THE RELATIONSHIP BETWEEN INTELLECTUAL DISPOSITION AND LEVELS OF ACADEMIC ACHIEVEMENT

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CHAPTER I

INTRODUCTION

The development of intellectual resources has been of real concern in recent years to educators, political scientists, economists and many others, especially those who are fearful that we may be losing in the international struggle. There are several reasons why the intellectual capacities of many individuals are not being developed. Among these reasons are the lack of educational opportunities, the lack of interest in pursuing an education, and the inability of some individuals to develop their potentials due to psychological factors. Whatever the reasons, lack of interest or lack of educational opportunities, etc., it is generally recognized to be a serious drain on society's reservoir of talent and on an individual's chances to realize a sense of worth and fulfillment in an increasingly technological society. Much research, in recent years, has been conducted in an attempt to determine why some individuals achieve above their measured level of ability and why other individuals achieve below their measured ability. The problem being studied and reported on in this paper is the relationship between intellectual disposition (interest in intellectual activities) and academic achievement at the collegiate level in a continuing effort to explore this aspect of the motivation to achieve.

Some studies of factors associated with academic achievement were made during the 1920's. These earlier studies were primarily

concerned with establishing a relationship between ability and grades. In the following decades, efforts of researchers have been directed toward discovering the causes of underachievement which were variously attributed to "parental disinterest, cultural impoverishment, personality, maladjustment, teacher inadequacy and just plain laziness" (Hummel and Sprinthall, 1965, p. 388). However, as a clearer understanding of human behavior developed and it came to be recognized that all behavior is caused, more penetrating analyses could be made of the influence of nonintellectual factors on learning. Consequently, some of the earlier recognized causes came to be thought of as symptoms rather than causes.

That a relationship does exist between certain psychological factors and level of academic achievement has come to have fairly wide acceptance among psychologists and educators in recent years though the nature of the relationship is not clearly understood. Some students seem to learn more than would have been predicted for them on the basis of the results from tests of intellectual ability. On the other hand, some students do not measure up to the level that is expected of them. Thus, conclusions reached by researchers in certain disciplines of psychology concerned with individual development and in the field of education have come to recognize that very important factors in addition to intellectual ability are related to academic achievement, one of these factors being the intellectual disposition of the individual.

College achievement, as indicated by overall grade point average, consists of several more or less well-established variance components. The major component, as demonstrated by over thirty years of research

on the prediction of college grades, is intellective (Harris, 1940; Garrett, 1949; Fishman and Panasella, 1960; Red, McCary and Johnson, 1962). Measures of scholastic aptitude and achievement and indices of previous performance, such as high school grade point average and class rank, correlate in the .50s and mid .60s with college achievement (Watley and Merwin, 1964; Holland and Astin, 1962; Barnette, 1961; Portenier, 1959; Russell and Bendig, 1960; Klugh and Bendig, 1961) which means that they account for approximately twenty-five to forty percent of the total variance in the criterion.

A second component in college achievement, the nature of which is not nearly as well-known as the first, is the non-intellective, which includes personality and study skill variables. Its existence is generally inferred from the following three sets of observations:

(1) Only a portion of the variance in college achievement is attributable to ability factors and measurement errors.

(2) Furthermore, an optimally weighted combination of measures of intellective factors with personality factors or with previous academic performance yields generally higher correlations with grade point average than either predictor alone (Fishman and Panasella, 1960; Holland, 1959; Khan, 1969; Watley and Merwin, 1964).

(3) Finally, there is certain empirical evidence which shows some correlation (approximately .22 to .29) between personality variables as assessed by the Rorschach, Minnesota Multiphasic Personality Inventory, Guilford-Zimmerman Temperament Survey, Edwards Personal Preference Schedule, California Psychological Inventory and others (Bendig, 1958; Watley and Merwin, 1964; Gough, 1964; Robinson, 1966; Barger and Hall, 1964; Drake, 1962; Steinberg, Segel and Levine, 1967) and college achievement. Also, there are moderate (approximately .37 to .43) relationships between scores on study habits inventories and grade point average (Fishman and Panasella, 1960; Desiderato and Koskinen, 1969).

Thus, the best estimate of variance in college achievement contributed by non-intellective factors on the basis of available research is probably between five and fifteen percent.

The remaining variance in college achievement most likely comes from two sources. Part of it is error variance which stems from the unreliability of grades and part of it represents differences in demographic and biographic factors such as size of family, religion, size of home town, extracurricular campus activities, etc. To minimize these sources of variance, many researchers use overall grade point average rather than grades in particular courses, which are less reliable, and gather data on large samples which tend to randomize the effects of the demographic variables.

Thus, as one can see, almost one-half of the total variance cannot be predicted from our present knowledge of intellective and non-intellective factors or accounted for by errors of measurement. However, since the newer tests of intellectual ability yield approximately the same correlations with grade point average as did the older tests, the non-intellective factors are believed to contribute much of the remaining variance even though we have been unable to measure these factors (McKeachie, 1961). As Raph and Tannenbaum stated in a frequently cited review of the literature on underachievement, the findings are "conflicting and inconclusive" and they conclude

> ...despite the voluminous work done in this area, we do not as yet have a clear profile of traits that distinguishes underachievers from their comparably able peers who live up to scholastic expectations (in Oakland, 1969, p. 452).

Statement of the Problem

The specific problem with which the present study is concerned is: What relationship exists between the intellectual disposition and over or underachievement of first semester male freshmen from seventeen to nineteen years of age who were enrolled in the College of Arts and Sciences at Oklahoma State University during the Fall semester of 1970-1971?

The present study sought to find the answer to the problem of the relationship between intellectual disposition, as measured by the Omnibus Personality Inventory, and academic achievement.

General Organization of the Study

The level of academic achievement, as used in this study, denotes a relationship of first semester grade point averages of the freshmen being studied to their composite American College Test scores. Two levels of achievement were used in this study: one for those achieving above their ability as measured by the American College Test (ACT) and a second for those achieving below their measured ability. Statistical analysis was made to determine if those who achieved at a level higher than was expected of them and those who achieved at a level below what was expected of them differed in respect to the intellectual disposition factor being studied.

The group achieving above their ability were designated "over-achievers" due to the fact that they had a cumulative grade point average of 3.00 or above (based on a 4.00 scale with A=4, B=3, C=2, D=1, and F=0) with a composite score on the American College Test of 21 or below which ranks them at the 68th percentile or lower on a

scale for college-bound students in Oklahoma who had participated in the American College Testing Program.

The other group was designated as "underachievers" due to their cumulative grade point average being 1.75 or below while achieving a composite score of 24 or above on the ACT, thus ranking these students at the 84th percentile or above which means they scored as well or better than eighty-four percent of the people in Oklahoma who had taken this test.

The intellectual disposition factor refers to

> ...the type and extent of commitment to general learning and intellectual activity, while permitting a designation of the emphasis or focus of the individual's disposition. The particular emphasis or focus denotes whether logical, analytical thinking takes precedence over thinking that involves free use of imagination and perceptual-cognitive exploration, or whether both kinds of thinking are found in the same person. Sometimes, neither the analytical nor the imaginative and perceptual emphases, per se, would be strong enough to be considered. The lack of any specific focus or emphasis may, and frequently does, go hand-in-hand with the lack of any real disposition to engage in cognitive learning activity (Heist and Yonge, 1968, p. 25).

In summary, the intellectual disposition categorization as implemented through the use of the Omnibus Personality Inventory,

> ...permits an identification and description of students who range in type from those with broad, intrinsic interests in intellectual pursuits (Categories 1 and 2) to those with very limited and restricted orientations in the area of cognitive learning (Categories 7 and 8). Where the former seek out and become involved in a variety of perceptual and learning experiences, with considerable emphasis given to the literary and esthetic spheres, the latter are notable for their mundane, pragmatic, and non-intellectual concerns, both in the immediate learning situation and relative to the later utilization of their knowledge and skills (Heist and Yonge, 1968, p. 26).

The term "relationship" implies that a level of statistical significance should be found in order for a relationship to be said to exist, but it does not imply that it is a causal relationship.

Scope and Limitations of the Study

This study attempted to determine whether or not a relationship existed between intellectual disposition and levels of academic achievement. It did not take into consideration other factors which also may have been related to the degree to which intellectual capacity was developed such as the quality of the instructional staff, the physical plant to accommodate the instructional program, aids to learning such as libraries and laboratories and the educational philosophy which guides the curricular program of the institution. Furthermore, none of the psychosocial factors such as level of parents' education, number of siblings, extracurricular activities, study habits, father's occupation, size of home town, size of high school, etc. were evaluated.

The present study was further limited to those male freshmen students between seventeen and nineteen years of age enrolled in the College of Arts and Sciences at Oklahoma State University during the Fall semester, 1970-71. Since non-intellectual factors other than one's intellectual disposition may influence the level of academic success, it seemed logical that a population should be sought for the study with as much homogeneity as possible so that differences found would more likely be due to the factors being studied than to environmental differences. It was furthermore arbitrarily decided that only those students receiving grades in twelve hours or more for the first

semester would be included in the study since a twelve hour load was necessary to be considered a full time student.

CHAPTER II

REVIEW OF THE LITERATURE

The extent to which an individual will be able to achieve academically at a level consistent with his ability will be affected by his personality structure and by the environment in which he is functioning. The environment was not treated as a variable in this study. However, this chapter does deal with some of the psychological factors which appear to be related to academic achievement.

