants selected has been considered a significant consequence of the study. The high school grades and the American College Test composite scores, however, were of little value in making selections for participants for the special honors programs. Nevertheless, the authors concluded:

> It logically followed that the use of an achievement equation combining high school recommending units and some other criteria could prove more generally suitable. Of considerable interest is the finding of this study that an achievement equation derived from the combination of high school recommending units and six scales from the CPI is a considerably better predictor of college success than the use of achievement or ability criteria taken separately or in combination (p. 192).

In the study by Gebhart and Hoyt (1958) on the differential personality characteristics of overachievers and underachievers, inconsistent findings have been revealed. Gebhart and Hoyt pointed out, however, that experimental weakness may have contributed to this result. They stated, for example, that various control factors have been neglected.

The instrument used to investigate relationships of scores to underachievement and overachievement was the Edwards Personal Preference Schedule containing 15 personality variables. The results of the 16 null hypotheses provided the following information: Of the 16 null hypotheses, seven were rejected at the 5% level of confidence or beyond. The study pointed out that overachievers' scores were significantly higher on the achievement, consistency, order, and intraception scales of the Edwards Personal Preference Schedule. The mean difference between the overachiever and the underachiever on the Achievement scale was especially significant. The mean for the underachievers on the Achievement scale was 14.4 and the mean for the overachievers on the Achievement scale was 16.3.

Table 2 shows that underachievers scored higher on the Nurturance, Affiliation, and Change scales. The mean differences as pointed out by Gebhart and Hoyt on the two groups on Nurturance and Change were significant.

In a study entitled Personality of College Underachievers Who Improve with Group Psychotherapy, Thelan and Harris (1968) supported the belief that psychological and psychosocial factors are significant determinants for academic achievement.

> Studies (Morgan, 1952; Blackham, 1955; Powell and Jourard, 1963) have shown underachievement to be correlated with emotional immaturity and impulsivity and negativism toward authority (p. 561).

TABLE 2

EPPS SCORES FOR GROUPS OF OVERACHIEVERS AND UNDERACHIEVERS[a]

Edwards Need	Underachievers (N - 120) Mean	SD	Overachievers (N = 120) Mean	SD	F
Ach.	14.4	4.1	16.3	3.8	16.341***
Def.	12.0	3.6	12.7	3.5	2.714
Ord.	11.1	4.2	12.3	4.5	4.544*
Exh.	13.8	4.4	12.3	3.5	1.467
Aut.	13.6	3.6	13.4	4.5	---
Aff.	16.2	4.2	14.8	4.6	5.559*
Int.	13.2	4.9	14.5	4.8	3.975*
Suc.	11.6	4.3	10.6	4.5	3.231
Dom.	13.8	4.3	14.9	4.9	1.073
Aba.	15.3	4.5	16.1	4.8	1.981
Nur.	15.6	4.7	13.6	4.6	11.555***
Chg.	15.7	4.0	14.1	4.8	7.808**
End.	14.4	4.6	15.2	5.6	1.521
Het.	15.6	6.1	14.9	6.3	---
Agg.	12.3	4.0	12.3	4.9	---
C. S.	10.5	2.2	11.11	2.0	6.104*

*P = .05
**P = .01
***P = .001

[a]G. Gary Gebhart and Donald P. Hoyt. Personality needs of underachieving and overachieving freshmen. Journal of Applied Psychology, XLIII, No. 2, 1958, p. 126.

Thelan and Harris further indicated that some studies where psychotherapy was employed with underacnievers have reported success in developing their academic performance while other studies gave no indication of success. These authors have also cited the Shouksmith and Taylor study (1964), in which a group of intermediate school underachievers showed improvement on achievement tests following sessions of psychotherapy, while Spielberger, Weitz, and Denny (1962) found there was an improved grade-point average with high-anxiety college students following group therapy sessions. However, another group of underachieving college freshmen (Winslow and Schmidt, 1962) who failed to receive group therapy earned a significantly higher grade-point average than those students who received group therapy.

Because of the contradictory findings of various studies concerning the possible effects of psychotherapy on underachievement, Thelan and Harris indicated the need of additional research in this area. The results of the Thelan-Harris studies supported the hypothesis that subjects receiving group therapy will function better academically than a group not receiving therapy. In considering the correlation between certain personality variables and subsequent academic improvement, a negative relationship between adaptive personality variables and academic improvement was shown in one group, while the opposite was true of a second group. The major purpose of their study was to explore the

relationships of Edwards Personality Preference Schedule scores to underachievement and overachievement. The authors (Thelan and Harris, 1968) raised the following question, "Why did those subjects, who on tests seemed to be relatively maladjusted, tend to show more academic improvement than those who tested to be relatively adjusted (p. 565)?" They add, "further research, designed to ascertain the personality characteristics of sub-groups of underachievers, is needed so that the methods of treatment can be made more responsive to the personality and needs of the individual (p.562)."

Gebhart and Hoyt (1958) indicated from the study at Kansas State College that there is merit in the idea of varieties of personality patterns in achievers and non-achievers. On the basis of their research, using Edwards Personality Preference Schedule, three different patterns of overachievement were hypothesized:

> (a) overachievement associated with a drive to compete (Achievement); (b) overachievement associated with a drive to organize or plan (Order); and (c) overachievement associated with intellectual curiosity (Intraception). Similarly, two patterns of underachievement may be hypothesized: (a) that associated with a need for variety (Change), wherein academic studies may appear boring and routine; and (b) that associated with social motives (Affiliation, Nurturance), wherein friendship may be placed above scholarship (p. 128).

Gebhart and Hoyt pointed out in this study that the scales involved do not intercorrelate significantly and would support the concept that several relatively distinct personality

patterns, rather than a distinct one, are involved. The authors concluded by saying,

> Further studies to test these hypotheses would seem worthwhile. A pattern analysis of the EPPS or an intensive clinical study of under- and overachievers would probably throw additional light on this problem (p. 128).

Krug (1959) replicated the Gebhart-Hoyt study at Carnegie Institute of Technology using engineering students as subjects. These overachievers scored significantly higher on Achievement, Order, and Endurance scales of the Edwards Personal Preference Schedule and significantly lower on Affiliation and Heterosexuality.

The results of the Gebhart-Hoyt study and Krug study provided the relevant data for comparison. The agreement between the two studies was significant. A definite correlation was shown between the Kansas State and Carnegie Institute of Technology engineering samples. The authors hypothesized that the several patterns of overachievement and underachievement are clearly substantiated.

Krug (1959) states:

> These scales reflect a difference between capacity and performance which is useful for predictive purposes, but which is also available from records of past performance. Since a theory of overachievement or underachievement is interested in accounting for behavior which ability measures do not predict, the findings of Gebhart and Hoyt replicated in the present study seem of real value (p. 135).

In 1960 Goodstein and Heilbrun conducted a study using the Edwards Personal Preference Schedule, grade-point

averages, and a vocabulary test score for scholastic aptitude with a sample of 357 undergraduates at the State University of Iowa. The results of their research offered support for the idea that personality factors are significantly related to academic achievement when the influence of academic ability is statistically removed. The nature of the relationships depended, however, on the general ability level of the group under study. Only when homogeneous ability groups have been studied have the relationships revealed themselves. Endurance, for example, was positively and significantly correlated with Achievement in the middle-ability male sub-group, but in the high-ability male sub-group these variables were insignificantly negatively correlated. The results of this study for middle-ability males were similar to those of Gebhart and Hoyt (1958) and Krug (1959). Achievement was positively related and Affiliation was negatively related to academic success in all three studies. Gebhart and Hoyt found Nurturance and Change negatively related to Achievement, while Krug found Endurance positively related. Goodstein and Heilbrun concluded that college success of high-ability and low-ability males was determined more by intellective factors than was that of the middle-ability male. In this middle-ability group, intellective factors were more important determiners of actual academic success or failure. These authors stressed the need for further research.

Lang, Sferra, and Seymour (1962) administered the Edwards Personal Preference Schedule to 87 freshmen students at Fairleigh Dickinson University representing a cross section from the four colleges: Liberal Arts, Science and Engineering, Business Administration, and Education. Correlations between academic achievement ratings and the 15 Edwards Personal Preference Schedule variables showed that for female freshmen, academic achievement correlated positively with Achievement and Dominance, but negatively with Nurturance. Academic achievement for male freshmen, however, correlated positively with Order, negatively with Dominance. All the correlations were significant at .05 level or better. The conclusions of this study supported the implications that certain personality variables from the Edwards Personal Preference Schedule differentiated significantly between low- and high-achieving male and female students at Fairleigh Dickinson University.

Lunneborg and Lunneborg (1966) found Edwards Personal Preference Schedule scores taken separately to be of no practical value in the prediction of college grade-point average. The research team felt, however, that although individual scores were ineffective predictors, it was important to investigate the possibility of the association of academic performance with patterns of needs. Their second study (1966) applied a technique of pattern analysis using reliable subpatterns of Edwards Personal Preference Schedule scores in

predicting grade-point average. Because the large number of Edwards Personal Preference Schedule scales that yielded raw scores from 0 to 28 provided a total number of possible patterns too large for one investigation, the Lunneborg and Lunneborg study limited the number of patterns to be studied by selecting five scales.

> The first step was to limit the number of patterns to be studied by choosing only five scales, by trichotomizing scores on each scale, and by focusing only on reliable patterns which occur frequently enough (p. 389).

The five subscores used were Achievement, Exhibition, Intraception, Abasement, and Aggression. For both sexes, academic achievement appeared to be associated with high needs for Achievement and Intraception and a low need for Abasement. However, when the best patterns were scored for the 600 subjects in the earlier study, they neither correlated higher with grade-point average than with Edwards Personal Preference Schedule raw scores, nor did they contribute to multiple prediction when added to the raw score. The authors concluded that the Edwards Personal Preference Schedule pattern formation was far from established since the sub-pattern scoring failed to add to prediction in the second sample.

The results of numerous studies (Holland, Lutz, and Richards, 1966; Cline, Richards, Abe, and Needham, 1963) indicated that there were many factors involved in academic achievement. The above research has hypothesized that no

single measure would be an adequate representation for all. Clifford Abe's research (1966) was an attempt to provide an analytic study of biographical and interest items that were performed to provide some insight into the dimensions of academic achievement. This study supported the tenet that certain measures constructed from biographical information may be very helpful in identifying significant non-intellectual indices of academic achievement. The author states,

> Non-intellective measures may also provide some understanding of the personal traits necessary for success even if they fail to add a substantial increment to the predictive equation (p. 39).

