A Q-SORT STUDY OF ATTITUDES AND ACHIEVEMENT

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DOCTOR OF EDUCATION
August, 1960

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ACKNOWLEDGMENT

The writer wishes to express his abiding gratitude to Dr. Harry K. Brobst, Chairman of his Advisory Committee, for his perceptive counsel and sympathetic guidance throughout this research. He also wishes to express gratitude and appreciation to the other members of his committee: to Dr. Richard Collier and to Dr. R. P. Jungers for their help which has contributed so substantially to the study.

. . . . achievement in school is influenced by many things other than the sum total of intellectual abilities. The same is true of success in life. . . . We have seen that intellect and achievement are far from perfectly correlated. To identify the internal and external factors that help or hinder the frustration of exceptional talent, and to measure the extent of their influences, are surely among the major problems of our time.

Lewis M. Terman

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CHAPTER I

INTRODUCTION TO THE STUDY

Introduction

Many investigators in the fields of education and psychology have sought answers to the problem of individual differences in college achievement. Numerous variables have been studied including both aptitude and personality or motivational factors. Frequently, however students whose academic prognosis is favorable fail to reach their potential. Others, conversely, achieve at a level considerably beyond their predicted potential. The aim of the present study, therefore, is to further investigate this gap or what Rust and Ryan (55) have called the coefficient of alienation, i.e., the unexplained difference left by the correlation between academic grades and those predictors of college success that are currently in use. In general, the factors leading to academic success or failure, above and beyond those of ability, have not been readily apparent or reducible to meaningful, operational definitions. Thus, the attempts to measure personality variables thought to be associated with achievement in college have, in the main, arrived at inconsistent or negligible results. Yet, despite these difficulties, the high over-all relationship between these factors is readily admitted by most authorities. Fresh approaches to the problem thus seem warranted.

Thus, in an investigation of the effects of stress upon personality, Lazarus (32) asserts that,

> . . . . the traditional search for main effects of independent variables in stress experimentation must give way to analysis of interactions among variables, if such experimentation is to be most meaningful and realistic. (32, p. 576)

Secord (59) has reached a somewhat similar conclusion. Accordingly, he says,

> . . . . attempts have been made to develop measures based on patterns of answers to self inventories, on the assumption that such measures may reveal personality characteristics not disclosed by the simple additive counts of answers. . . . (59, p. 308)

Rokeach (54) asks, "What sort of theory and what sort of measuring devices are needed which would enable one to skirt around the contents of a person's thoughts and beliefs and still reveal intact its formal characteristics?" (54, p. 227) Emphasis is thus being focused upon integration and organization within this area of research.

It seems probable that the Q-sort technique as developed by Stephenson (65) possesses sufficient subtlety, depth, and scope to fulfill these purposes and is, therefore, an ideal method for studying personality structures and cognitive organization. The present research is based upon the assumption that attitudes and academic achievement are both operationally definable and quantifiable and that their relationship can be empirically studied by means of a Q-sort.

Statement of the Problem

The problem posed was to ascertain whether attitudes, as herein measured, were significantly related to achievement, as herein measured, at East Texas State College. While this may seem to be a limited approach to the aforementioned "gap", Centi (12) after analysis of the published research has warned that,

> . . . the factors important to academic success are different from school to school. In view of this, it would seem important for the college counselor to determine what factors influence academic success or failure in the particular institution which he serves. (12, p. 457)

A specific question further delimits the scope of the present undertaking. Will East Texas State College first semester freshmen of similar ability as measured by The School and College Ability Test, but who differ in relative achievement as measured by grade point averages, have significantly different attitudes, ideal-attitudes, and discrepancy scores between attitudes and ideal-attitudes as measured by a Q-sort?

An additional purpose of the study was to empirically develop the Q-sort instrument with which to measure inter-individual differences in attitudes among college students.

Specific Hypotheses Tested

While it would have been possible to develop specific hypotheses about the relationships of attitudes and achievement among the various groups, this procedure was not followed since it would have been primarily a test of the intuitive skill of the experimenter. Moreover, the number of hypotheses necessary to cover all of the potentialities would have been impractical and needlessly burdensome. In any event while not bound by the requirement of a vigorous validation study, it seems entirely within bounds to interpret significant differences discovered by the present method as a preliminary validation of some of the existing relationships between attitudes and achievement behavior.

The scope of the present study is, therefore, defined by the following hypothesis: There will be significant differences in the area and valence scores for attitudes, ideal-attitudes, and discrep-

ancies between attitudes and ideal-attitudes among the groups which compose the study. The four groups were (1) male, better-achievers, (2) male, poorer-achievers, (3) female, better-achievers, and (4) female, poorer-achievers.