Self-Concept

An individual's self-concept has been found to be related to his academic achievement. In some cases, a negative self-concept appears to hinder academic performance while in others a negative self-concept would appear to be the product of poor academic achievement. In other words, sometimes a negative self-concept is the result of academic underachievement while in other cases, a negative self-concept is the cause of underachievement. Biber (1961) stated that there is a circular relationship between healthy personality and effective learning whereas Glover (1963) suggested that failure in reading leads to a negative self-concept and a tendency to dislike and avoid reading. However, Buchin (1966) could find no significant relationship between academic potential, college achievement, anxiety and self-concept.

Furthermore, underachievement does not always imply negative attitudes toward the self. Thus, Jervis' study (1959) revealed no significant relationship between self-concept and either prediction of grades or actual grades nor was attitude toward others related to self-concept. Moreover, Berger (1961) found that students with high scores on "willingness to accept limitations" tended to get better grades. Underachievers, by contrast, were able to accept only the good in themselves and evidenced idealized self-images which did not correspond to reality. They established extremely high standards for themselves, denied wholeheartedness of effort, and expressed the belief that they should achieve at a high level with little effort. They were unwilling to risk being wrong, being disappointed or doing poorly.

Payne and Farquhar (1962) were able to distinguish between under and overachievers through the use of a word-rating list measuring self-concept. The often observed surface confidence of underachievers may conceal deep-seated feelings of inferiority. Thus, Shaw et. al., (1960) found that male underachievers seem to have more negative feelings about themselves than male achievers while female underachievers tended to be ambivalent with regard to their feelings toward themselves. Lum (1960) compared over and underachieving female college students and found that overachievers tended to be more self-confident and had a greater capacity for working under pressure, while underachievers procrastinated more, relied more on external pressures to complete assignments and were more critical of educational methodology and philosophy than were overachievers. Johnson (1967) also found that on the Adjective Check List, academically successful students tended to describe themselves as more free and outgoing with more drive and resourcefulness

than the academically unsuccessful student. When compared with students who requested counseling while in academic difficulty, students who did not seek counseling were higher on the temperament traits as ascedance, sociability, objectivity, friendliness and masculinity as measured by the Guilford-Zimmerman Temperament Survey (Stripling, 1967).

When it comes to predicting academic achievement for self-concept scales, however, much caution is advised. Borislow (1962), for example, reported that regardless of academic orientation, underachievers and achievers could not be distinguished on the basis of general self-evaluation prior to or subsequent to their first semester in college. However, underachievers did evidence poorer conceptions of themselves as students.

Anxiety

Anxiety has frequently been studied as a factor influencing academic performance. Spielberger and Weitz (1962) found that anxious students voluntarily responding to counseling invitations showed more improvement in their academic performance than students who were not counseled. However, no control group for anxiety level was used. Spielberger (1962) further discovered that students of low intellectual ability earned poor grades in college irrespective of their Taylor Manifest Anxiety scores while anxious students in the middle range of ability obtained lower grades and a higher percentage of failures than non-anxious students of comparable ability. Moreover, for the very superior students (ACE 150+), anxiety appeared to facilitate academic performance. However, a relationship between achievement and anxiety is not consistently found. Desiderato and Koskinen (1969), in an

attempt to replicate Spielberger's findings on college women, discovered no differences in grade point averages associated with the Taylor Manifest Anxiety scores at any ability level. Moreover, Davids and Erikson (1955), Sarason and Mandler (1952) and Matarazzo, Vlett, Guze and Saslow (1954) all failed to find any significant relationship between anxiety and college grade point averages. Grooms and Endler (1960) reported no significant differences in achievement between high anxious and low anxious students although Taylor (1964), in his review of the literature, concluded that the degree to which a student is able to handle his anxiety is directly related to his level of achievement.

Conformity

Other studies indicate that general tendencies to conform to the expectations of the group appear to be related to academic success. Duff and Siegel (1960) found that high ability females who overachieved assumed a unique role within the university community, conforming more to societal requirements as well as participating more actively in religious activities than any other subgroup on campus. Gill and Spilka (1962) found that achievers manifested considerably less hostility, more social maturity, intellectual efficiency and conformity to rules. Furthermore, Garms' study (1968) revealed that college achievers are conformists who have good study habits, attend, concentrate and remember with little interference from emotional problems whereas underachievers dislike academic tasks with verbal emphasis, are not academically motivated and rely on external pressures for task completion. Moreover, they are self-debasing, rebellious and hostile

individuals who find it difficult to relate to others, especially authority figures. Erb (1961) further discovered that high conformity females achieved higher college grades than low conformity females whereas no difference was found in the performance of high- and low-conforming males.

Neuroticism

Neuroticism has been related to academic performance in several studies. Lynn and Gordon (1961) found a positive relation between introversion and persistence and between neuroticism and size of vocabulary. There was no significant correlation, however, between either neuroticism or introversion and intelligence. Gill and Spilka (1962) reported a non-significant tendency for achievers to be better adjusted than low achievers. Robinson (1966) also found that persons achieving academic honors and having lower academic ability experience more anxiety and other neurotic traits than do comparable students having higher academic ability.

Motivation

The motivation to learn which a particular student has greatly influences his learning effectiveness. In an analysis of drives related to high and low achievement, Middleton and Guthrie (1959) discovered that high achievement may be motivated by drives for power, resentment, dependence, social acceptance, and aggression whereas low achievement may be motivated by drives toward pleasure seeking, extroversion, denial of normal shortcomings, and power. Todd et. al., (1962) found evidence suggesting that underachievers as compared with

"normals" manifest less need for academic achievement, are less likely to have decided on a specific vocational goal, are more likely to perceive a relationship between course work and goals, and have a lower expectancy for success in academic pursuits. Lynn (1959, 1960) found that capacity for sustained work depends largely on an individual's level of drive and rate of accumulation of reactive inhibition. Shaw (1961) administered the McClelland Achievement Motivation Test, the French Need Achievement Scale and the Edwards Personal Preference Schedule to underachievers and achievers. None of the three scales differentiated achievers from underachievers with the exception of the French scale which did differentiate between achieving and underachieving males. Uhlinger and Stephens (1960) found that need achievement did not differ from high and low achievers except that high achievers showed greater need for social love and affection and had generally higher minimal grade goals and greater expectancy for academic success.

General Personality Traits

In recent years, many studies have been concerned with the relationship between personality traits, as measured by various personality tests, and grades, either overall grade point averages or those grades obtained in specific courses.

Griffin and Flaherty (1964) in a correlational analysis of the relationship between grade point average and the California Psychological Inventory (CPI) found that dominance, capacity for status, sociability, self-acceptance, responsibility, achievement via conformance, achievement via independence, intellectual efficiency, femininity and sense of well-being were found to correlate significantly with

grade point average. Norfleet (1968) found that achievers scored significantly higher on the social presence, responsibility, socialization, tolerance, achievement via conformity, achievement via independence and intellectual efficiency scales than did the underachievers. In another study, Flaherty and Reutzel (1965) discovered that high achievers scored significantly higher than low achievers on the dominance, capacity for status, sociability, self-acceptance, responsibility, tolerance, achievement via conformity, achievement via independence, intellectual efficiency and femininity scales whereas low achievers scored significantly higher on the flexibility scale of the CPI. Gough's study (1964) revealed that the responsibility scale correlated .48, intellectual efficiency correlated .43 while achievement via conformance as measured by the California Psychological Inventory correlated .40 with overall grade point average. However, Winkelman (1963) concluded in his study that underachievers could not be differentiated from average achievers or overachievers either on the basis of their profile patterns or on the basis of their individual scale scores on the California Psychological Inventory.

In other research on over and underachievers, Steinberg, Segel and Levine (1967) found that on the Structured Objective Rorschach Test, overachievers scored significantly higher on the conformity scale whereas the underachievers scored significantly higher on the pedantic and theoretical scales. Vaughan (1967), after administering the Minnesota Multiphasic Personality Inventory to a group of nonachievers and achievers, discovered that nonachievers generally score higher on the psychopathic deviate and hypomania scales while achievers tend to have higher masculinity-femininity scores.

Other researchers have used the Guilford-Zimmerman Temperament Survey (GZTS) in an attempt to determine the relationship, if any, between level of academic achievement and personality traits as measured by the GZTS. Hummel and Sprinthall (1965) found that the only differences were on the restraint and thoughtfulness scales; superior achievers scored extremely high, underachievers quite low and par achievers averaged between these extremes.

Furthermore, Watley and Martin (1962) in a similar study of under and overachievers found that, for males, the traits of general activity, restraint, ascendance and thoughtfulness differentiated significantly between the two groups whereas only restraint differentiated between a similar group of females. In another study, Watley and Merwin (1964) found that the restraint and thoughtfulness scales correlated significantly with overall grade point average. Moreover, Bendig and Sprague's study (1954) revealed a significant correlation between the grade obtained in an introductory psychology course and the restraint and objectivity scales of the GZTS.