Utilizing biographical information as a predictor of achievement, several studies by Bunderson, Rigby, and Taylor (1963), Cline, Richards, Abe, and Needham (1963), and Ellison and Taylor (1962) obtained positive results in the use of personal inventory interest scales to predict the individual's probable academic achievement.

The majority of colleges have endorsed and supported academic achievement as an important goal. It has been the experience of The American College Testing Program that the majority of all admissions procedures often require a basic level of performance be reached on some standarized instrument designed to measure academic potential. When colleges and universities have improved the level of academic achievement of their student body, they have done so by requiring

higher American College Test scores and high school grade-point averages for admission.

Hoyt and Munday (1968) in Your College Freshmen pointed out that "academic achievement represents only one objective; by selecting exclusively on this basis, many students with unusual potentials for other types of achievement would be eliminated (p. 18)." Some studies (Holland and Richards, 1966; Holland and Lutz, 1966) have revealed that academic achievement and academic potential tend to be unrelated to many other criteria of educational success. The Holland and Richards study (ACT Research Report No. 12, May, 1966) involved a sample of 18,378 college applicants. The results strongly suggested that academic and non-academic accomplishment are relatively independent areas of talent. Their findings suggested that the high emphasis in colleges and universities on academic potential has definitely led to the neglect of other significant human talent. This research also revealed that the proponents of standardized aptitude and intelligence tests have too often relied on only one type of measure at the neglect of others. The researchers stated,

> If academic talent had a substantial relation with vocational and other non-classroom achievement, then this intense, pervasive concern with academic potential would be less disturbing. Unfortunately, college grades are generally poor predictors of real-life success (Price, Taylor, Richards, and Jacobsen, 1964; Richards et al., 1962; Taylor, Smith & Ghiselin, 1963; Hoyt, 1965) and are at best only inefficient predictors (p. 16).

Fishman (1960) indicated that academic achievement is predicted best from intellectual predictors, Lang, Sferra, and Seymour (1962), however, found evidence that certain Edwards Personal Preference Schedule personality variables were significantly related to academic achievement. A study by Stone and Foster (1958) related the psychological needs of a freshmen class to such achievement as measured by the Stern Activities Index (SAI). The Stern Activities Index was given to the 1961-62 freshman class at Kansas State University as part of their entrance requirements. In the Stone and Foster study, ten of the thirty SAI scales correlated consistently with predicted academic achievement. In this study the prediction scores were based upon the American College Test scores and high school rank. The authors stated,

> The usual kind of explanation regarding significant correlation between the 10 SAI scales and predicted academic achievement would be: A specific amount of SAI variation is predictable or attributable to variation of scholastic ability (p. 56).

They further concluded that variation in scholastic ability is predictable or attributable to variation of measured psychological needs (the SAI).

In 1965 the Developmental Research Department of the American College Testing Program, in an effort to generate more knowledge of higher education, added to the American College Test Battery the Student Profile Section, which is

a short biographical inventory and collects in a comprehensive and systematic manner a diversified amount of information about a student's needs, potentials, and other educationally significant characteristics. The Student Profile Section of the American College Test Battery is used to assess a student's potential for non-academic achievement.

Holland and Richards (ACT Research Report, No. 2, April, 1965) reported that academic potential appears to be only one of several independent dimensions of talent.

> Since academic potential appears to be only one of several relatively independent dimensions of talent, it should be used with discrimination rather than as a panacea. We should continue to develop other independent measures of achievement and originality. . . . At the same time, we should not make the same mistake that the purveyors of aptitude and intelligence have made in the past; that is, to rely on only one kind of measure and to exclude others (p. 21).

The Holland-Richards study has significantly implied that the emphasis in colleges and universities on academic potential alone has led to the gross neglect of other important non-academic talents.

To explore further the role and significance of non-academic characteristics, Elton and Rose (1967) conducted a study at the University of Kentucky to see whether freshman male scholarship recipients could be differentiated in their personality structure from non-scholarship students. The Omnibus Personality Inventory (OPI) was used with the composite score on the American College Test battery along with

the first semester grade-point average. Five Omnibus Personality Inventory factor scores were used from a total of 16 scales. The five factors were Tolerance and Autonomy, Suppression-Repression, Masculine Role, Scholarly Orientation, and Social Introversion. The results indicated the University Committee on Student Aid awarded scholarships solely on the basis of American College Test performance; therefore, the academic achievement of the scholarship recipient holders was excellent. The findings of the study showed that scholarship grants have been given to students who were successful in the college classroom and that, as a result, the Committee has certainly been justified in its practice of granting financial aid on the results of the academic performance on the American College Test battery.

However, if one has assumed that the purpose of scholarship awards is primarily to aid those students who will accomplish outstanding achievement in life subsequent to college, it is possible that the Committee may have selected a very poor predictor.

> The issue here is the degree of the relationship between an aptitude predictor like the ACT and measures of non-college achievement. There is an increasing and substantial body of evidence that the relationship between these variables is negligible (Holland and Richards, 1965, p. 264).

These authors have argued cogently for the need to develop measures of achievement and originality that are independent of academic potential.

> It is critically important (Hakel, 1965) that subsequent studies incorporate cross-validation designs and that they better account for the true complexities of the relationships between student personalities, abilities and college environments. Such studies may lead to the discovery of stable and general personalities correlates which can be used to enhance the predicting efficiency of college selection batteries (p. 340).

This survey of the literature has revealed strong support among researchers concerning the relationships between personality variables and academic achievement and has indicated a need for additional research to determine which personality variables have the highest correlation with academic achievement. Furthermore, it has attempted to supply evidence that grade-point averages alone do not insure academic achievement for the college student.

CHAPTER III

THE PROBLEM

The problem of this study was to determine the relationships between achievement variables as measured by the American College Test battery and personality variables as measured by the Edwards Personal Preference Schedule. However, the American College Test, like many other standarized instruments, is not capable of measuring the personality, maturity, and sustained motivation necessary to complete successfully a four-year course required for graduation. According to Brown and Scott (1966), it is impossible to predict with any degree of accuracy from American College Test scores whether a particular student will be able to make an adequate adjustment to the college environment.

During recent years more restrictive enrollment standards have been established in Oklahoma by the Regents for Higher Education; that is, potential college freshmen must obtain an American College Test composite score of 16 or represent the upper half of his high school graduating class or have a high school grade average of "C" or higher. When college entrance requirements are met, the majority of

entering freshmen should be intellectually capable of doing acceptable college work for degree requirements.

Research by Richard Leo Burns (1963), James W. Firnberg (1965), and Leo A. Munday (1965) indicates that a good predictor of academic success is the combination of high school grades and the scores from the four sub-tests of the American College Test battery. However, such factors as the student's motivation, his ability to adjust to the college environment, and his emotional stability and maturity are factors which are not measurable by American College Test scores or by his high school grade-point average.

There is a limited amount of research indicating relationships among American College Test performance (English, Mathematics, Social Studies, and Natural Science), grade-point average, and personality variables. Therefore, this study seeks to determine relationships among achievement variables and personality variables.

Hypothesis

In accordance with the problem of this study, it is hypothesized that no significant statistical relationship among test performance on achievement variables as measured by the American College Test and personality variables as measured by the Edwards Personal Preference Schedule exists. The .05 level of significance will be used to determine the significance of the correlations.

Description of Instruments

American College Test

An important purpose of the American College Testing Program is to promote student welfare by transmitting useful information about students to colleges and high schools. To accomplish this, the Program has frequently expanded its data collection and reporting services which, in turn, has fostered a broader conception of the Program's services.

The fundamental idea underlying development of the four sub-tests of the American College Test is that the best way to predict success in college is to measure as directly as possible the abilities the student will have to apply in his college work. This means the tasks presented in the tests must be representative of scholastic tasks. They must be significant in their own right rather than narrow or artificial tasks that can be defended for inclusion only on the ground of their statistical correlation with a criterion. The validity of this kind of reasoning in test construction has been amply supported by research. The result today is that nearly all of the most widely used tests of academic potential consist largely of two kinds of exercises: (1) the comprehension of reading passages and (2) the solution of functional and practical problems involving quantitative reasoning.

The four sub-tests of the American College Test battery are comprised of English, Mathematics, Social Studies, and Natural Science. From this time forward the American College Test will be referred to as ACT.

> The ACT tests contain a large proportion of complex problem-solving exercises and proportionately few measures of narrow skills. They also provide a broader coverage of educational skills than do most other tests of scholastic potential; the inclusion of a score for English usage is a case in point.
>
> The ACT tests are oriented toward major areas of college and high school instructional programs rather than toward a factorial definition of various aspects of intelligence. Thus the scores have a direct and obvious relation to the student's educational progress, and a meaning that can be readily grasped by both the instructional staff and the student (ACT Technical Report, 1965, p. 5).

On each of the four tests in the ACT battery, the total number of correct responses transforms a raw score into standard scores. This scale is the same for the four tests.

Since its beginning The American College Testing Program has continually collected information about the quality of its test battery. Each new form of the examination is subjected to a reliability study. The odds-evens procedure recommended by Gulliksen (1950) is used. The median reliabilities of the ACT tests range from .84 for a single test to .95 for the composite score.

Through its Research Service, the Program has continually sampled the predictive validity of new and old test forms. These findings clearly show that the ACT tests

have useful validity and that the tests in combination with high school grades are generally superior to the use of either tests or grades.

The ACT battery consists of the four following tests: English, Mathematics, Social Studies, and Natural Science. These tests were developed to measure the academic abilities of the students who plan to attend college. The four sub-tests are described below:

English. This test measures the student's understanding and use of the basic elements in correct and effective writing: punctuation, capitalization, usage phraselogy, style, and organization.

Mathematics. This test measures the student's mathematical reasoning ability and emphasizes practical quantitative problems that are encountered in many college curricula. It also includes a sampling of mathematical techniques taught in the high school courses.

Social Studies. This test measures the evaluative reasoning and problem-solving skills required in the social studies. It measures the student's comprehension of reading passages taken from typical social studies' materials. It also contains a few items that test his understanding of basic concepts, knowledge of sources of information, and knowledge of special study skills needed in college work in the social studies.

Natural Sciences. This test measures critical reasoning and problem-solving skills required in the natural sciences. Emphasis is placed on the formulation and testing of hypotheses and the evaluation of reports of scientific experiments.