The specific hypotheses tested stated as null hypotheses were as follows:

(1) Attitudes toward self, teachers and education are the same for the four groups.

(2) Ideal-attitudes toward self, teachers, and education are the same for the four groups.

(3) Discrepancies between attitudes and ideal-attitudes toward self, teachers and education are the same for the four groups.

(4) Positive, neutral, ambivalent, and negative attitudes of the four groups are the same.

(5) Positive, neutral, ambivalent, and negative ideal-attitudes of the four groups are the same.

(6) Discrepancies between attitudes and ideal-attitudes of positive, neutral, ambivalent and negative valences of the four groups are the same.

Conceptual Framework

Gordon W. Allport (2) has defined an attitude as a neuropsychic state of readiness for mental and physical activity. According to Sargent (57),

> An attitude is more than a state of mind. It is a tendency to act. A person's attitudes determine in large measure how he will behave. Some social psychologists go so far as to define social psychology as the scientific study of attitudes. (57, p. 282)

Because definitions of attitudes are overlapping in some cases,

contradictory in others, and finally, almost countless in number, without further discussion the foregoing point of view is advanced as representative of the present position. An attitude or cognitive structure is defined as a learned, persisting, predisposition of the organism which tends to decrease the variability of behavior. It is additionally hypothesized that these structures vary from individual to individual and are ultimately related to behavior, in this case academic achievement. Attitudes are herein structured in terms of areas and valences. Each of these is taken into account on three levels, that of self, ideal-self, and discrepancy measures. However, beyond this point of theoretical structuring, the definition of attitudes is empirical in nature. That is, items in the Q-sort were selected not because they theoretically should measure attitudes, but because they have been demonstrated to discriminate among actual college students in Q-sort behavior. The method is comparable to that utilized in the measurement of intelligence where it is uncertain just what it is that is being measured, but where empirically selected items do discriminate and where individual differences in response to these items are subsequently related to behavioral criteria. In like manner no attempt will be made to rigidly define the ultimate nature of attitudes. Items which discriminate among students have been selected and our concern is with the hypothesized relationship between these variables and the criteria of academic achievement. The following operational definitions have thus been specified:

(1) Attitude - The way the subject actually sees himself in terms of a Q-sort.

(2) Ideal-Attitude - The way the subject would like to see himself

in terms of a Q-sort.

(3) Self-Ideal Discrepancy - The difference between the individual's attitudes and ideal-attitudes.

(4) Better Achievers - The 20 males and 20 females earning the highest grade point averages among the original 100 subjects.

(5) Poorer Achievers - The 20 males and 20 females earning the lowest grade point averages among the original 100 subjects.

The role of congruence has received considerable attention in achievement research, and its conception needs additional clarification. Rogers (52) has suggested that the neurotic or poorly integrated person can be represented by two circles which are only slightly congruent; after successful therapy in the case of such a person, the two are assumed to have a greater degree of congruence. In diagram form these ideas are presented in Figure 1.

Self-Structure Experience

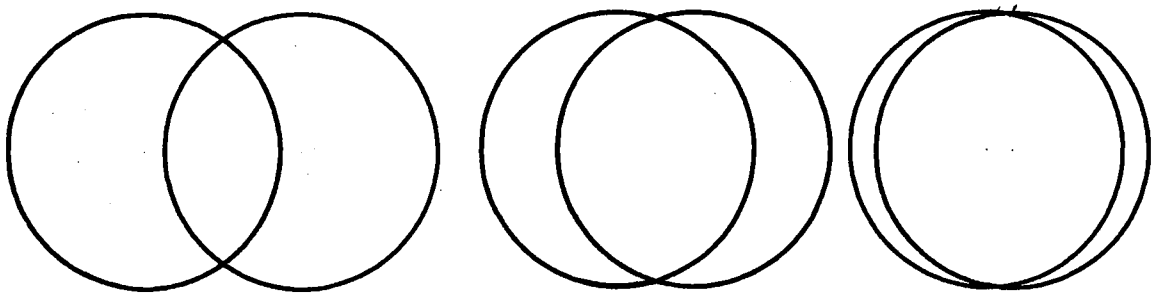

Figure 1. Schematic presentation of from left to right, a poorly integrated, moderately integrated, and highly integrated individual as conceived by Rogers in terms of self, experience congruence.