Other studies have utilized the Edwards Personal Preference Schedule (EPPS) as the measure of personality traits and correlated grade point averages with the scores obtained on the various scales. Izard (1962) found that the achievement scale of the EPPS correlated .28 and .17 with cumulative grade point averages for males and females, respectively. In another study, Weiss, Wertheimer and Groesbeck (1959) discovered that grade point average correlated .42 with the achievement scale of the EPPS. For females, academic achievement correlates positively with the achievement and dominance scales and negatively with nurturance, as measured by the Edwards Personal Preference

Schedule, while, for males, academic achievement correlated positively with order and negatively with dominance, as revealed in research conducted by Lang, Sferra and Seymour (1962). Bendig (1958) in a correlation analysis of EPPS scores and grades obtained in an introductory psychology course, found that the Edwards' achievement scale is a valid predictor of achievement in this specific course and demonstrated a correlation with course achievement of approximately .37. However, other researchers have not come to such positive conclusions concerning the use of the Edwards Personal Preference Schedule. In fact, Bachman (1964) concluded that consideration of the data dealing directly with prediction of overachievement suggests that the need achievement scale of the Edwards Personal Preference Schedule is of little value in differentiating over and underachievers. Osborne's study (1964) revealed an even more negative finding: none of the needs measured by the EPPS was significantly correlated with grade point average. Furthermore, Demos and Spolyar (1961) discovered no significant differences between achievers and underachievers and between overachievers and non-achievers on the EPPS scales.

Conclusions of Review of the Literature

Research on relating non-intellectual factors to levels of academic achievement presents a somewhat consistent though disjointed pattern. It is difficult to make many generalizations because of the different criteria and instruments used in the studies. In a large portion of the studies, the subjects were selected from the gifted student body. These research projects were designed to discover differences between high and low achievers of high ability. In these cases, the

findings may not be applicable to the general student population.

In some instances, the studies have been concerned with a single sex, so generalizations cannot be made for both sexes since the level of academic achievement is, apparently, sex-related. Studies also vary in the educational level under consideration although the more systematic studies seem to have been concentrated at the collegiate level. Any conclusions drawn from the lower levels of education would need further verification before being applied to the level of higher education.

Moreover, the instruments used in the studies have varied. To determine the level of achievement, different methods are used to relate grade-point average to some measure of ability by using standardized tests. Instruments used to measure non-intellectual factors vary from questionnaires to projective techniques designed to discover differences in personality characteristics. They also include interviewing, sentence completion, adjective selection and observation.

Some of the studies and observations have been made in clinical and counseling settings. Ganzhorn (1961) and others have pointed out that a selective factor is operating when students seek counseling so the findings and conclusions drawn from these settings may have doubtful validity for a cross section of the student population, even for the same university.

Although little has been definitely decided about the non-intellectual characteristics of overachievers and underachievers, those who are functioning in the student personnel field need to know as much as possible about the students with whom they deal. Findings of this study should be of value to those involved in counseling students.

Educators have also shown a concern not only for low academic achievement but also for student failure and the high drop-out rate among college freshmen. College admissions officers should also be able to utilize the findings of this study in their work.

Thus, this study seeks to determine the relationship, if any, between intellectual disposition, as measured by the Omnibus Personality Inventory, and overachievement and underachievement, determined by the ACT composite score and cumulative grade point average achieved by first semester freshmen males in the College of Arts and Sciences at Oklahoma State University during the Fall semester, 1970-1971.

CHAPTER III

METHOD AND PROCEDURE

In order to make a study of the relationship between intellectual disposition and levels of academic achievement, the design for the study had to be such that a relationship would be shown if one were present: a sample had to be drawn so that the different levels of achievement were represented; instruments for evaluating levels of achievement and intellectual disposition of the subjects had to be developed and a statistical method had to be used to determine if any differences which were found were statistically significant.

Selection and Description of the Sample

The sample was obtained from the population of male freshmen in the College of Arts and Sciences at Oklahoma State University enrolled in twelve or more hours for the Fall semester, 1970-1971.

From this population, two groups were defined: overachievers and underachievers. The twenty-eight overachievers were those persons with a cumulative grade point average of 3.00 or above (on a 4.00 scale where A=4, B=3, C=2, D=1, F=0) who had obtained a composite score of 21 or below on the American College Test which ranks them at the 68th percentile or lower on a scale for college bound students in Oklahoma who have participated in the American College Testing Program.

The twenty male students designated as underachievers had a cumulative grade point average of 1.75 or below while obtaining a composite score of 24 or above on the American College Test thus ranking them at the 84th percentile or above which means that they scored as well or better than 84 percent of the people in Oklahoma who participated in the American College Testing Program.

Instruments for Evaluating Over and Underachievement

The selection of the two levels of academic achievement, over and under, as used in this study, was based on the assumption that the predictor of potential for achievement was valid and that the criterion for determining whether or not achievement had occurred reliably represents scholastic success. The composite ACT score was used as the predictor and the first semester grade point average for males enrolled as first semester freshmen in the College of Arts and Sciences as the criterion for academic success. These were assumed to be valid instruments for determining levels of academic achievement for several reasons.

High school grade point averages are generally accepted as the most reliable predictor of college grades, but it was assumed that many factors that might have related to academic achievement in college, one of them being intellectual disposition, might also have been influencing grades in high school. The variation in high school grading was not known for the schools from which the first semester freshmen came which would further minimize the value of high school grades as predictors for the purposes sought in this study.

American College Test (ACT)

For this study, the composite American College Test (ACT) score was considered to be the best predictor of potential to do college work among the various predictors. According to the manual of the American College Testing Program, it:

> ...is designed to provide participating colleges (and high schools) with advance information concerning the general educational development attained by the college-bound high school senior in each of four major areas of the curriculum: English, mathematics, the social studies, and the natural sciences. The major purposes of the test program are:
>
> (1) to supply an ability measure, predictive of academic success in college...;
>
> (2) to provide a composite measure of educational development and of college potential...;
>
> (3) to help colleges place entering freshmen in appropriate class sections in introductory courses--particularly in English and mathematics;
>
> (4) to help colleges screen students whose requests for advanced placement deserve careful consideration...;
>
> (5) to provide dependable and comparable information for pre-college counseling and for on-campus educational guidance (ACT, 1965, p. 4).

The reliability of the composite ACT score was estimated from a study of 9,371 Oklahoma high school male seniors who planned to enroll in college in 1969-1970. The mean composite ACT score was found to be 19.6 with a standard deviation of 5.30 and a reliability estimated at .94 when ascertained by the odd-even technique (ACT, 1969, p. 5).

Writers of the manual maintain that the ACT test has high content validity (ACT, 1965, p. 17). The manual presents, as evidence of the validity of the ACT, the correlations obtained from relating the National Merit Scholarship Qualifying Test to grade point averages

at different colleges. These correlations tend to run close to .50 although one school reported one as low as .35 while another one reported a correlation of .59.

The rationale for using the individual first semester grade point averages as representative of the amount of academic achievement is based on the assumption that the faculty is able to evaluate the amount of learning and can assign a letter grade to represent this learning. There is more recent evidence to confirm Harris' (1940) contention, after a review of the literature on academic achievement in 1940, that first term grade averages in college are the best predictor of future college work that is available. Thus, students tend to be consistently rated as they were as first semester freshmen. This appears to support the reliability of first semester grades as a measure of learning which occurred during the first semester.

It is also assumed that the faculty and the administration expect students to achieve at a level of which they are capable; students of high ability are expected to make high grades while those of lower ability are expected to make lower grades.

It was further assumed that the students responded on the inventory in a manner which reflected their insights and feelings to the questions being asked.

The Omnibus Personality Inventory

The Omnibus Personality Inventory-Form F (OPI) (see Appendix A) is a self-report inventory containing 385 statements

> ...designed to measure the differences among college students with regard to their attitudes, opinions and feelings on a variety of subjects (Heist and Yonge, 1968, p. 4).

The student is instructed to read each statement in the booklet and mark his responses on a separate answer sheet. He is to mark true if the statement is true or mostly true for him and false if it is false or not usually true about him. Although the OPI is composed of fourteen scales, Thinking Introversion, Theoretical Orientation, Estheticism, Complexity, Autonomy, Religious Orientation, Social Extroversion, Impulse Expression, Personal Integration, Anxiety Level, Altruism, Practical Outlook, Masculinity-Femininity, and Response Bias, the intellectual disposition category with which this study is concerned is derived from only the first six scales. To determine the intellectual disposition category of an individual, the answer sheet is first scored for the Thinking Introversion, Theoretical Orientation, Estheticism, Complexity, Autonomy and Religious Orientation scales. These raw scores are then converted to standard scores which range from twenty to eighty. Further, the average of the standard scores obtained on the Thinking Introversion, Theoretical Orientation, Estheticism and Complexity scales is computed. Addition of the scores on the Thinking Introversion and Theoretical Orientation scales, and the standard score of either Thinking Introversion or Theoretical Orientation as well as the score obtained on the Autonomy or Religious Orientation scale are then considered before assigning an individual to a specific intellectual disposition category.

Four scales, Thinking Introversion, Theoretical Orientation, Estheticism, and Complexity, serve as the primary criteria and two others, Autonomy and Religious Orientation, are supplementary or secondary criteria. Descriptions of these scales follow:

(1) Thinking Introversion--43 items. Persons scoring high on this measure are characterized by a liking

for reflective thought and academic activities. They express interests in a broad range of ideas found in a variety of areas, such as literature, art and philosophy. Their thinking is less dominated by immediate conditions and situations, or by commonly accepted ideas, than that of thinking extroverts (low scorers). Most extroverts show a preference for overt action and tend to evaluate ideas on the basis of their practical, immediate application, or to entirely reject or avoid dealing with ideas and abstractions.

(2) Theoretical Orientation--33 items. This scale measures an interest in, or orientation to, a more restricted range of ideas than is true of Thinking Introversion. High scorers indicate a preference for dealing with theoretical concerns and problems and for using the scientific method in thinking; many are also exhibiting an interest in science and in scientific activities. High scorers are generally logical, analytical, and critical in their approach to problems and situations.