Edwards Personal Preference Schedule

The Edwards Personal Preference Schedule, hereafter referred to as EPPS, was designed primarily as an instrument for research and counseling purposes to provide quick and convenient measures of a number of relatively independent normal personality variables. The statements in the EPPS and the variables that these statements purport to measure have their origin in a list of manifest needs presented by H. A. Murray and others. The names that have been assigned to the variables are those used by Murray.

The EPPS (EPPS Manual, 1959) provides measures of fifteen personality variables. The names and definitions of the variables are as follows:

1. Achievement (ach): To do one's best, to be successful, to accomplish tasks requiring skill and effort, to be a recognized authority, to accomplish something of great significance, to do a difficult job well, to solve difficult problems and puzzles, to be able to do things better than others, to write a great novel or play.

2. Deference (def): To get suggestions from others, to find out what others think, to follow instructions and do what is expected, to praise others, to tell others that they have done a good job, to accept the leadership of others, to read about great men, to conform to custom and avoid the unconventional, to let others make decisions.

3. Order (ord): To have written work neat and organized, to make plans before starting on a difficult task, to have things organized, to keep things neat and orderly, to make advance plans when taking a trip, to organize details of work, to keep letters and files according to some system, to have meals organized and a definite time for eating, to have things arranged so that they run smoothly without change.

4. Exhibition (exh): To say witty and clever things, to tell amusing jokes and stories, to talk about personal adventures and experiences, to have others notice and comment upon one's appearance, to say things just to see what effect it will have on others, to talk about personal achievements, to be the center of attention, to use words that others do not know the meaning of, to ask questions others cannot answer.

5. Autonomy (aut): To be able to come and go as desired, to say what one thinks about things, to be independent of others in making decisions, to feel free to do what one wants, to do things that are unconventional, to avoid situations where one is expected to conform, to do things without regard to what others may think, to criticize those in positions of authority, to avoid responsibilities and obligations.

6. Affiliation (aff): To be loyal to friends, to participate in friendly groups, to do things for friends, to form new friendships, to make as many friends as possible, to share things with friends, to do things with friends rather than alone, to form strong attachments, to write letters to friends.

7. Intraception (int): To analyze one's motives and feelings, to observe others, to understand how others feel about problems, to put one's self in another's place, to judge people by why they do things rather than by what they do, to analyze the behavior of others, to analyze the motives of others, to predict how others will act.

8. Succorance (suc): To have others provide help when in trouble, to seek encouragement from others, to have others be kindly, to have others be sympathetic and understanding about personal problems, to receive a great deal of affection from others, to have others do favors cheerfully, to be helped by others when depressed, to have others feel sorry when one is sick, to have a fuss made over one when hurt.

9. Dominance (dom): To argue for one's point of view, to be a leader in groups to which one belongs, to be regarded by others as a leader, to be elected or appointed chairman of committees, to make group decisions, to settle arguments and disputes between others, to persaude and influence others to do what one wants, to supervise and direct the actions of others, to tell others how to do their jobs.

10. Abasement (aba): To feel guilty when one does something wrong, to accept blame when things do not go right, to feel that personal pain and misery suffered does more good than harm, to feel the need for punishment for wrong doing, to feel better when giving in and avoiding a fight than when having one's own way, to feel the need for confession of errors, to feel depressed by inability to handle situations, to feel timid in the presence of superiors, to feel inferior to others in most respects.

11. Nurturance (nur): To help friends when they are in trouble, to assist others less fortunate, to treat others with kindness and sympathy, to forgive others, to do small favors for others, to be generous with others, to sympathize with others who are hurt or sick, to show a great deal of affection toward others, to have others confide in one about personal problems.

12. Change (chg): To do new and different things, to travel, to meet new people, to experience novelty and change in daily routine, to experiment and try new things, to eat in new and different places, to try new and different jobs, to move about the country and live in different places, to participate in new fads and fashions.

13. Endurance (end): To keep at a job until it is finished, to complete any job undertaken, to work hard at a task, to keep at a puzzle or problem until it is solved, to work at a single job before taking on others, to stay up late working in order to get a job done, to put in long hours of work without distraction, to stick at a problem even though it may seem as if no progress is being made, to avoid being interrupted while at work.

14. Heterosexuality (het): To go out with members of the opposite sex, to engage in social activities with the opposite sex, to be in love with someone of the opposite sex, to kiss those of the opposite sex, to be

> regarded as physically attractive by those of the opposite sex, to participate in discussions about sex, to read books and plays involving sex, to listen to or to tell jokes involving sex, to become sexually excited.
>
> 15. Aggression (agg): To attack contrary points of view, to tell others what one thinks about them, to criticize others publicly, to make fun of others, to tell others off when disagreeing with them, to get revenge for insults, to become angry, to blame others when things go wrong, to read newspaper accounts of violence (p. 11).

In addition to the above fifteen personality variables, the EPPS provides a measure of test consistency and a measure of profile stability.

A number of personality inventories purport to measure such traits as emotional stability, anxiety, adjustment, or neuroticism. Still other inventories purport to measure such clinical and psychiatric syndromes as schizophrenia, paranoia, or hysteria. High and/or low scores on these inventories have maladjustive or unfavorable clinical connotations. For research and counseling purposes, where it is often desirable to report back scores to subjects such inventories present definite problems. These connotations are less likely to be attached to the variables in the EPPS.

Normative data have been developed for two groups of subjects: college students and adults who were household heads in the United States. The college sample was composed of high school graduates with some college training. The sample consisted of 749 college women and 760 college men. The students were enrolled in day or evening liberal arts

classes at various universities and colleges; they were obtained as subjects through the cooperation of the psychologists. Each of the cooperating psychologists was asked to obtain a specified number of students approximately equally divided between the sexes and with as wide an age spread as possible. They were also requested to obtain students majoring in as wide a variety of different areas as possible.

The adult sample was composed of male and female household heads who were members of a consumer purchase panel used for market surveys. The sample covered urban and rural areas of 1,181 counties in the 48 states (as of 1957). The consumer panel consisted of 5,105 households. These households all had female household heads, and 88.5 percent also had male household heads.

Sample

The population was comprised of 384 graduating seniors (235 males and 149 females) who were currently enrolled in four major state colleges: Northeastern State College, Tahlequah, Oklahoma; Central State College, Edmond, Oklahoma; Southeastern State College, Durant, Oklahoma; and Southwestern State College, Weatherford, Oklahoma. From this time forward Northeastern State College will be designated as College I, Central State College as College II, Southwestern State College as College III, and Southeastern State College as College IV. The selected colleges

represented four various geographical areas in the state of Oklahoma. The sample included 99 students from College I, 95 students from College II, 98 students from College III, and 92 students from College IV and represented those students who enrolled as freshmen in 1965 and were expected to graduate from each respective institution in 1969.

The subjects selected designated one of the three following major fields: (1) Education Fields; (2) Business, Political, or Persuasive Fields; or (3) Scientific Fields. These areas of concentration were randomly selected from the nine major vocational groupings designated by the Student Profile Section (ACT, 1966) of the American College Testing Program.

All senior classes in the three major areas were listed, and from this list the classes for testing were randomly selected. These students in each class were administered the EPPS. The ACT scores for those tested were obtained from the Registrar's office. Students who did not have ACT scores on record were eliminated from the study. The resulting frequency of cases within each sample is presented in Table 3 by college, major field, and sex.

TABLE 3

FREQUENCY DISTRIBUTION OF SAMPLING

BY COLLEGES: MALE AND FEMALE

	I Northeastern			II Central			III Southwestern			IV Southeastern			Total
	Educ	Bus	Sci	Educ	Bus	Sci	Educ	Bus	Sci	Educ	Bus	Sci	
Male	16	26	23	12	21	23	16	27	16	25	18	12	235
Female	22	6	6	22	13	4	17	8	8	21	12	10	149
Total	38	32	29	34	34	27	33	35	24	46	30	22	384

Data

The EPPS was administered to the randomly selected group of subjects by competent professional staff members at each respective institution. The EPPS was scored by hand by the investigators. The ACT sub-test scores and other pertinent information were obtained from the college records. The data for ACT performance was obtained from the registrar's office of the respective colleges for all students.

The original raw data were tabulated and presented in the Appendix. These data were punched on IBM cards and intercorrelations among the variables were computed by the Merrick Computer Center.

CHAPTER IV

RESULTS OF STUDY

Correlation (Weinberg and Schumaker, 1962) refers to a relationship in which each unit change on one variable corresponds to a designated change in the other, and the change is uniform. To explore the degree of relationship among the four ACT achievement sub-test scores and the fifteen EPPS personality variables, a correlation matrix was formulated and presented in Table 4. With a sample size of 384 subjects, a correlation coefficient of .20 or greater was necessary to be statistically significant at or beyond the .05 level of significance.

Because of the relatively small number of students in several classifications, the underlying assumptions for doing zero-order correlations could not be met. Therefore, the scores were combined by sex, major fields, and colleges in order to increase sample size so that the obtained correlations among all variables would be more meaningful.

Measures of various kinds of cognitive abilities included the sub-tests of the ACT which covered the background materials and achievement in English, Mathematics,

TABLE 4

CORRELATION COEFFICIENTS: ALL COLLEGES
MALE AND FEMALE: ALL FIELDS OF STUDY
(N=384)

	ACT				EPPS[a]														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
English																			
Math.	.42																		
Soc. St.	.55	.49																	
N. Sci.	.48	.51	.66																
ach	.07	.19	.25	.22															
def	-.12	-.21	-.17	-.15	-.06														
ord	-.14	-.13	-.18	-.14	.02	.24													
exh	.05	.13	.05	.11	.07	-.14	-.13												
aut	.08	.15	.18	.16	.09	-.26	-.13	.14											
aff	.08	-.16	-.12	-.11	-.41	.06	-.20	-.18	-.29										
int	-.08	-.11	-.04	-.09	-.12	.07	-.03	-.04	-.24	.03									
suc	.07	-.04	-.05	-.13	-.16	-.07	-.18	-.03	-.22	.19	-.10								
dom	-.08	.20	.19	.18	.30	-.15	-.07	.16	.14	-.30	-.11	-.26							
aba	-.16	-.19	-.27	-.26	-.27	.08	.00	-.20	-.19	.18	-.02	.06	-.34						
nur	.01	-.11	-.14	-.15	-.45	-.01	-.18	-.19	-.39	.60	.11	.33	.44	.27					
chg	.09	-.05	.01	.03	-.08	-.02	-.14	-.07	.13	.04	.03	-.15	-.18	.12	-.03				
end	-.07	-.05	-.02	-.02	.15	.04	.37	-.15	-.01	-.33	-.01	-.37	.01	-.01	-.31	.03			
het	.17	.17	.14	.20	-.08	-.27	.29	-.01	.06	-.04	-.23	.08	-.07	-.25	-.03	-.06	-.32		
agg	-.02	.09	.11	.09	.13	-.23	-.16	.03	.26	-.31	-.31	-.07	.26	-.20	-.35	-.24	-.09	.16	

[a]See description of variables on pp. 39-42.