(3) Estheticism--24 items. High scorers endorse statements indicating diverse interests in artistic matters and activities and a high level of sensitivity and response to esthetic stimulation. The content of the statements in this scale extends beyond painting, sculpture, and music and includes interests in literature and dramatics.

(4) Complexity--32 items. This measure reflects an experimental and flexible orientation rather than a fixed way of viewing and organizing phenomena. High scorers are tolerant of ambiguities and uncertainties; they are fond of novel situations and ideas. Most persons high on this dimension prefer to deal with complexity, as opposed to simplicity, and very high scorers are disposed to seek out and to enjoy diversity and ambiguity.

(5) Autonomy--43 items. The characteristic measured by this scale is composed of liberal, non-authoritarian thinking and a need for independence. High scorers show a tendency to be independent of authority as traditionally imposed through social institutions. They oppose infringements on the rights of individuals and are tolerant of viewpoints other than their own; they tend to be realistic, intellectually and politically liberal, and much less judgmental than low scorers.

(6) Religious Orientation--26 items. High scorers are skeptical of conventional religious beliefs and practices and tend to reject most of them,

> especially those that are orthodox or fundamentalistic in nature. Persons scoring around the mean are manifesting a moderate view of religious beliefs and practices; low scorers are manifesting a strong commitment to Judaic-Christian beliefs and tend to be conservative in general and frequently rejecting of other viewpoints (Heist and Yonge, 1968, p. 4).

The system of Intellectual Disposition Categories (IDC) is a way of classifying or locating persons at eight different points on a "continuum" of intellectual disposition. Furthermore, according to the writers of the Omnibus Personality Inventory manual,

> The persons distributed among the eight categories of this dimension are the products of a variety of background experiences and have distinctly dissimilar orientations toward learning and scholastic activities (Heist and Yonge, 1968, p. 23).

Consequently, if the intellectual disposition category is a valid indicator of interests in academic activities, then it should distinguish between the two groups defined above, underachievers and overachievers.

Although the validation data have been drawn from many sources and utilize several types of information, correlations with other measures provide most of the evidence.

Much of the information about the Thinking Introversion (TI) scale supports the interpretation of this scale as reflecting a general interest in ideas and, to some extent, a "scholarly orientation." For instance, a substantial relation has been found to the Economic (-.63) and Aesthetic (.47) measures of the Allport, Vernon and Lindzey Study of Values test. The idealistic, non-applied aspects of Thinking Introversion are reflected in the correlations between TI and the Strong Vocational Interest Blank for Men which suggests

> ...that high scorers have interests more congruent with men engaged in occupations which require dealing with abstract ideas and concepts; low scorers show interests congruent with those of men in occupations characterized by more immediate, practical concerns (Heist and Yonge, 1968, p. 28).

Furthermore, the correlation of .68 between TI and Thoughtfulness on the Guilford-Zimmerman Temperament Survey as well as the correlation of -.50 with the Business Interest scale on the Opinion, Attitude and Interest Survey (OAIS) are supportive of the theory that Thinking Introversion reflects an interest in abstract, theoretical thinking not dominated by practical concerns. A correlation of .52 with the Literary score on the Kuder Preference Record-Vocational reflects the literary interest component of TI. Of particular interest concerning the interpretation of TI as a measure of scholarly orientation are the significant correlations (.33 to .42) with seven of eight faculty ratings of graduate students concerning different aspects of scholarly behavior (Heist and Yonge, 1968, p. 28).

Supportive evidence of the Theoretical Orientation (TO) scale as reflecting an interest in problem solving, logical or critical thinking and science has also been found in a variety of correlations with established measures. For example, TO correlates .62 with the Study of Values Theoretical scale and .53 with an experimental measure of problem-solving ability. Furthermore, Theoretical Orientation correlates .46 and .52 with the SAT Mathematical and Verbal scales, respectively. Evidence for the theoretical-scientific interest component is found in the coefficients of correlation between TO and the following scales of the Strong Vocational Interest Blank: Psychologist (.51), Physician (.42), Mathematician (.39), Physicist (.39), Engineer (.36), Chemist (.44), Banker (-.45) and Mortician (-.46)

whereas on the Kuder Preference Record, Theoretical Orientation correlates significantly with the Scientific (.39) and Clerical (-.39) interest scales. On the GZTS, a correlation of .51 with the Thoughtfulness scale is supportive of the theory that TO reflects an interest in logical, critical thinking. Further evidence in support of the validity of the Theoretical Orientation scale is found in the significant correlations of .35 and .33 with faculty ratings for "self-reliance and originality" and "overall effectiveness as a graduate student and future scholar," respectively (Heist and Yonge, 1968, p. 29).

Etheticism, as expected, correlates well with the Study of Values Aesthetic measure, with the Kuder Literary and Musical interest scales as well as the Creative Personality measure (.36) and the Humanities Interest measure (.47) of the Opinion, Attitude and Interest Survey. However, Estheticism does not correlate with the Artistic interest scale of the Kuder (Heist and Yonge, 1968, p. 29).

In contrast to the three above scales, Complexity (Co) reflects an experimental or flexible orientation in the area of perceiving and organizing phenomena. Moderate correlations (.32) have been obtained between Complexity and a preference for complex, ambiguous designs and with problem solving of the type which requires restructuring, defined as the ability to see new aspects of a problem situation. Of greater importance, Co correlates .44 with a measure of construct complexity "(a measure of the number of varied perspectives from which a subject prefers to view a limited range of concepts)" (Heist and Yonge, 1968, p. 29). Furthermore, Complexity correlates .40 with the Flexibility scale on the California Psychological Inventory and with the Socialization scale (-.40). On the OAIS, Complexity correlates

highest with the measures of Creative Personality (.58) and Intellectual Quality (.52) (Heist and Yonge, 1968, p. 29).

Although the validation data concerning Autonomy are not as clear perhaps as the data for other scales, the information available is in line with the non-authoritarian, intellectually liberal aspect of this dimension as demonstrated by the correlations with the Economic (-.29), Aesthetic (.44) and Religious (-.23) scales of the Study of Values test. On the Myers-Briggs Type Indicator, Autonomy correlates with Intuition and Perception, of which the latter "is theoretically relevant to a measure of non-authoritarianism" (Heist and Yonge, 1968, p. 30). For men, Autonomy correlates with the CPI measures of Capacity for Status (.38), Social Presence (.35), Socialization (-.30), Achievement via Independence (.46), and Flexibility (.45). Moreover, on the Edwards Personal Preference Schedule, Autonomy correlates highest (.37) with the EPPS need for Autonomy (Heist and Yonge, 1968, p. 30).

Although the intellectual-liberal component of the Religious Orientation dimension is evident from the moderate correlations (.32) with the Study of Values Theoretical and Aesthetic measures, the only available correlation statistic of direct relevance is -.66 with the Study of Values Religious score.

For the intellectual disposition category, one major assumption "is that the higher the category,...the more the student is oriented toward learning for its own sake" (Heist and Yonge, 1968, p. 34). This assumption is supported by data which indicate that students who attach little or no importance to getting good grades obtain a higher median IDC score than do those who attach a moderate or a good deal of attachment to getting good grades. Moreover, as freshmen, those

students who aspire to graduate or professional schooling have higher median IDC scores than those who intend to terminate their education with a bachelor's degree. Furthermore, many students with a relatively low median IDC score are found to have a vocational orientation toward education. Other evidence indicates that the IDC scores of students are related to family religious background, church attendance as well as self-rated degree of religiosity. It was found that the higher the IDC score tends to be, the less religious the student and the more liberal the religious orientation of his family. However, these relationships must be understood in the context of other variables, at least for the particular sample of students, because with non-religious or less religious homes, there are, generally, frequent concomitants, such as higher levels of ability and more education. Other validation data in support of the intellectual disposition category are the correlations (.39 to .51) of the first five scales with the Myers-Briggs Type Indicator Intuition scale, which supports the theory of the intellectual component of these scales (Heist and Yonge, 1968, p. 29).

The reliability coefficients of correlation in relation to the internal consistency of the first six scales of the Omnibus Personality Inventory ranged from .73 to .91 and were computed from the scores obtained by the total standardization sample with the Kuder-Richardson Formula 21. Time intervals between the two test administrations to determine test-retest reliability were between three and four weeks. Reliability coefficients ranged from .84 to .94 and from .87 to .93 for two different samples on the six scales. These reliability coefficients of correlation reflect the tendency of individuals to maintain their first scores on the second testing (Heist and Yonge, 1968, p. 49).

Reliability coefficients for the Intellectual Disposition Category classification were also computed on a small sample of sixty-seven women. From the first to the second testing (approximately one month) fifty-five percent of the women remained in the same category whereas ninety-four percent remained either in the same category or within one category of their first classification. A test-retest coefficient of .88 was obtained by treating each category as a score on an eight-point scale (Heist and Yonge, 1968, p. 49).

Collection of the Data

The Omnibus Personality Inventory was administered to twenty-eight male freshmen overachievers and twenty male freshmen underachievers who were enrolled in the College of Arts and Sciences at Oklahoma State University for the Fall semester 1970-71.

Subjects were contacted by means of a letter over the signature of the Director of Student Services for the College of Arts and Sciences and told that a survey was being conducted on a representative sample of freshmen in the College of Arts and Sciences regarding their attitudes, opinions and ideas. Furthermore, it was emphasized that in no way would their answering the questionnaire affect their grades or academic standings. Twenty-three came as a result of the letter. Other students who did not come at this time were contacted personally by telephone and an additional twenty-five subjects were obtained.

Hypotheses to be Tested

Major Hypothesis

Although there have not been any studies relating intellectual disposition, as such, to grade point average, the description of the intellectual disposition category, as measured by the Omnibus Personality Inventory, suggests the following null hypothesis:

(1) There is no significant difference between the intellectual disposition means of underachievers and overachievers.

It is expected, however, from the previous review of related research, that overachievers will be in higher intellectual disposition categories (Category 1 being the highest) than underachievers.

Secondary Hypotheses

Furthermore, it was expected that overachievers would score significantly higher on the scales, Thinking Introversion, Theoretical Orientation, Complexity and Religious Orientation, than underachievers. However, because of the nature of the characteristics measured by the scales, Estheticism and Autonomy, no such prediction could be made about the scores obtained on these scales.

Such expectation would suggest the following null hypotheses:

(1) There is no significant difference between the means of the scale, Thinking Introversion, for overachievers and underachievers.

(2) There is no significant difference between the Theoretical Orientation scale means for overachievers and underachievers.

(3) There is no significant difference between the means on the scale, Complexity, for overachievers and underachievers.

(4) There is no significant difference between the Religious Orientation scale means for overachievers and underachievers.

Analysis of the Data

In order to discover the relationship, if any, which exists between intellectual disposition and levels of academic achievement, each inventory was scored for the first six scales in order to obtain an intellectual disposition index. The t-test for independent samples was used to determine if there was a statistically significant difference (α=.05) between the intellectual disposition means for overachievers and underachievers. Further analysis with the t-test for independent samples was conducted to ascertain which of the following scales, if any, Thinking Introversion, Theoretical Orientation, Complexity and Religious Orientation, differentiated significantly (α=.05) between overachievers and underachievers.

CHAPTER IV

RESULTS AND DISCUSSION

Major Hypothesis

The major hypothesis stated that no significant differences would be found between the intellectual disposition means of overachievers and underachievers. The t-test for two independent samples yielded a t equal to .1415 which is not statistically significant at the five percent level of significance (see Table I). Thus, the null hypothesis was not rejected and the observed differences between the two groups can be attributed to spurious differences; the two groups are not significantly different in relation to the intellectual disposition index. However, the limited amount of variability in the intellectual disposition index (1-8) would make it very difficult to find a significant difference between overachievers and underachievers.

Although the intellectual disposition category may differentiate between students with various academic interests, values, and aspirations; with various life and occupational values; with different intellectual-cultural interests and backgrounds, as well as different religious attitudes and behaviors, it does not appear to differentiate between students who are motivated to achieve academically as an assessment of educational gain as opposed to those who lack this motivation.

TABLE I

MEANS, STANDARD DEVIATIONS, AND t VALUES FOR OVER AND UNDERACHIEVERS ON THESE SCALES

Scale	$\overline{X}_O$	$\overline{X}_U$	s_O	s_U	t
Intellectual Disposition	5.00	4.95	1.2817	1.0234	.1415 N.S.
Thinking Introversion	49.61	47.95	8.0726	8.0092	.6886 N.S.
Theoretical Orientation	48.71	50.80	6.9480	7.2152	-.9877 N.S.
Complexity	53.46	55.50	10.1400	8.8515	-.7072 N.S.
Religious Orientation	52.82	54.05	4.6526	5.0147	-.8546 N.S.

N.S. - not significant at the five percent level.

In other words, the intellectual disposition index appears to be an indicator of persons varying from, at one end of the continuum, those who manifest an interest in very broad intellectual activities, usually to an extent resulting in literary pursuits in a variety of areas and a high level of esthetic sensitivity and appreciation, to, at the other end of the continuum, those who need to deal with a tangible world and resort to a pragmatic, generally nonconceptual approach to problems. Either of these definitions could apply to an overachiever or an underachiever. Those students in the higher categories of the intellectual disposition index tend to reach out for a variety of perceptual and cognitive experiences which are intrinsically meaningful. However, this desire to experience and learn may pose a problem in the area of formalized academic activity. Because of the nature of the educational system, it requires some narrowing of interests as well as delimitation of commitments. Consequently, those who were unwilling to narrow their interests in various intellectual pursuits and confine themselves to specific tasks and assignments within the educational system might easily find themselves classified as "underachievers."

Those individuals who are in the lower categories of the intellectual disposition index are usually not interested in intellectual ideas, abstract thinking or conceptualizing problems in new ways. This need to work with a tangible world may leave this type of student unmotivated to academically achieve also unless for some specific goal, such as a certain type of job, more money, etc. Thus, these individuals might be either "overachievers" or "underachievers."

However, the absence of any intrinsic intellectual interests does not always correlate strongly with poor academic achievement. Actually,

many individuals achieve good grades, manifest strong goal orientations (getting a degree or good vocational preparation) and thrive on the competitive aspects of educational evaluation. Certainly, these students are motivated but they pursue learning as a means to an end and seldom for the intrinsic satisfactions gained from the acquisition of knowledge or the process of inquiry. Consequently, these individuals would be called "overachievers" although they manifest little intrinsic interest in intellectual and/or academic activities.

Consequently, it appears that we are considering two dimensions or continua which are parallel to each other and seemingly unrelated. One continuum describes individuals in relation to their intellectual disposition and the other classifies them on an educational achievement criterion (grades). Whereas many researchers, in the past, have assumed that they are correlated to some extent, further research in this area may prove more successful if the assumption were made that there is absolutely no correlation between intellectual interests and academic achievement. One may be very interested in intellectual activities and ideas and still be unmotivated to academically achieve. Or one may be uninterested in abstract, conceptual problems or academic activities and be quite motivated to achieve high grades. Furthermore, some persons may be very interested in intellectual pursuits and also be motivated to work for grades whereas others may be quite disinterested in intellectual activities and pursuits and not motivated to achieve academically. Thus, the correlation between these two continua would appear to be sporadic and further research in the prediction of college grades might be more successful if the correlation between intellectual interests and motivation or lack of motivation to achieve high grades

were ignored and simply work with the motivation to achieve academically.

Secondary Hypotheses

As null hypotheses, the secondary hypotheses stated that there are no significant differences between the means on the scales, Thinking Introversion, Theoretical Orientation, Complexity and Religious Orientation, of overachievers and underachievers.

Analysis of the scores obtained on the Thinking Introversion scale through the use of the t-test for two independent samples revealed a t equal to .6886 which is not statistically significant at the five percent level of significance (see Table I). Thus, overachievers and underachievers may be viewed as being not significantly different in relation to the Thinking Introversion dimension. Seemingly, this "liking for reflective thought and academic activities" (Heist and Yonge, 1968, p. 4) does not differentiate between those motivated to academically achieve and those unmotivated toward academic achievement.

Utilizing the t-test for two independent samples for analysis of the scores obtained on the Theoretical Orientation scale yielded a t equal to -.9877 which is not statistically significant at the five percent level of significance (see Table I). Consequently, in relation to the Theoretical Orientation scale, the two groups, overachievers and underachievers, are not significantly different. Simply, the "preference for dealing with theoretical concerns and problems and for using the scientific method in thinking" (Heist and Yonge, 1968, p. 4) does not appear to indicate a difference between those who are motivated

to achieve high grades and those who are not motivated to achieve high grades.

Analysis of the scores obtained on the Complexity scale through the use of the t-test for two independent samples revealed a t equal to -.7072 which is not statistically significant at the five percent level of significance (see Table I). Thus, the overachiever and underachiever groups may be viewed as not significantly different in relation to the Complexity dimension. Apparently, "an experimental and flexible orientation rather than a fixed way of viewing and organizing phenomena" (Heist and Yonge, 1968, p. 4) does not either differentiate between overachievers and underachievers.

Further utilization of the t-test for two independent samples for analysis of the scores obtained on the Religious Orientation scale yielded a t equal to -.8546 which is not significant at the five percent level of significance (see Table I). Consequently, these two groups, overachievers and underachievers, are not significantly different in relation to the Religious Orientation dimension. Furthermore, the independent general intellectual liberalism primarily assessed by the Religious Orientation scale apparently does not differentiate between overachievers and underachievers.

To summarize, the assessment of various aspects of an intellectual-liberal dimension, called intellectual disposition, does not appear to have any relation to level of academic achievement, i.e., whether one is motivated to achieve within the formal educational system or whether he is not motivated to achieve. Motivation to achieve academically seems to be a separate dimension uncorrelated to interests in intellectual and academic activities (intellectual disposition).

CHAPTER V

SUMMARY AND CONCLUSIONS

Educators and psychologists have been interested, particularly in recent years, in levels of academic achievement. The world situation has stimulated a greater concern for the development of the intellectual resources of our nation. Attempts have been made to obtain a clearer understanding of the factors which are related to academic achievement. This study sought to determine primarily, the relationship, if any, between intellectual disposition and levels of academic achievement.

The Omnibus Personality Inventory-Form F was administered to twenty-eight male freshmen "overachievers" and twenty male freshmen "underachievers." Overachievers were those individuals who had obtained a composite score of 21 or below on the American College Test thus ranking them at the 68th percentile or below on a scale for Oklahoma high school seniors and who also achieved a grade point average of 3.00 or above in the Fall semester, 1970-71.

Underachievers were those students who had obtained a composite score of 24 or above which ranked them at the 84th percentile or above on a scale for Oklahoma high school seniors and who had achieved a grade point average of 1.75 or below in the Fall semester, 1970-71. All subjects were enrolled in the College of Arts and Sciences at Oklahoma State University as freshmen in twelve or more semester hours.