Social Studies, and Natural Sciences studied. The correlations of these measures are shown in Table 5. The correlations were all positive and relatively high, ranging in size from r = .42 to r - .66, which suggested that some common ability was assessed; therfore, it might be interpreted as schooling, comprehension, verbal, reasoning, or a combination of these, perhaps.

TABLE 5

INTERCORRELATIONS OF THE SUB-TESTS

MEASURED BY THE ACT

(N=384)

	English	Math.	Soc. St.	N. Sci.
English	1.00			
Math.	0.42*	1.00		
Soc. St.	0.55*	0.49*	1.00	
N. Sci.	0.48*	0.51*	0.66*	1.00

* Significant beyond the .05 level.

Intercorrelations of the variables measured by the EPPS are presented in Table 6. In comparing this single matrix with the correlation matrix presented in the EPPS revised test manual, no significant difference existed. Since the correlations were quite low, it seemed obvious that the variables being measured were relatively independent.

TABLE 6

INTERCORRELATIONS OF THE VARIABLES MEASURED BY THE EPPS

	2 def	3 ord	4 exh	5 aut	6 aff	7 int	8 suc	9 dom	10 aba	11 nur	12 chg	13 end	14 het	15 agg
1. ach	-.06	.02	.07	.09	-.41*	-.12	-.16	.30*	-.27*	-.45*	-.08	.15	-.08	.13
2. def		.24*	-.14	-.26*	.06	.07	-.07	-.15	.08	-.01	-.02	.04	-.27*	-.23*
3. ord			-.13	-.13	-.20*	-.03	-.18	-.07	.00	-.18	-.14	.37*	.29*	-.16
4. exh				.14	-.18	-.04	-.03	.16	-.20*	-.19	-.07	-.15	-.01	.03
5. aut					-.29*	-.24*	-.22*	.14	-.19	-.39*	.13	-.01	.06	.26*
6. aff						.03	.19	-.30*	.18	.60*	.04	-.33*	-.04	-.31*
7. int							-.10	-.11	-.02	.11	.03	-.01	-.23*	-.31*
8. suc								-.26*	.06	.33*	-.15	-.37*	.08	-.07
9. dom									-.34*	.44*	-.18	.01	-.07	.26*
10. aba										.27*	.12	-.01	-.25*	-.20*
11. nur											-.03	-.31*	-.03	-.35*
12. chg												.03	-.06	-.24*
13. end													-.32*	-.09
14. het														.16
15. agg														

* Significant at .05 level or behond.

The correlations of ACT scores with EPPS scores are presented in Table 7. No statistically significant correlations were found in column one, that is, the relationship between the personality variables and English scores, which showed that they were unrelated. The correlations between performance in Mathematics and personality variables were quite low. Only two correlations--those of Deference and Dominance--were significant. Perhaps, it could be expected to find a negative correlation with Deference ($r = -.21$) and a positive correlation with Dominance ($r = .20$) since the Dominance need suggested argumentation for one's point of view and the Deference need of accepting suggestions from others, to follow instructions, and do what was expected.

The correlations of Social Studies with the need categories also yielded two significant relationships, that is, a positive correlation ($r = .25$) with Achievement and a negative correlation ($r = -.27$) with Abasement. This suggested that those needs associated with Social Studies involved the abilities of working with people and groups, also, the successful accomplishment of tasks which require skill and effort.

Three significant correlations were found when correlating Natural Science ACT scores with the EPPS variables. It was interesting to note that two of the significant relationships between these variables were the same as for the relationships found with Social Studies. One additional

TABLE 7

CORRELATIONS OF ACT SCORES WITH EPPS SCORES

EPPS	A C T			
Variable	English	Math.	Soc. St.	N. Sci.
ach	0.07	0.19	0.25*	0.22*
def	-0.12	-0.21*	-0.17	-0.15
ord	-0.14	-0.13	-0.18	-0.14
exh	0.05	0.13	0.05	0.11
aut	0.08	0.15	0.18	0.16
aff	0.08	-0.16	-0.12	-0.11
int	-0.08	-0.11	-0.04	-0.09
suc	0.07	-0.04	-0.05	-0.13
dom	-0.08	0.20*	0.19	0.18
aba	-0.16	-0.19	-0.27*	-0.26*
nur	0.01	-0.11	-0.14	-0.15
chg	0.09	-0.05	0.01	0.03
end	-0.07	-0.05	-0.02	-0.02
het	0.17	0.17	0.14	0.20*
agg	-0.02	0.09	0.11	0.09

* Significant at .05 level or beyond.

positive relationship, r = .20, was obtained with the variable, heterosexuality. This correlation cannot be adequately interpreted, yet it could possibly be expected.

Discussion of Findings and Conclusions

The findings of this study revealed that of the four sub-tests of the ACT battery, only three of the sub-tests correlated with a respective EPPS personality variable. The fourth sub-test, English, was not found to have a significant relationship with any of the fifteen personality variables. The data also revealed that five of the fifteen personality variables of the EPPS were significantly related to the ACT sub-tests. They were Achievement, Deference, Dominance, Abasement, and Heterosexuality.

Research has indicated that academic achievement may best be predicted by performances on tests which measure achievement. There has been a dearth of research relating achievement with personality variables which are non-intellective measures that reflect personality traits and are independent dimensions of talent. The results of this study provided additional evidence that certain personality traits were related to academic achievement. The results concurred with the research by Fishman (1960), Lang (1962), and Himelstein (1965) who were supported by Thelan and Harris (1968) when they hypothesized that while academic achievement test performance is an accurate predictor of academic

success, other factors such as personality traits must have an effect on its predictor value. The findings also tended to corroborate in part the results of Lunneborg and Lunneborg (1966) where they found academic achievement associated with high need for Achievement and low need for Abasement.

The data did not permit a meaningful interpretation with the given complicated relationships between achievement measures and the personality variables. An extreme interpretation could not be made since it is almost impossible to make interpretations directly from a table of correlations because a significant correlation between achievement measures and personality measures may or may not simply involve a common relationship. Furthermore, since only seven statistically significant correlations were obtained from 60 correlations, this could have been a chance occurrence in view of the relatively low values. The answer may be found in a factor analysis of the scores.

Since the relationships among the variables were complex, and since a small number of the personality variables were related to achievement variables, a simple examination of the tables for the appearance of significant correlations between these variables was not adequate. It was possible, however, that insofar as the characteristics measured were concerned, the achievement of skills and concepts in academic fields influenced the manner in which the items in the personality schedule were responded to.

In conclusion it may be said that although the personality variables included in this study failed to clarify the nature of needs measured by the EPPS, they did suggest a number of personal tendencies which perhaps influenced the effectiveness of performance on the ACT. Conversely, abilities to perform on the ACT may have effected performance on the EPPS.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

Testing, measuring and evaluating human growth and development by employing standardized instruments designed to measure academic progress has many implications in any type of academic program. When those in the field of education attempt to measure learning, they do so by the selection or construction of valid and reliable instruments designed to appraise specific areas of academic achievement.

The survey of the literature revealed some support among researchers concerning the relationships among personality variables and academic achievement. It suggested the need for additional research to determine whether there were definite personality variables that have a higher correlation with academic achievement than other personality variables.

The problem of this study was to determine the relationships between achievement variables as measured by the American College Test battery and personality variables as measured by the Edwards Personal Preference Schedule. The

Edwards Personal Preference Schedule was administered to 384 college seniors currently enrolled at Northeastern State College, Tahlequah, Oklahoma; Central State College, Edmond, Oklahoma; Southwestern State College, Weatherford, Oklahoma; and Southeastern State College, Durant, Oklahoma. American College Test scores were obtained from the registrar's office of each respective school. The subjects selected designated one of the three following major fields: Education Fields; Business, Political, and Persuasive Fields; and Scientific Fields. They were grouped as male and female for the combined four colleges.

There is a limited amount of research indicating relationships among ACT performance (English, Mathematics, Social Studies, and Natural Science) and personality variables. Therefore, the purpose of this study was to provide additional evidence regarding the relationships between academic achievement and personality variables.

The population was comprised of 384 graduating seniors, 235 males and 149 females, who were currently enrolled in four major state colleges. The areas of concentration were randomly selected from the nine major vocational groupings as designated by the Student Profile Section of the ACT battery. The EPPS was administered to the randomly selected subjects and ACT sub-test scores and other pertinent information were obtained from the college records.

An intercorrelation matrix was developed for each of the respective variables on the ACT battery and the EPPS variables, for males and females, in each college and each field of study. To explore the degree of relationship among the four ACT achievement sub-test scores and the fifteen EPPS personality variables, a correlation matrix was formulated combining males and females, all colleges and all fields of study.

When investigating these relationships as determined by performances on the ACT battery and the EPPS, significant correlations were found in seven analyses at the .20 level. The findings of this study indicate that of the four sub-tests of the ACT battery, only three correlated with any personality variable. These were Mathematics, Social Studies, and Natural Science. The fourth sub-test, English, was not found to have a significant relationships to any of the fifteen personality variables. The data revealed that five of the fifteen personality variables of the EPPS were significantly related to the ACT sub-tests. They were Achievement, Deference, Dominance, Abasement, and Heterosexuality.

Conclusions and Recommendations

The relationships between achievement measures and personality variables were so complex that the data did not permit a meaningful interpretation, because significant correlations between achievement measures and personality

variables did not necessarily involve a common relationship. Only seven of the sixty correlations were found to be statistically significant. Whatever the academic achievement test measures, it was designed to measure not intelligence but knowledge: academic skills and experiences derived from exposure to an academic setting. Depending on which academic area of experience was selected, personality items were perceived differently because of the skills and concepts learned in that particular field. Personality variables included in this study suggested a number of personal tendencies or needs which could influence the effectiveness of performance on the ACT battery, and abilities to perform on the ACT may have affected performance on the EPPS.