Analysis of the scores obtained on the separate scales, Thinking Introversion, Theoretical Orientation, Complexity and Religious Orientation, as well as the intellectual disposition index for the above two groups, overachievers and underachievers, utilizing the t-test for two independent samples, revealed no significant differences between these two groups. Consequently, these groups must be viewed as not significantly different in relation to the dimensions of Thinking Introversion, Theoretical Orientation, Complexity, Religious Orientation and intellectual disposition. However, a larger sample might have revealed significant differences between overachievers and underachievers which were not apparent with the small number of subjects used in this study.

From this study, the conclusion may be drawn that intellectual disposition, per se, and levels of academic achievement are actually two parallel continua having little, if any, relationship. In other words, working with academic achievement is simply working with the motivation or lack of motivation to obtain high grades. One may either conform to the rules of an educational subculture and receive its rewards (high grades) or one may not conform and thereby refuse to accept the rewards offered in this system (high grades). Furthermore, in dealing with intellectual disposition, one is concerned with an interest in reflective and abstract thinking, ability to conceptualize, a freedom to accept new ideas, etc. which apparently has little relationship, if any, to a desire to achieve high grades or a lack of desire to achieve high grades. Future research in this area might attempt to isolate and measure, if possible, the motivation to achieve academically without consideration of other irrelevant variables

which would not contribute to a better understanding of a desire or lack of desire to achieve academically.

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APPENDIX A

OMNIBUS PERSONALITY INVENTORY-FORM F

OPI

Form F

Paul Heist
George Yonge
T. R. McConnell
Harold Webster

PLEASE READ THESE INSTRUCTIONS CAREFULLY.
DO NOT OPEN THE BOOKLET UNTIL YOU ARE TOLD TO DO SO.

This is not an ability or achievement test, but a means of reporting your attitudes, opinions, and feelings regarding a variety of subjects. Try to respond to all statements. However, if you would prefer not to respond to a specific statement, you need not do so.

In the booklet, you are to read each of the statements and decide whether it is *TRUE as applied to you*, or *FALSE as applied to you*. If a statement is TRUE or MOSTLY TRUE for you, blacken the answer space marked T. If a statement is FALSE or NOT USUALLY TRUE for you, blacken the answer space marked F. Make your marks heavy and black.

Use a soft lead pencil to mark your responses on the answer sheet. *Do not make any marks on this booklet.* Erase completely any answer you wish to change. *Do not leave any blank spaces if you can avoid it.*

Be sure that the number of each response you mark on the answer sheet agrees with the number of the corresponding statement in this booklet.

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DO NOT MAKE ANY MARKS ON THIS BOOKLET

1. I would like to learn more about the history of human thought.
2. I take an active part in group or class discussions.
3. I am cordial to strangers.
4. I dislike mathematics.
5. I would enjoy showing foreigners around my town or state.
6. I should like to belong to several clubs or lodges.
7. I want to be an important person in the community.
8. I work better when I am not being observed by others.
9. I enjoy reading Shakespeare's plays.
10. It is highly unlikely that astrology will ever be able to explain anything.
11. I am interested in the historical development of American jazz.
12. I do not introduce myself to strangers at a social gathering.
13. Usually I prefer known ways of doing things rather than trying out new ways.
14. I prefer to eat in a small rather than a large restaurant or cafeteria.
15. I have often gone against my parents' wishes.
16. I prefer having a principle or theory explained to me rather than attempting to understand it on my own.
17. I prefer popular music to classical music.
18. I would enjoy being a famous person.
19. I get stage fright when I have to appear before a group.
20. I enjoy playing cards for money.
21. I generally attend the meetings of school or community organizations.
22. Society puts too much restraint on the individual.
23. I enjoy teas and receptions.
24. I study and analyze my own motives and reactions.
25. I enjoy hearing a great singer in an opera.
26. I talk with strangers when I travel.
27. I enjoy looking at paintings, sculpture, and architecture.
28. More than anything else, it is good hard work that makes life worthwhile.
29. I am happy most of the time.
30. I enjoy writing a critical discussion of a book or article.
31. I have strong likes and dislikes for certain colors.
32. Parents are much too easy on their children nowadays.
33. I have always enjoyed dances.
34. It is annoying to listen to a lecturer who seems unable to make up his mind about what he really believes.
35. Our way of doing things in this nation would be best for the world.
36. It is a good rule to accept nothing as certain or proved.
37. I am a better listener than conversationalist.
38. The unfinished and the imperfect often have greater appeal for me than the completed and the polished.
39. I pray several times a week.
40. All groups can live in harmony in this country without changing the system in any way.
41. I do not like to appear on programs or to give oral reports.
42. I like to solve puzzles.
43. I am uninterested in discussions of the ideal society or Utopia.
44. At times I have a strong urge to do something harmful or shocking.
45. I leave the radio tuned to a symphony concert rather than changing to a program of popular music.
46. Every wage-earner should be required to save a certain part of his income each month so that he will be able to support himself and his family in later years.

Page Four

47. When I sit down to study it is hard to keep my mind on the material.
48. During one period when I was a youngster I engaged in petty thievery.
49. I like short, factual questions in an examination better than questions which require the organization and interpretation of a large body of material.
50. I think I take primarily an esthetic view of experiences.
51. It is not the duty of a citizen to support his country right or wrong.
52. I want to know that something will really work before I am willing to take a chance on it.
53. I am aroused by a speaker's description of unfortunate conditions in a locality or country.
54. I like to be with a crowd who play jokes on one another.
55. I wish I could be as happy as others seem to be.
56. I dislike following a set schedule.
57. A strong person doesn't show his emotions and feelings.
58. In matters of religion it really does not matter what one believes.
59. I have sometimes wanted to run away from home.
60. I have difficulty in starting to do things.
61. Science should have as much to say abcut moral values as religion does.
62. I often feel that the people I meet are not interested in me.
63. I am active on the committees of school organizations.
64. I prefer people who are never profane.
65. Most nights I go to sleep without ideas or thoughts bothering me.
66. Novelty has a great appeal to me.
67. My home life was always happy.
68. At times I feel like picking a fist fight with someone.
69. I believe there is a God.
70. People ought to be satisfied with what they have.
71. I often act on the spur of the moment without stopping to think.
72. I do not like to act as a host or hostess at parties.
73. I envy the man who can walk up to anybody and tell him off.
74. I prefer to stay at home rather than attend social affairs.
75. I like to imagine what is inside objects.
76. I have had periods when I felt so full of pep that sleep did not seem necessary for days at a time.
77. In most ways the poor man is better off than the rich man.
78. I have the feeling of being detached and alone when I am in a group of people.
79. I am fascinated by the way sunlight changes the appearance of objects and scenes.
80. I often forget immediately what people say to me.
81. I hesitate to borrow money or personal belongings from others.
82. I am apt to hide my feelings in some things to the point where people may hurt me without their knowing it.
83. I have always hated regulations.
84. I would be uncomfortable in anything other than fairly conventional dress.
85. I am inclined to take things hard.
86. I would disapprove of anyone's drinking to the point of intoxication at a party.
87. At times I have had to be rough with people who were rude or annoying.
88. I have been disappointed in love.
89. I usually feel that I am drifting along in life with no particular role to play.
90. I dominate many of my acquaintances of about my own age.

PLEASE CHECK TO MAKE SURE THAT THE NUMBER OF YOUR LAST RESPONSE ON THE ANSWER SHEET AGREES WITH THE NUMBER OF THE LAST STATEMENT ON THIS PAGE.

91. I think I feel more intensely than most people do.

92. I have more trouble concentrating than others seem to have.

93. I don't blame anyone for trying to grab all he can get in this world.

94. I have had periods of days, weeks or months when I couldn't take care of things because I couldn't "get going."

95. I never worry about being different from other people.

96. Sometimes I can think of nothing but the rhythm or pulsation of certain music.

97. Assuming that I had sufficient leisure time, I would prefer to use it to develop a favorite skill rather than to do volunteer social work or public service work.

98. In a group of people, new acquaintances or strangers pay little attention to me.

99. Once a week or more often I become very excited.

100. I am curious about people but I don't feel close to them.

101. Each person should interpret the Bible for himself.

102. Often I think that life is absurd.

103. I am embarrassed by dirty stories.

104. The best way to handle people is to tell them what they want to hear.

105. No one seems to understand me.

106. I often do whatever makes me feel cheerful here and now, even at the cost of some distant goal.

107. People pretend to care more about one another than they really do.

108. I have had more than my share of things to worry about.

109. There must be something wrong with a person who is lacking in religious feeling.

110. I have been quite independent and free from family rule.

111. People often disappoint me.

112. I dislike assignments requiring original research work.

113. I tend to ignore the feelings of others when accomplishing some end that is very important to me.

114. Although I seldom admit it, my secret ambition is to become a great person.

115. I have often felt as though I had done something wrong or wicked.

116. Much of my life I've dreamed about having enough time to paint or sculpture.

117. I am a high-strung person.

118. Most people inwardly dislike putting themselves out to help other people.

119. I am not unusually self-conscious.

120. When prices are high you can't blame a person for getting all he can while the getting is good.

121. I enjoy being in a crowd just to be with people.

122. Young people sometimes get rebellious ideas, but as they grow up they ought to get over them and settle down.

123. Even when I am with people I feel lonely much of the time.

124. I don't like things to be uncertain and unpredictable.

125. The surest way to a peaceful world is to improve people's morals.

126. I like to go alone to visit new and strange places.

127. Sometimes I enjoy hurting persons I love.

128. One of the most important things children should learn is when to disobey authorities.

129. There are certain people I dislike so much that I am inwardly pleased when they are catching it for something they have done.

130. Politically I am probably something of a radical.

131. Teachers often expect too much work from students.

132. I would rather remain free from commitments to others than risk serious disappointment or failure later.

133. If I could get into a movie without paying and be sure I was not seen, I would probably do it.

134. I often find myself listening without hearing.

135. I like to fool around with new ideas, even if they turn out later to have been a total waste of time.

136. Once in awhile I feel hatred toward members of my family whom I usually love.

137. I am more realistic than idealistic, that is, more occupied with things as they are than with things as they should be.

138. At times I feel like swearing.

139. I am more interested in learning facts than in relating them to my ideas and previous experiences.

140. I discuss the causes and possible solutions of social, political, economic or international problems.

141. I feel there is a barrier between me and other persons.

142. I react to new ideas which I hear or read about by analyzing them to see if they fit in with my own point of view.

143. I shrink from facing a crisis or difficulty.

144. I show individuality and originality in my school work.

145. I am usually calm and not easily upset.

146. I enjoy listening to debates and discussions on social, economic, or political problems.

147. At times I have fits of laughing or crying that I cannot control.

148. It takes a lot of argument to convince most people of the truth.

149. Very often I find that I dislike members of the opposite sex.

150. I generally prefer being with people who are not religious.

151. I would like to enter a profession which requires much original thinking.

152. I frequently find myself worrying about something.

153. I like assignments which require me to draw my own conclusions from some data or a body of facts.

154. I would like to hunt lions in Africa.

155. My family treats me more like a child than an adult.

156. I believe in a life hereafter.

157. I would rather be a brilliant but unstable worker than a steady and dependable one.

158. I have sometimes felt that difficulties were piling up so high that I could not overcome them.

159. As a youngster I acquired a strong interest in intellectual and esthetic matters.

160. When I work, I prefer to be alone rather than have others around me.

161. When it comes to differences of opinion in religion we should be careful not to compromise with those whose beliefs are different from ours.

162. I am so touchy on some subjects that I can't talk about them.

163. When traveling I am more interested in seeing the scenic or historical spots than in making new acquaintances.

164. I am not afraid of snakes.

165. The trouble with many people is that they don't take things seriously enough.

166. I prefer a long, rather involved problem to several shorter ones.

167. I sometimes feel that I am several persons rather than just one.

168. I always see to it that my work is carefully planned and organized.

169. It doesn't matter to me what church a man belongs to, or whether or not he belongs to a church at all.

170. I shy away from serving as the chairman of a committee.

171. There have been times when I could not control my movements or speech but knew what was going on around me.

172. It is all right to get around the law if you don't actually break it.

173. I prefer to engage in activities from which I can see definite results rather than those from which no tangible or objective results are apparent.

174. I am slow to accept new acquaintances as friends.

175. Every person should have complete faith in a supernatural power whose decisions are obeyed without question.

176. Perfect balance is the essence of all good composition.

177. Sometimes I feel like smashing things.

178. Straightforward reasoning appeals to me more than metaphors and the search for analogies.

179. I like to do work which requires little study or thought after it is once learned.

180. I am certainly lacking in self-confidence.

181. The idea of doing research does not appeal to me.

182. I often get the feeling that I am not really part of the group I associate with and that I could separate from it with little discomfort or hardship.

183. I am more interested in the application of principles and theories than in the critical consideration of them.

184. I cannot keep my mind on one thing.

185. I question the accuracy of statements made in my textbooks or reference books.

186. I certainly feel useless at times.

187. I read articles or books that deal with new theories and points of view within my field of interest.

188. Divorce is often justified.

189. Science has its place, but there are many important things that can never possibly be understood by the human mind.

190. I believe I am no more nervous than most persons.

191. I analyze what I like or dislike about a movie or play which I have seen.

192. I become so enthusiastic that my enthusiasm spreads to those around me.

193. I enjoy solving problems of the type found in geometry, philosophy, or logic.

194. A strong person will be able to make up his mind even on the most difficult questions.

195. I don't care much for scientific or mathematical articles.

196. I tend to make friends with men who are rather sensitive and artistic.

197. Uncontrolled impulsiveness is not part of my make-up.

198. It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important.

199. It's better to stick by what you have than to try new things you don't really know about.

200. Usually after arising I walk around for awhile more asleep than awake.

201. I would enjoy writing a paper explaining a theory and presenting the arguments for and against it.

202. I would like to collect prints of paintings which I personally enjoy.

203. Life is a strain for me much of the time.

204. I like to discuss philosophical problems.

205. I find it hard to keep my mind on a task or job.

206. I would rather not have responsibility for other people.

207. I am unable to explain the reasons for my opinions and reactions.

208. My church, faith, or denomination has the only true approach to God.

209. When I work on a committee I like to take charge of things.

210. I am more sensitive than most people.

211. When science contradicts religion it is because of scientific hypotheses that have not been and cannot be tested.

212. I enjoy discarding the old and accepting the new.

213. I am tantalized by a question or problem until I can think through to an answer that is satisfactory to me.

214. I prefer to work with others rather than alone.

215. I don't like to work on a problem unless there is a possibility of coming out with a clear-cut and unambiguous answer.

216. It is hard for me to communicate my innermost thoughts.

PLEASE CHECK TO MAKE SURE THAT THE NUMBER OF YOUR LAST RESPONSE ON THE ANSWER SHEET AGREES WITH THE NUMBER OF THE LAST STATEMENT ON THIS PAGE.

Page Eight

217. I have read little or none of the Bible.

218. I am bored by discussions of what life will be like one hundred years from now.

219. My way of doing things is apt to be misunderstood by others.

220. In school I was sometimes sent to the principal for cutting up.

221. I sometimes wake up to find myself thinking about some impractical or irrelevant problem.

222. In the final analysis, parents generally turn out to be right about things.

223. I sometimes feel that I am about to go to pieces.

224. I like to read about science.

225. I like to go to parties and other affairs where there is lots of loud fun.

226. I like to have a place for everything and everything in its place.

227. The prophets of the Old Testament predicted the events that are happening today.

228. It doesn't bother me when things are uncertain and unpredictable.

229. Our modern industrial and scientific developments are signs of a greater degree of civilization than that attained by any previous society, for example, by the Greeks.

230. Husbands, rather than wives, should have the final voice in family matters.

231. God hears our prayers.

232. For most questions there is just one right answer, once a person is able to get all the facts.

233. I have had very peculiar and strange experiences.

234. I prefer social functions to which only a small group of intimate friends are invited.

235. I prefer the practical man any time to the man of ideas.

236. It is better never to expect much; then you are rarely disappointed.

237. I like to listen to primitive music.

238. It is a pretty callous person who does not feel love and gratitude for his parents.

239. I like to read about artistic or literary achievements.

240. When a man is with a woman he is usually thinking about things related to her sex.

241. I have little or no idea what I will be like a few years from now.

242. I have never done any heavy drinking.

243. In religious matters I believe I would have to be called a skeptic or an agnostic.

244. There usually seems to be some kind of barrier between me and the opposite sex.

245. Every person ought to be a booster for his own home town.

246. I have had strange and peculiar thoughts.

247. Nothing about communism is any good.

248. I tend to make decisions on the spur of the moment.

249. I often feel as if things were not real.

250. Nothing in life is worth the sacrifice of losing contact with your family.

251. The best theory is the one that has the best practical applications.

252. The only meaning to existence is the one man gives to it.

253. I hesitate to ask the cooperation of others in carrying out activities such as the arrangements for a party.

254. I have the wanderlust and am happiest when I am roaming or traveling around.

255. Often I wonder who I really am or what I should really be like.

256. I like modern art.

257. If I were a university professor and had the necessary ability, I would prefer to teach chemistry and physics rather than poetry.

258. If you start trying to change things very much you usually make them worse.

259. In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.

260. One needs to be wary of those persons who claim not to believe in God.

261. One of my aims in life is to accomplish something that would make my mother proud of me.

262. I spend a lot of time listening to serious music.

263. Sometimes an unimportant thought will run through my mind and bother me for days.

264. I find it difficult to carry on a light conversation with strangers.

265. Many of my dreams are about sex.

266. Many of my friends would probably be considered unconventional by other people.

267. What is lost in life seems more vivid than what is gained.

268. I disagree with statements and ideas expressed by my classmates or friends.

269. I crave excitement.

270. I find it difficult to give up ideas and opinions which I hold.

271. If I encounter a person whom I have met previously, I begin a conversation with him.

272. I frequently have serious doubts about my religious beliefs.

273. I would like to be an actor on the stage or in the movies.

274. I would enjoy writing a paper on the possible long-term effects or outcomes of a significant research discovery.

275. Little things upset me.

276. I dislike test questions in which the information being tested is in a form different from that in which it was learned.

277. I dislike women who disregard the usual social or moral conventions.

278. I get excited very easily.

279. I do not enjoy starting in at a new school or moving to a new community.

280. I do not express my opinions freely.

281. I would enjoy studying the causes of an important national or international event and writing a paper on these causes.

282. It puzzles me why some people will so avidly read and discuss science fiction.

283. I work under a great deal of tension.

284. I give more attention to the action of the story than to the characterizations or to the form and style of the literature I read.