Intuitively, it is strongly suspected that personality composition is am important factor to college success. Why then, has empirical demonstration of this belief been elusive? In the literature there is a dearth of research regarding the relationships of academic achievement and personality traits. Yet, there is a need for more complex statistical designs, such as multivariate analyses, which would allow for a more detailed statistical analysis. Such designs could ascertain common factors of each test and important relationships not identified in simple relationships. Also, an increase in number of observations would permit comparisons among various colleges as to geographical location, several fields of study, and between sex.

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APPENDIX

NORTHEASTERN STATE COLLEGE, TAHLEQUAH - COLLEGE I

EDUCATION - MALE N=16

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	25	15	25	25	11	07	12	13	21	14	16	10	14	10	07	25	16	25	09
2	18	15	20	16	16	14	11	19	08	09	17	14	15	04	10	17	13	28	15
3	08	13	10	15	12	14	11	16	14	15	21	09	13	13	15	19	06	30	12
4	17	16	17	16	15	14	16	15	24	04	17	07	15	11	04	20	16	17	19
5	12	22	17	16	17	09	12	23	15	11	07	16	11	04	16	16	11	26	16
6	19	17	18	14	08	10	12	12	17	12	19	21	08	07	16	17	14	24	13
7	15	10	17	24	14	17	12	24	04	17	21	10	16	10	12	13	19	17	13
8	21	28	27	26	09	13	14	14	19	17	17	07	09	13	17	10	16	27	09
9	23	22	22	27	13	07	13	18	30	09	10	09	19	14	06	24	04	28	14
10	10	16	13	19	10	12	10	15	06	16	18	14	14	08	23	17	06	28	13
11	18	27	29	24	09	19	10	14	03	18	19	06	16	19	18	15	19	19	05
12	19	14	15	07	15	14	07	16	08	19	19	16	13	14	18	14	08	17	12
13	21	21	21	27	18	07	07	14	11	12	17	08	24	07	13	17	07	27	20
14	11	13	10	14	14	11	16	17	23	12	11	04	16	01	09	22	18	24	13
15	14	12	34	19	17	16	14	15	12	11	20	05	09	09	15	13	22	16	16
16	05	01	05	10	13	14	16	10	14	17	17	04	13	14	15	22	22	07	12

NORTHEASTERN STATE COLLEGE, TAHLEQUAH - COLLEGE I

EDUCATION - FEMALE N=22

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	10	14	12	18	07	19	20	12	07	15	23	15	08	12	19	15	17	12	10
2	18	18	16	17	10	12	12	16	15	15	14	22	08	21	24	15	06	21	07
3	16	17	21	22	12	12	05	22	19	15	14	09	08	20	13	22	13	19	09
4	19	09	14	15	06	18	10	15	16	18	13	18	06	11	14	24	11	16	15
5	21	06	10	17	13	12	08	12	14	22	16	11	10	12	24	16	08	28	04
6	18	08	11	15	15	19	14	12	11	17	22	13	17	05	19	24	09	07	06
7	23	11	26	20	13	14	12	12	09	17	18	17	09	16	24	12	08	21	08
8	11	14	16	13	09	15	11	17	12	17	26	06	15	17	16	19	13	05	09
9	21	18	23	22	15	15	14	19	10	15	21	12	15	11	10	12	14	18	13
10	18	12	19	10	15	14	09	13	12	21	10	15	09	21	19	16	11	12	13
11	08	12	12	10	15	14	12	14	09	22	23	12	11	12	19	13	10	12	13
12	10	18	11	15	09	14	12	17	11	15	19	13	15	13	14	18	17	17	06
13	21	23	19	14	17	15	16	10	04	20	22	09	10	14	15	09	18	15	06
14	21	10	14	14	12	14	09	18	10	20	19	18	10	12	16	22	08	17	05
15	21	16	10	17	12	12	13	20	10	17	22	06	12	14	21	20	12	09	07
16	16	12	18	23	12	21	15	12	07	18	21	11	14	12	16	18	13	09	12
17	22	26	17	26	21	12	08	13	10	11	18	09	18	14	11	16	16	17	15
18	14	12	17	09	10	09	11	20	15	14	20	08	17	12	08	25	17	14	10
19	15	12	15	26	24	14	06	17	13	18	20	08	10	13	07	18	13	17	18
20	10	10	14	10	15	09	11	15	07	13	19	14	18	22	13	21	15	14	04
21	17	13	15	16	18	13	17	11	12	12	22	12	08	16	11	22	21	08	11
22	15	17	11	17	13	11	12	19	20	11	24	07	22	02	11	24	16	14	04

NORTHEASTERN STATE COLLEGE, TAHLEQUAH - COLLEGE 1

BUSINESS - MALE N=26

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	11	17	12	09	13	11	15	10	07	21	19	13	19	13	13	17	14	15	17
2	25	26	22	20	15	16	03	13	08	18	13	14	15	12	24	08	13	19	16
3	13	08	17	12	14	08	08	15	13	11	14	06	18	14	12	20	20	17	18
4	22	22	26	24	12	13	03	15	13	14	08	16	25	18	11	15	11	16	20
5	14	27	21	27	19	13	11	17	11	13	09	11	18	13	09	15	22	19	11
6	18	25	30	32	21	10	07	18	19	13	18	05	22	14	03	18	16	24	12
7	20	25	28	26	12	11	20	11	14	20	09	07	14	01	16	24	13	28	10
8	18	15	20	16	23	10	05	18	17	12	15	06	19	06	04	20	15	21	18
9	16	19	13	18	14	17	16	13	12	15	10	10	11	24	19	18	12	09	07
10	13	19	16	16	14	11	17	08	15	19	15	09	12	17	17	21	16	07	12
11	20	13	23	27	15	11	12	16	08	15	08	21	25	07	12	15	10	34	12
12	19	22	27	27	17	07	06	13	16	15	09	14	17	10	17	22	06	19	21
13	17	21	15	16	15	15	14	13	06	12	17	10	21	23	15	13	24	05	06
14	18	27	19	18	13	10	11	14	15	10	11	15	13	13	13	18	13	15	22
15	20	18	15	11	22	10	20	07	12	10	16	05	15	17	08	12	23	14	20
16	18	23	19	19	24	12	10	11	11	11	19	05	21	14	10	25	18	18	14
17	10	15	11	15	14	24	11	07	08	17	15	09	24	15	16	17	10	16	07
18	16	18	13	14	12	15	14	10	19	14	13	11	08	07	12	20	15	27	13
19	15	25	26	26	19	17	18	21	14	22	17	15	18	12	20	05	15	05	12
20	18	25	19	22	13	16	12	14	13	14	17	12	19	12	12	16	16	13	11
21	13	15	17	17	11	08	11	10	17	12	09	12	13	18	14	20	18	28	09
22	16	15	22	15	15	14	15	13	12	15	06	05	18	16	14	19	21	09	15
23	17	20	14	19	20	15	13	21	09	11	13	07	18	24	12	08	19	06	14
24	15	20	17	04	15	07	12	21	18	14	12	18	10	22	12	08	08	21	13
25	19	19	22	20	11	03	10	12	18	13	12	15	20	16	15	15	16	15	19
26	20	24	17	19	12	15	10	11	14	15	14	14	12	16	16	14	11	16	20

NORTHEASTERN STATE COLLEGE, TAHLEQUAH - COLLEGE I

BUSINESS - FEMALE N=6

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	mur	chg	end	het	agg
1	21	24	21	22	23	10	14	17	16	10	23	11	11	04	08	12	19	15	16
2	21	18	24	20	08	08	15	19	18	21	12	13	09	25	21	27	12	02	04
3	19	13	16	13	17	21	14	11	12	12	15	18	12	14	12	19	14	09	09
4	10	10	14	10	10	16	13	12	16	12	18	12	13	10	16	22	22	09	10
5	16	19	13	18	18	09	12	13	16	12	13	27	06	14	11	15	11	22	11
6	16	11	07	10	12	19	13	15	13	16	17	11	14	14	12	17	14	08	15

NORTHEASTERN STATE COLLEGE, TAHLEQUAH - COLLEGE I

SCIENCE - MALE N=23

	ACT				EPPS														
	English	Math.	Soc. St.	N. Scl.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	21	27	28	27	15	09	12	20	19	13	10	08	15	09	08	07	12	22	19
2	14	27	21	27	19	08	14	16	14	10	14	11	26	12	10	21	21	05	08
3	07	23	17	18	04	08	13	11	17	09	22	09	17	12	22	16	17	16	19
4	16	22	10	20	06	12	08	20	18	17	13	05	14	11	13	17	19	21	16
5	24	27	21	26	14	04	06	17	22	16	21	11	16	09	14	19	14	11	16
6	18	26	28	29	11	12	14	10	12	16	19	08	19	05	10	23	20	17	11
7	25	27	29	25	20	15	09	14	08	10	13	16	16	06	14	14	19	25	16
8	18	21	28	29	18	14	10	14	12	21	09	15	21	07	13	11	06	21	17
9	21	23	20	24	16	10	04	18	14	17	13	16	11	16	22	13	04	24	14
10	23	23	25	22	07	12	10	07	09	18	20	13	16	12	17	13	14	22	18
11	18	23	22	24	16	11	13	13	13	10	22	05	15	08	08	24	23	17	11
12	05	18	13	20	20	20	18	15	09	12	14	04	24	12	08	17	17	04	12
13	22	24	27	26	16	15	21	17	10	14	04	12	22	05	14	12	13	21	15
14	19	21	19	26	15	06	13	11	16	11	18	08	17	13	11	17	23	18	12
15	24	17	20	30	16	11	10	16	08	22	09	08	15	10	22	18	14	19	11
16	19	17	23	27	21	12	09	07	06	19	18	12	13	18	21	17	12	14	09
17	18	25	30	32	20	09	11	17	20	07	12	07	25	08	09	17	16	19	13
18	25	26	21	20	18	15	08	15	13	15	07	06	09	16	07	27	18	19	16
19	14	27	21	27	19	08	14	16	14	10	14	11	26	12	20	21	21	05	08
20	21	27	28	27	15	09	12	20	19	13	10	08	15	09	08	17	12	22	19
21	15	27	19	18	15	07	08	19	11	18	21	14	10	08	21	14	09	24	07
22	20	25	28	26	09	14	17	12	08	20	25	08	09	11	23	13	20	14	07
23	21	28	30	29	14	07	06	15	15	17	12	14	15	09	16	20	18	16	16

NORTHEASTERN STATE COLLEGE, TAHLEQUAH - COLLEGE I

SCIENCE - FEMALE N=6

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	30	28	33	32	20	03	06	18	10	12	23	14	20	03	15	16	13	26	11
2	20	19	13	16	20	14	11	21	13	19	22	16	10	09	13	22	10	10	08
3	16	08	21	26	13	17	08	07	14	18	13	09	06	17	18	22	10	22	17
4	13	11	14	19	12	17	14	16	07	17	19	14	14	10	16	16	22	09	05
5	30	28	33	32	20	03	06	18	10	12	23	14	20	03	15	16	13	26	11
6	20	19	13	16	20	14	11	21	13	19	22	16	10	09	13	22	10	10	08

CENTRAL STATE COLLEGE, EDMOND - COLLEGE II

EDUCATION - MALE N=12

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	22	21	21	27	13	09	02	12	11	21	15	19	18	19	16	09	13	13	17
2	21	26	28	24	21	09	02	20	11	18	18	19	20	05	14	17	03	16	18
3	10	09	21	19	19	10	14	13	15	15	16	11	16	13	11	14	16	17	15
4	22	20	20	22	17	12	11	11	15	22	18	02	10	12	27	21	12	13	05
5	17	23	17	22	20	06	12	15	16	17	10	09	18	12	07	12	09	26	20
6	16	09	15	18	15	17	14	08	12	14	21	03	15	15	13	17	19	14	11
7	05	09	03	14	12	07	07	20	03	20	12	14	14	14	24	18	18	16	11
8	14	21	18	16	15	10	16	17	15	12	18	03	16	16	11	08	03	25	21
9	17	18	26	25	12	20	10	16	11	16	26	09	08	16	22	13	11	14	06
10	14	24	31	27	13	10	17	13	15	17	07	17	25	10	11	14	17	10	17
11	16	15	22	22	23	14	07	18	11	17	20	08	18	12	10	12	11	19	12
12	20	23	19	24	13	12	07	16	06	22	14	15	08	13	22	22	10	27	03

CENTRAL STATE COLLEGE, EDMOND - COLLEGE II

EDUCATION - FEMALE N=22

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	22	07	22	19	13	10	07	17	20	17	12	04	13	19	18	17	03	23	17
2	27	26	31	20	13	10	05	17	18	20	25	10	12	06	18	26	13	13	05
3	24	17	27	26	15	10	14	14	18	11	10	10	16	13	11	11	16	23	18
4	22	20	24	22	18	12	14	14	11	12	24	11	21	15	11	16	10	15	07
5	20	20	22	12	10	10	05	11	17	17	08	18	12	12	26	12	16	12	19
6	15	18	25	22	13	10	10	13	14	16	23	15	19	08	19	11	11	16	10
7	12	12	14	14	15	16	13	13	11	10	25	12	22	15	12	22	09	16	11
8	19	19	20	17	12	16	12	17	12	18	16	16	06	23	20	15	12	11	04
9	21	18	28	24	13	11	05	14	11	20	20	12	20	08	19	17	05	23	11
10	22	30	19	30	09	14	14	18	08	19	26	11	03	16	16	22	07	20	08
11	12	20	14	14	14	06	13	13	11	10	25	12	23	15	12	22	07	15	11
12	23	24	26	28	11	14	08	10	09	21	17	15	06	13	19	25	10	21	10
13	15	18	25	22	12	10	07	14	15	20	24	15	20	06	19	12	10	18	11
14	20	21	23	27	11	17	10	16	11	20	13	11	09	16	19	19	14	14	07
15	10	25	10	22	10	09	21	16	11	06	28	17	12	17	13	09	17	16	17
16	20	18	24	20	09	06	06	18	13	14	16	09	22	20	11	11	16	12	27
17	23	15	19	13	09	11	13	12	10	09	24	10	09	25	12	09	20	22	16
18	25	12	17	18	20	07	10	09	09	18	26	16	12	07	11	13	21	27	03
19	16	09	15	18	11	12	16	15	17	21	25	07	16	03	20	10	14	17	11
20	13	15	04	22	11	12	05	19	11	18	11	13	08	25	16	17	15	19	10
21	17	16	13	17	08	16	11	13	15	16	25	18	05	09	15	18	02	24	14
22	20	19	19	13	16	18	15	05	07	14	12	17	14	24	18	20	14	09	08

CENTRAL STATE COLLEGE, EDMOND - COLLEGE II

BUSINESS - MALE N=21

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	14	09	16	11	15	11	12	14	13	19	25	02	19	06	11	15	17	14	16
2	18	18	22	17	23	10	09	14	17	08	18	15	24	12	07	16	18	02	16
3	11	21	10	14	14	12	06	15	13	11	18	14	21	15	12	17	16	18	09
4	23	18	21	19	12	14	11	13	13	14	23	07	23	07	13	22	20	12	05
5	19	15	22	29	23	13	12	12	18	12	08	13	21	12	12	20	12	08	14
6	13	22	20	14	19	11	11	15	14	12	14	14	23	09	13	18	20	16	11
7	18	17	24	24	09	11	09	15	15	22	21	09	17	12	16	17	08	20	08
8	18	27	19	25	15	17	14	15	15	17	15	09	23	08	08	16	14	12	11
9	15	16	06	20	16	16	25	07	07	17	13	04	19	20	17	15	19	06	09
10	16	22	24	20	19	14	13	16	13	10	11	10	19	18	07	12	16	10	18
11	20	21	26	27	19	20	06	16	17	06	09	12	20	03	03	24	14	26	15
12	23	28	29	32	21	12	06	18	19	07	15	12	23	07	09	18	11	13	20
13	17	12	19	22	21	12	17	16	14	12	12	06	22	09	04	14	14	22	15
14	14	22	14	20	12	11	14	18	09	20	12	14	22	11	19	08	04	15	21
15	25	27	31	28	18	11	10	12	21	13	20	04	24	10	08	17	17	13	12
16	11	22	23	20	08	07	04	08	14	15	15	12	22	13	15	16	15	26	20
17	17	21	20	22	18	11	07	15	14	13	18	04	24	10	09	14	13	18	22
18	22	21	29	27	14	17	09	16	11	18	26	07	16	11	06	24	17	11	08
19	19	23	23	18	13	08	06	15	18	11	16	13	16	18	15	14	12	22	13
20	15	18	25	22	18	10	13	10	12	10	18	13	24	22	09	10	18	11	12
21	19	15	22	28	23	08	14	19	18	10	12	06	26	03	07	19	20	09	16

CENTRAL STATE COLLEGE, EDMOND - COLLEGE II

BUSINESS - FEMALE N=13

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	21	10	10	15	07	11	15	13	08	16	10	11	06	27	15	18	13	23	16
2	22	22	13	21	14	10	15	19	11	19	18	13	19	07	16	16	09	18	06
3	17	09	16	08	12	13	10	13	10	20	18	15	11	18	19	12	10	13	14
4	18	22	13	20	18	09	17	17	15	13	26	11	10	12	11	18	21	09	03
5	25	18	27	25	09	07	10	15	08	19	19	18	19	12	24	09	06	19	17
6	19	20	22	21	18	07	11	15	09	13	19	18	05	22	17	17	07	19	12
7	31	25	19	26	06	09	10	11	07	22	15	15	03	15	22	15	20	28	12
8	19	19	20	18	12	13	09	13	09	22	22	06	09	20	15	21	17	16	06
9	19	14	22	15	21	14	14	13	10	12	18	07	25	10	12	12	23	10	09
10	19	15	21	14	22	11	14	17	10	14	15	11	23	05	09	18	15	18	18
11	32	25	19	22	08	08	05	13	12	19	21	20	10	20	22	16	08	16	13
12	24	17	28	26	19	09	12	12	04	21	15	18	05	16	22	24	09	19	09
13	32	36	28	26	20	17	12	15	13	12	20	11	13	13	14	20	17	11	02

CENTRAL STATE COLLEGE, EDMOND - COLLEGE II

SCIENCE - MALE N=23

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	19	23	19	24	18	07	09	17	15	12	13	04	16	03	09	22	21	25	17
2	18	22	20	18	16	13	07	11	11	17	09	19	16	10	20	12	09	24	14
3	17	24	19	20	12	06	11	16	09	15	13	14	13	14	19	17	15	27	09
4	21	16	20	23	16	17	20	15	11	12	09	12	11	11	13	11	17	21	14
5	23	21	25	28	15	05	09	13	17	15	21	05	13	16	14	19	16	19	13
6	21	23	25	24	20	10	08	16	15	14	11	10	15	14	14	21	20	10	11
7	20	26	22	25	20	09	08	26	14	20	25	03	17	24	15	14	17	07	12
8	17	24	19	20	13	11	10	24	18	06	12	03	21	15	10	18	17	13	15
9	12	20	18	20	14	13	07	13	12	19	11	19	10	10	20	16	14	22	11
10	15	20	21	25	17	16	12	11	19	12	18	05	08	20	13	17	20	11	12
11	17	18	23	19	16	10	07	16	21	16	17	11	18	12	14	16	13	10	16
12	24	25	27	28	17	12	14	15	20	15	11	08	18	13	07	11	19	08	22
13	20	27	26	26	11	13	12	19	09	14	13	10	16	14	15	21	15	21	06
14	20	25	25	30	17	10	13	15	14	12	10	07	16	18	13	15	19	13	17
15	16	14	06	13	11	13	06	19	14	11	13	08	19	13	20	16	17	13	16
16	22	26	28	27	20	08	05	17	09	12	17	12	20	05	13	17	14	27	15
17	16	14	23	18	15	10	08	13	09	16	18	12	20	17	18	13	14	15	12
18	16	22	23	23	17	15	15	17	09	13	18	02	20	16	08	14	16	16	12
19	17	16	19	14	13	13	07	18	18	13	05	12	20	18	11	15	14	21	12
20	19	18	23	22	18	06	09	16	22	14	18	06	16	12	10	23	25	10	05
21	12	19	16	15	15	12	12	14	15	15	19	09	14	19	13	14	15	11	15
22	15	25	24	18	16	07	08	16	13	10	07	20	14	21	23	06	09	24	15
23	11	13	16	23	17	11	06	11	13	16	19	04	16	14	18	17	13	22	14