285. At times I think I am no good at all.

286. I go to church or temple almost every week.

287. My free time is usually filled up by social demands.

288. Communism is the most hateful thing in the world today.

289. Courses in literature and poetry have been as satisfying to me as those in most other subject areas.

290. Colored lights sometimes arouse feelings of excitement in me.

291. Unquestioning obedience is not a virtue.

292. My conversations with friends usually deal with such subjects as mutual acquaintances and social activities.

293. Trends toward abstractionism and the distortion of reality have corrupted much art in recent years.

294. I have at one time or another in my life tried my hand at writing poetry.

295. Criticism or scolding hurts me terribly.

296. I do not like to see people carelessly dressed.

297. I have been inspired to a way of life based on duty which I have carefully followed.

298. I usually enjoy parties.

299. I have difficulty in imagining the reaction of a person of another period, race, or country, to a given situation or environment.

300. I think I would like to drive a racing car.

301. Organized religion, while sincere and constructive in its aims, is really an obstacle to human progress.

302. At times I have very much wanted to leave home.

303. I much prefer friends who are pleasant to have around to those who are always involved in some difficult problem.

304. I much enjoy thinking about some problem which is a challenge to the experts.

305. I do not understand myself.

306. I like to write my reactions to and criticisms of a given philosophy or point of view.

307. Disobedience to the government is sometimes justified.

308. I like worldliness in people.

309. I like to work crossword puzzles.

310. I have feelings of anxiety about something or someone almost all the time.

311. I have frequently found myself, when alone, pondering such abstract problems as free will, evil, etc.

312. I often count things that are not important.

313. It is hard for me to work intently on a scholarly problem for more than an hour or two at a stretch.

314. I never attend a sexy show if I can avoid it.

315. After a lecture or class I think about the ideas presented.

316. A person who lets himself get tricked has no one but himself to blame.

317. I enjoy listening to poetry.

318. I am ill at ease with members of the opposite sex.

319. I am in favor of strict enforcement of all laws no matter what the consequences.

320. I analyze the motives of others and compare their reactions with my own.

321. I enjoy reading essays on serious or philosophical subjects.

322. Some of my friends think that my ideas are impractical if not a bit wild.

323. I enjoy the actual laboratory work more than the study of the textbook for a course.

324. Something exciting will almost always pull me out of it when I am feeling low.

325. I believe it is a responsibility of intelligent leadership to maintain the established order of things.

326. I am interested in conversations about people whether or not I am acquainted with them.

327. Religion should be primarily a social force or institution.

328. I avoid becoming engaged in conversation with my barber or beauty parlor operator.

329. When I get bored I like to stir up some excitement.

330. I enjoy thinking of new examples to illustrate general rules and principles.

331. We should respect the work of our forefathers and not think that we know better than they did.

332. I dislike having others deliberate and hesitate before acting.

333. I like dramatics.

334. I find that a well-ordered mode of life with regular hours is not congenial to my temperament.

335. We cannot know for sure whether or not there is a God.

336. I do not avoid large gatherings of people.

337. Kindness and generosity are the most important qualities for a wife to have.

338. I like to read serious, philosophical poetry.

339. I like to talk about sex.

340. I enjoy spending leisure time in writing poetry, plays, stories or essays.

341. Some ideas which come to me are accompanied by such a strong feeling of urgency that, regardless of their usefulness, I can think of little else.

342. I question statements and ideas expressed by teachers and speakers.

343. I believe in the worth of humanity but not in God.

344. I dislike being assigned to write a short story, essay, or song.

345. I often wonder what hidden reason another person may have for doing something nice for me.

346. The main object of scientific research should be the discovery of truth rather than its practical applications.

347. I like to flirt.

348. I like to discuss the values of life, such as what makes an act good or evil.

349. Sometimes I find myself "studying" advertisements in order to discover something interesting in them.

350. No one is very much the same person two days in succession.

351. There was a time when I wished that I had been born a member of the opposite sex.

352. There is something noble about poverty and suffering.

353. I have never done anything dangerous for the thrill of it.

354. It is essential for learning or effective work that our teachers and leaders outline in detail what is to be done and how to do it.

355. It is difficult for me to take people seriously.

356. I have often either broken rules (school, club, etc.) or inwardly rebelled against them.

357. I prefer movies which are biographical or historical to movies of the musical comedy type.

358. Only a fool would try to change our way of life in this country.

359. The thinking which I do is largely limited to that which I must do in the course of my work.

360. I have periods of such great restlessness that I cannot sit for long in a chair.

361. I enjoy a thought-provoking lecture.

362. I easily become impatient with people.

363. I don't like to undertake any project unless I have a pretty good idea how it will turn out.

364. I am more religious than most people.

365. I like to take the lead at social gatherings.

366. When I go to a strange city I visit art galleries.

367. I expect that ultimately mathematics will prove more important for mankind than will theology.

368. I hesitate to ask the assistance of others.

369. I have a very poor sense of time.

370. Nothing about fascism is any good.

371. I like to serve as a member of a committee in carrying out some activity or project.

372. I prefer to carry out an activity or job rather than to do the planning for it.

373. I prefer to visit with one person rather than with a group of people.

374. At an exposition I like to go where I can see scientific apparatus rather than new manufactured products.

375. As a youngster in school I used to give the teachers lots of trouble.

376. I like to look for faulty reasoning in an argument.

377. I am embarrassed when I arrive too early or too late at a social affair.

378. The most important qualities of a husband are determination and ambition.

379. I dream frequently.

380. I seldom chat with clerks when they are waiting on me.

381. I read a great deal even when my work does not require it.

382. I do not enjoy eating meals by myself.

383. I enjoy chatting and playing with children.

384. I like to work late at night.

385. Facts appeal to me more than ideas.

CHECK BEFORE CLOSING BOOKLET TO SEE THAT NUMBER 385 IS THE LAST ONE YOU HAVE MARKED ON THE SHEET.

THE PSYCHOLOGICAL CORPORATION ®

INCORPORATED IN 1921

APPENDIX B

STANDARD SCORES, MEANS AND STANDARD DEVIATIONS FOR SIX SCALES OF THE OMNIBUS PERSONALITY INVENTORY AS WELL AS THE INTELLECTUAL DISPOSITION CATEGORY AND MEANS AND STANDARD DEVIATIONS OF ACT SCORES AND GRADE POINT AVERAGES FOR OVERACHIEVERS AND UNDERACHIEVERS

UNDERACHIEVERS

Subject	IDC	TI	TO	Es	Co	Au	RO	ACT	GPA
1	5	50	51	48	60	46	47	30	1.000
2	5	56	45	40	60	49	50	28	1.000
3	5	50	51	48	60	46	47	26	1.533
4	7	38	50	34	37	49	50	24	1.230
5	5	40	56	40	48	49	50	27	1.133
6	5	46	45	38	55	60	58	26	1.357
7	5	56	53	52	60	41	44	24	1.687
8	5	50	44	48	64	64	60	27	.466
9	5	38	58	40	53	64	60	29	1.571
10	6	45	44	42	62	57	55	26	.857
11	5	37	44	44	57	46	55	26	.300
12	5	37	44	40	64	54	53	30	1.500
13	7	43	38	38	48	54	53	26	1.600
14	4	50	61	44	66	61	58	24	.562
15	4	58	53	63	59	64	60	25	.738
16	4	51	63	53	51	60	58	25	1.312
17	2	64	63	65	68	65	62	26	1.470
18	5	38	44	48	42	51	50	28	1.500
19	5	57	49	48	59	60	58	25	1.533
20	5	55	60	44	37	54	53	24	1.538
$\overline{X}$	4.95	47.95	50.80	45.85	55.50	54.70	54.05	26.30	1.1943
s	1.0234	8.0092	7.2152	7.7412	8.8515	7.1491	5.0147	1.8466	.4082

OVERACHIEVERS

Subject	IDC	TI	TO	Es	Co	Au	RO	ACT	GPA
1	5	58	42	46	53	51	50	12	3.357
2	7	46	44	32	35	54	53	20	3.533
3	2	64	61	69	73	54	53	21	3.214
4	5	56	40	48	55	49	50	20	3.133
5	3	57	61	59	59	61	58	21	3.166
6	5	43	47	36	60	48	50	18	3.071
7	5	50	53	50	39	53	53	21	3.333
8	5	37	49	46	48	53	53	21	3.500
9	5	41	40	42	50	58	57	20	3.272
10	5	50	45	52	51	43	45	20	3.000
11	5	52	45	52	46	52	52	21	3.266
12	6	46	49	48	55	53	53	19	3.533
13	5	53	51	53	60	61	58	20	3.562
14	5	50	45	44	48	60	58	18	3.000
15	5	52	42	50	51	57	55	20	3.214
16	5	47	51	44	57	43	45	11	3.000
17	7	43	54	27	42	53	53	20	3.666
18	8	31	37	36	44	45	47	16	3.214
19	5	51	54	52	70	55	58	20	3.307
20	6	57	56	55	42	42	44	21	3.800
21	5	45	53	38	50	48	50	19	3.538
22	4	57	47	55	73	65	62	20	3.533
23	5	41	37	52	48	43	47	21	3.333
24	3	57	63	50	64	55	55	19	3.066
25	4	57	49	57	66	64	60	21	3.250
26	7	33	42	34	46	57	52	19	3.400
27	3	60	56	63	68	60	58	21	3.214
28	5	55	51	57	44	48	50	21	3.071
$\overline{X}$	5	49.61	48.71	48.10	53.46	53.03	52.82	19.32	3.3052
s	1.2817	8.0726	6.9480	9.4579	10.1400	6.3778	4.6526	2.4648	.2101

VITA

Nancy Hall McSwain

Candidate for the Degree of

Master of Science

Thesis: THE RELATIONSHIP BETWEEN INTELLECTUAL DISPOSITION AND LEVELS OF ACADEMIC ACHIEVEMENT

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Biographical:

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