CENTRAL STATE COLLEGE, EDMOND - COLLEGE II

SCIENCE - FEMALE N=4

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	com	aba	nur	chg	end	het	agg
1	25	21	24	18	06	14	09	15	11	19	20	08	14	18	18	23	17	15	03
2	20	21	16	24	11	13	17	13	07	13	23	15	15	23	17	09	15	14	05
3	23	21	26	27	15	10	11	15	14	13	16	09	16	08	15	20	15	20	09
4	20	16	19	16	13	13	11	16	17	13	21	06	06	08	13	27	21	13	08

SOUTHEASTERN STATE COLLEGE, DURANT - COLLEGE III

EDUCATION - MALE N=25

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	22	12	19	21	12	12	13	09	17	12	19	02	13	10	06	18	20	23	16
2	15	16	06	16	14	06	13	12	12	17	12	17	18	13	13	16	15	14	12
3	19	25	10	12	17	20	09	12	14	14	15	11	20	06	09	13	16	16	18
4	21	23	17	27	16	09	09	17	18	11	15	13	15	15	16	13	14	14	13
5	14	15	16	15	08	13	10	14	08	22	17	12	09	18	21	15	11	28	04
6	12	16	18	16	16	17	09	13	11	12	25	09	16	13	12	23	13	07	15
7	12	15	09	14	12	16	16	11	13	16	16	13	15	15	09	15	16	13	15
8	11	17	22	15	13	10	15	13	20	10	09	11	12	15	18	22	12	16	16
9	24	20	31	28	24	11	05	24	11	05	26	09	14	04	04	18	17	21	13
10	10	13	07	13	12	11	11	12	11	15	13	16	09	16	16	19	18	16	13
11	07	14	05	12	19	02	13	12	13	08	17	06	23	14	08	12	23	16	22
12	22	19	22	22	15	19	10	15	14	16	11	13	17	14	14	10	12	13	17
13	18	14	21	23	11	11	14	13	15	13	19	02	22	09	11	18	12	18	18
14	19	21	11	18	17	14	14	12	12	11	13	07	13	18	15	21	22	04	11
15	19	27	22	28	19	12	11	11	18	10	17	06	22	14	16	14	08	16	13
16	21	22	25	26	17	17	14	12	04	14	07	15	18	06	21	11	17	27	10
17	16	19	22	18	17	16	06	15	13	11	18	09	23	10	10	18	15	12	18
18	19	24	18	20	15	10	09	12	09	18	14	23	14	12	20	08	04	23	19
19	15	18	19	19	14	11	10	13	14	16	20	13	13	17	13	14	19	15	12
20	10	17	21	21	20	09	12	17	13	14	14	13	15	15	13	12	17	14	13
21	19	24	25	22	20	11	11	14	18	14	14	14	15	10	15	15	14	14	11
22	17	22	11	17	16	12	13	16	18	16	11	07	14	02	11	08	18	27	21
23	10	18	12	25	19	16	10	14	15	15	14	08	10	23	15	21	14	03	11
24	14	15	18	12	05	13	08	13	13	18	13	09	13	25	19	14	09	27	10
25	15	15	21	20	17	09	09	12	16	15	10	07	20	14	06	18	14	27	16

SOUTHEASTERN STATE COLLEGE, DURANT - COLLEGE III

EDUCATION - FEMALE N=21

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	16	16	11	11	16	09	10	11	08	18	14	07	07	20	14	22	16	24	15
2	18	13	18	19	14	12	06	07	13	21	14	12	12	15	23	25	11	13	10
3	22	11	23	15	19	07	17	17	14	08	18	15	11	15	12	18	17	13	09
4	24	16	22	26	10	12	06	15	15	19	22	11	10	16	15	25	08	16	08
5	11	05	07	10	15	13	10	13	13	17	19	09	11	15	13	18	18	14	11
6	19	14	17	23	12	15	18	12	07	20	16	08	06	11	18	26	19	07	14
7	23	16	20	17	16	15	21	19	09	09	23	06	15	15	08	12	25	01	07
8	23	21	17	17	16	10	06	10	12	21	17	15	09	13	21	23	10	23	06
9	18	23	15	10	09	12	19	17	05	17	25	11	23	18	21	10	09	08	10
10	20	26	20	15	13	12	08	13	10	16	19	11	18	12	15	26	12	14	11
11	18	10	21	19	14	13	13	16	10	20	16	15	11	12	19	19	11	12	09
12	19	25	10	12	14	10	05	18	10	21	17	17	15	19	19	16	02	08	19
13	23	18	25	23	19	10	13	20	05	10	24	08	18	11	19	25	18	09	11
14	25	17	19	16	14	12	13	09	08	18	21	21	09	22	15	21	14	03	10
15	19	25	10	12	18	12	13	11	13	13	10	22	05	14	16	15	17	15	16
16	17	15	18	17	12	16	16	09	12	22	15	11	07	13	23	14	16	13	11
17	14	03	19	14	15	16	14	09	11	18	19	18	12	08	14	15	12	13	15
18	27	27	24	24	09	10	13	12	14	21	12	14	10	12	20	24	08	14	17
19	12	17	15	21	19	17	09	13	17	13	18	07	15	15	12	20	14	12	08
20	16	13	16	21	15	11	13	12	12	10	11	16	09	21	13	23	17	15	12
21	21	18	17	23	12	12	09	15	17	16	09	07	23	14	14	15	18	10	10

SOUTHEASTERN STATE COLLEGE, DURANT - COLLEGE III

BUSINESS - MALE N=18

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	19	20	19	17	11	12	10	12	13	16	11	12	13	16	14	19	12	26	12
2	07	14	12	13	13	11	12	14	11	16	23	09	18	14	20	12	11	13	13
3	15	11	12	17	09	11	12	17	15	20	06	11	15	21	19	19	11	16	08
4	12	16	05	17	14	15	17	10	12	12	12	12	15	16	09	13	07	20	17
5	20	23	24	27	10	12	17	15	10	16	16	14	20	05	13	16	17	17	12
6	17	19	19	20	13	14	07	18	05	20	12	09	22	19	20	12	15	10	14
7	19	19	21	28	11	09	02	09	13	19	20	16	14	11	16	23	14	27	16
8	26	23	28	28	22	15	21	12	15	06	14	05	20	06	03	18	25	09	19
9	12	22	10	12	11	19	16	13	08	20	24	14	14	15	21	12	12	05	05
10	24	23	17	26	12	07	07	16	15	20	16	06	20	17	20	18	14	13	09
11	22	22	24	16	16	16	20	15	07	17	14	02	16	16	10	11	23	12	14
12	19	25	19	20	18	12	19	14	16	08	06	02	16	05	08	21	26	26	13
13	16	20	19	18	13	12	14	12	15	20	18	10	26	15	11	05	13	08	17
14	21	09	17	19	14	17	16	11	12	12	11	11	08	14	09	21	22	17	15
15	18	24	07	19	21	17	13	16	14	12	16	02	12	18	10	14	20	10	14
16	16	15	11	10	12	09	13	09	09	18	10	12	22	14	15	12	11	28	17
17	19	17	21	23	18	13	07	07	07	16	16	15	09	23	16	13	25	17	07
18	23	23	23	23	14	05	02	18	16	11	13	08	18	11	13	19	24	20	18

SOUTHEASTERN STATE COLLEGE, DURANT - COLLEGE III

BUSINESS - FEMALE N=12

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	20	20	16	23	04	15	10	17	05	19	20	13	09	18	25	18	13	23	05
2	14	08	18	18	11	12	16	09	09	18	15	16	05	21	18	11	27	02	19
3	20	17	10	19	16	14	13	12	06	19	21	13	08	17	18	16	14	20	03
4	14	15	12	09	08	18	11	14	04	22	17	16	11	20	22	21	07	09	10
5	20	16	18	14	08	16	11	20	15	14	19	15	05	14	15	28	19	02	10
6	14	10	13	14	13	12	12	21	16	18	12	12	15	13	13	14	14	12	13
7	15	06	11	15	14	18	09	17	10	15	14	13	05	18	14	13	17	23	14
8	21	19	22	21	08	08	09	19	14	19	22	13	21	12	12	17	06	19	10
9	16	14	17	14	13	11	04	13	12	16	22	08	08	23	18	19	16	10	17
10	19	15	16	17	16	16	09	13	08	19	20	17	09	15	19	19	10	17	13
11	22	16	16	24	08	09	12	12	14	24	14	12	05	25	23	20	14	14	04
12	15	16	17	15	14	13	16	16	06	16	23	05	23	23	16	16	19	15	10

SOUTHEASTERN STATE COLLEGE, DURANT - COLLEGE III

SCIENCE - MALE N=12

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	10	17	21	21	20	09	12	17	13	14	14	13	15	15	13	12	17	14	13
2	07	14	12	13	13	11	12	14	11	16	23	09	18	14	20	12	11	13	13
3	21	32	29	25	15	07	06	08	15	12	22	10	13	19	17	17	13	21	15
4	21	25	20	21	11	10	02	21	12	16	10	14	20	07	12	22	09	21	23
5	25	26	28	29	21	08	07	16	20	15	14	09	04	12	12	19	12	26	14
6	17	20	12	19	17	11	12	20	13	13	09	12	23	07	13	17	08	22	14
7	18	19	22	18	17	14	23	14	12	08	15	03	11	15	13	20	23	21	01
8	22	25	25	29	11	14	21	09	14	13	12	07	11	24	15	17	17	14	08
9	19	18	18	21	13	15	07	13	09	12	23	08	12	16	14	15	14	21	18
10	16	19	20	14	13	08	09	14	17	21	14	12	19	11	19	13	17	09	14
11	14	19	19	19	07	09	12	13	12	24	22	09	10	19	16	19	19	06	12
12	20	19	26	25	12	07	02	18	15	15	13	11	16	14	12	23	06	24	27

SOUTHEASTERN STATE COLLEGE, DURANT - COLLEGE III

SCIENCE - FEMALE N=10

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	23	21	17	17	16	10	06	10	12	21	17	15	09	13	21	23	10	23	06
2	28	24	27	25	11	14	12	10	17	20	09	09	07	16	19	22	19	15	10
3	23	16	20	17	16	15	21	19	09	09	23	06	15	15	08	12	25	01	07
4	19	06	17	17	12	15	09	13	06	23	21	16	11	18	26	20	07	06	07
5	14	10	18	13	15	11	15	14	13	08	22	07	20	16	10	22	13	14	10
6	18	14	19	26	20	12	13	22	10	11	16	11	16	12	10	17	17	08	15
7	24	21	31	28	22	11	05	14	15	15	25	10	20	12	11	18	12	12	08
8	20	19	20	14	12	13	15	10	21	08	13	11	16	16	12	13	20	13	17
9	24	24	25	25	18	15	16	12	22	13	13	10	09	14	10	17	24	01	16
10	20	16	20	20	16	21	08	15	05	20	18	19	06	22	18	12	12	10	05

SOUTHWESTERN STATE COLLEGE, WEATHERFORD - COLLEGE IV

EDUCATION - MALE N=16

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	15	16	11	21	11	12	20	20	07	10	17	15	03	16	23	10	17	24	05
2	13	22	21	17	15	08	04	12	11	18	23	22	04	15	19	17	06	25	11
3	11	16	14	21	15	14	09	13	11	18	08	05	22	18	13	16	15	20	13
4	08	14	13	14	14	15	14	14	09	20	13	19	11	17	20	13	15	12	04
5	14	27	16	16	21	11	09	16	16	13	16	03	15	16	12	23	11	16	12
6	19	29	22	29	15	05	06	17	19	08	18	10	18	15	11	05	06	19	28
7	15	15	19	13	13	17	16	16	10	12	13	13	12	14	17	13	11	16	17
8	16	15	19	17	11	05	12	11	12	21	14	11	11	16	17	15	15	22	17
9	19	19	21	25	18	13	13	20	22	06	15	11	26	00	03	20	10	11	21
10	21	20	19	17	12	11	14	19	12	13	14	15	12	15	17	14	09	23	11
11	13	16	21	23	15	17	20	16	10	14	13	07	25	20	12	10	17	02	13
12	18	10	19	22	17	12	20	16	12	13	21	12	17	09	11	18	19	04	10
13	22	21	19	23	21	16	11	15	11	14	16	03	16	05	12	15	13	25	17
14	17	25	18	18	12	15	07	16	07	24	09	18	15	22	25	15	19	08	04
15	17	18	15	18	12	17	09	12	15	12	06	14	14	15	14	14	15	27	15
16	08	18	08	20	11	20	12	25	16	05	20	08	13	12	10	17	16	19	15

SOUTHWESTERN STATE COLLEGE, WEATHERFORD - COLLEGE IV

EDUCATION - FEMALE N=17

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	18	10	08	13	05	16	14	19	09	18	22	13	10	18	19	08	16	12	10
2	21	17	19	23	13	13	17	16	08	19	14	08	07	18	20	20	13	08	17
3	23	21	21	23	17	10	11	13	17	23	08	23	16	07	14	18	04	21	09
4	24	06	07	15	12	10	11	14	08	25	16	05	10	23	21	18	15	13	10
5	17	18	19	24	12	16	05	15	11	17	27	05	13	12	15	23	12	16	11
6	15	09	12	17	06	10	12	13	11	26	17	16	12	24	19	19	18	04	03
7	18	17	17	18	07	17	08	15	18	25	21	06	08	21	26	14	14	06	05
8	11	16	17	16	13	16	07	12	17	15	19	11	13	15	08	19	07	22	17
9	14	19	20	13	13	16	16	12	12	14	23	13	08	15	13	16	16	15	08
10	21	20	20	22	08	17	22	14	07	17	14	04	06	13	17	18	09	28	16
11	16	18	12	13	08	10	10	13	02	15	22	24	07	15	21	15	13	28	07
12	20	14	24	25	09	18	05	16	17	15	17	17	13	20	14	10	09	19	13
13	15	07	13	21	13	12	13	17	15	20	14	17	05	22	15	16	12	04	15
14	18	17	20	15	16	06	13	14	15	15	11	07	19	16	12	10	16	27	14
15	16	16	11	10	08	14	08	16	15	21	18	10	16	13	17	21	10	15	08
16	20	18	13	16	09	15	10	16	09	18	18	16	14	09	21	22	10	08	05
17	22	14	24	24	04	15	08	13	15	16	21	08	23	17	12	09	16	18	17

SOUTHWESTERN STATE COLLEGE, WEATHERFORD - COLLEGE IV

BUSINESS - MALE N=27

	ACT				EPPS															
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	19	22	21	26	13	12	12	10	15	07	15	07	14	12	07	21	24	15	25
2	19	24	17	23	12	12	11	18	12	21	09	11	20	11	13	15	14	21	10
3	20	27	27	29	15	14	08	21	24	10	17	04	15	16	05	18	12	18	13
4	23	29	19	23	19	11	09	18	11	16	09	07	19	12	15	19	16	21	08
5	20	19	23	21	19	11	06	12	12	16	12	12	19	15	11	16	13	24	13
6	11	16	15	19	17	12	07	14	09	20	18	07	22	23	13	19	07	15	07
7	18	22	24	26	17	13	13	16	16	09	17	08	23	20	07	04	16	17	15
8	18	17	24	18	22	14	05	17	07	14	18	13	10	09	24	22	23	09	12
9	17	16	05	10	15	24	10	15	16	13	10	09	22	12	05	11	16	08	14
10	19	14	25	27	12	19	17	15	06	10	19	13	18	09	09	19	16	14	14
11	18	16	20	25	14	09	17	15	19	15	12	09	07	16	14	16	13	23	10
12	06	19	12	15	10	09	05	17	13	06	15	07	20	18	09	20	19	17	23
13	19	13	19	21	06	17	12	09	19	19	10	09	12	16	15	21	17	22	05
14	24	26	24	22	16	08	07	14	15	18	09	10	23	07	18	18	14	22	11
15	18	02	07	17	11	11	09	18	14	17	14	08	13	21	10	22	14	21	07
16	20	29	27	31	19	18	09	18	07	09	22	10	15	16	14	17	06	24	06
17	23	25	25	28	09	05	02	13	14	19	13	12	19	17	23	20	02	23	19
18	05	10	12	13	17	10	11	16	12	12	20	16	06	23	17	08	19	16	07
19	04	16	09	18	17	18	15	15	13	10	23	07	20	14	14	17	16	03	08
20	12	19	21	24	24	09	15	18	15	11	14	04	22	07	10	18	23	09	11
21	19	17	16	24	10	06	09	22	13	12	20	08	20	07	16	16	22	16	13
22	15	14	18	24	11	04	08	16	14	17	15	22	19	07	18	21	15	21	13
23	19	24	28	26	22	15	06	15	21	11	18	07	27	02	06	14	10	17	19
24	19	23	17	18	11	09	12	14	16	12	19	11	14	18	12	19	14	14	14
25	20	18	21	22	18	11	09	10	14	10	15	11	17	13	09	21	16	22	14
26	19	28	23	16	12	13	14	09	09	23	17	05	12	21	13	25	19	09	08
27	19	15	22	23	17	24	15	17	13	13	11	14	16	12	04	14	11	26	13

SOUTHWESTERN STATE COLLEGE, WEATHERFORD - COLLEGE IV

BUSINESS - FEMALE N=8

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	17	14	16	18	13	10	19	08	11	15	12	15	09	23	18	17	18	13	08
2	16	17	13	10	14	18	18	16	08	19	09	11	15	16	11	22	13	15	06
3	16	08	12	09	12	16	10	15	14	16	11	27	10	21	13	18	15	11	09
4	24	19	29	24	09	12	07	17	16	18	20	10	09	11	19	20	14	24	07
5	21	26	17	14	18	08	06	21	16	11	22	09	13	15	15	21	13	18	04
6	19	15	20	18	03	11	11	22	14	16	12	14	11	19	16	20	07	20	14
7	19	25	20	19	14	12	19	10	08	10	15	09	13	09	12	17	24	16	22
8	20	22	19	10	13	15	12	09	15	08	24	15	14	18	11	17	16	15	08

SOUTHWESTERN STATE COLLEGE, WEATHERFORD - COLLEGE IV

SCIENCE - MALE N=16

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	22	23	28	27	18	18	11	12	19	17	12	03	07	19	14	20	19	12	09
2	20	18	19	17	18	14	10	16	18	12	02	08	18	15	07	16	12	26	17
3	20	23	20	21	09	14	04	19	07	20	17	13	18	10	14	14	05	25	21
4	16	25	23	25	14	13	13	13	04	10	20	06	20	11	05	20	25	27	07
5	20	23	14	22	13	08	17	14	13	11	11	13	11	12	10	16	22	27	11
6	17	25	19	27	12	06	15	15	17	14	18	11	13	15	11	16	15	25	07
7	26	28	26	25	13	11	09	17	26	19	04	08	13	09	09	18	14	24	16
8	26	21	20	27	21	14	06	13	13	15	10	15	14	14	10	11	06	25	14
9	21	18	17	27	14	15	11	12	07	16	13	14	16	13	12	14	14	26	13
10	17	17	14	12	15	05	26	15	08	12	12	13	10	17	10	08	21	22	16
11	19	29	25	26	18	11	15	14	12	16	08	10	18	08	08	21	17	21	12
12	22	25	21	28	14	12	05	15	11	13	16	14	06	14	18	19	08	26	19
13	21	27	22	22	18	06	07	22	17	16	08	11	26	13	06	10	14	21	15
14	22	27	18	20	18	13	25	15	16	17	11	04	19	13	12	07	20	09	11
15	17	23	16	27	08	16	11	10	11	16	25	04	12	20	22	17	15	21	01
16	17	18	15	19	19	08	10	08	12	09	11	07	14	18	15	20	19	24	17

SOUTHWESTERN STATE COLLEGE, WEATHERFORD - COLLEGE IV

SCIENCE - FEMALE N=8

	ACT				EPPS														
	English	Math.	Soc. St.	N. Sci.	ach	def	ord	exh	aut	aff	int	suc	dom	aba	nur	chg	end	het	agg
1	26	25	28	24	23	14	20	15	10	16	22	11	12	03	14	18	16	11	05
2	24	27	29	27	12	12	10	15	10	21	23	11	22	15	20	16	06	11	06
3	26	27	22	26	19	07	06	21	15	14	10	16	13	18	14	12	07	20	17
4	21	09	19	21	07	13	13	17	11	09	14	12	13	13	13	23	22	15	15
5	25	27	25	26	13	07	11	20	18	12	05	22	21	03	10	17	12	22	17
6	15	15	08	14	06	14	08	10	11	25	20	09	09	15	27	16	10	19	11
7	20	19	18	23	13	11	21	14	15	15	15	10	09	12	15	23	13	07	15
8	18	19	18	22	17	14	18	16	08	10	17	09	18	22	15	17	22	00	07