Rogers goes on to point out that the highly congruent individual represents the end point of healthy personality development. In this state a basic congruence between the phenomenal field of experience

and the conceptual structure of the self has been achieved, a condition representing freedom from internal strain and anxiety as well as freedom from potential strain.

Behaviorally, however, congruence may well be accompanied by numerous complications and diverse expressions depending on other aspects of the personality. What might be optimum congruence for one situation, might be minimum congruence for another. Moreover, lack of congruence itself might in one instance lead to high achievement in a kind of compensation effort and in another to low achievement due to a withdrawal reaction.

Thus congruence in and of itself alone is held to be insufficient for the prediction of behavior such as college achievement. A point of view which retains its virtues as a measure of personality integration but additionally attempts to meet the aforementioned difficulties is presented by analogy.

Malmo (36) has expressed dissatisfaction with current measures of motivation in terms of antecedents, holding that they are usually gross oversimplifications of complex motivational states. He, therefore, has recommended a fresh approach to the problem, utilizing patterns of concurrent physiological correlates.

In much the same manner many attacks upon the achievement problem have been based upon the assumption of the unitary character of variables. That is, a single dimension is visualized or postulated along which persons may be ordered. The alternative point of view, similar to Malmo's position, holds that single variables are more fruitfully conceptualized as configurations or patterns of a pluralistic nature. Thus in the present study, while congruence is one of the variables

tested for relationship to academic achievement, both attitudes and ideal-attitudes are likewise included. Furthermore, each of these levels is treated as non-unitary and as consisting of patterns of areas and valences. Where Malmo hopes to find patterns of physiological correlates which taken together represent motivational differences, the present study aims at the discovery of patterns of attitudes, ideal-attitudes, and discrepancies which are important for college achievement.

Rogers's (52) general theory of human behavior embraces three aspects: perception, behavior, and consequences. Stated in the simplest terms and related to present interests, consequences such as academic achievement are a function of behavior which in turn is a function of perception. The present study is an attempt to quantify the cognitive structures which are felt to underlie perceptive phenomena and to ascertain their relationship with achievement behavior.

Plan of the Study

The design of the study was based upon the method of difference. The independent variables were sex and academic achievement which were differentially present in each group. The dependent variables were the Q-sort scores. The Q-sort method itself was based upon an adoptation of the rank ordering method. Controls were instituted for ability factors. The presentation which follows begins with a review of the related literature in Chapter II. Chapter III consists of a description of the procedure of the study. Chapter IV deals with the treatment of the data and the analysis of the results.

Finally, Chapter V presents the summary of the study and the conclusions that were reached.

Summary

The gap between academic grades and present predictors of college success has been reviewed. An approach involving the quantification of patterns of attitudes, ideal-attitudes, and congruence measures has been outlined as a potentially fruitful means of attack on this problem. The present study has been described as a preliminary attempt to designate some of these attitudinal variables and to assess their relationship with achievement.

CHAPTER II

A REVIEW OF THE RELATED LITERATURE

Introduction

Implicit in the statement of the basic problem of the study are the assumptions that, (1) cognitive structures do exist, (2) grade point averages are a measure of college achievement, and (3) there is a more or less invariant relationship between these variables. The clarification and defense of these assumptions provides the framework in which the related literature will be discussed.

Cognitive Structures

The cognitive structure is one method of approach to the problem of how man gains information and understanding of his environment, and how this experience comes to affect subsequent behavior. There appears to be a consistency to behavior which cannot always be explained in terms of the environmental stimulus elements. Cognitive structures are therefore postulated as ". . . reported or inferred perceptual organizations, as mediators between stimulus patterns and behavior." (58, p. 91) Within this frame of reference, cognition is a part of behavioral organization and plays a basic role in the S-R unit. Broadly speaking this is the position of holistic and molar theorists such as Stern (68), Allport (2), Goldstein (23), Rogers (52), Tolman (72), Snygg and Combs (63), Lewin (34), Kretch and Crutchfield (31), and the Gestalt

psychologists.

The etiology of these constructs is not the concern of the present paper. Only further research can discover their genetic history. The purpose is solely to quantify these structures as they are currently demonstrated by individuals.

The literature on cognitive concepts is almost limitless, involving a variety of approaches, methods, and a confusing difference in terminology. Thus according to Bieri (7),

> Theories of behavior that use perceptual or cognitive constructs have found it necessary to postulate some organizing or schematizing process which is held responsible for the active interpretation and representation of external events to the organism. (7, p. 112)

To illustrate he lists: Freud's ego, Lewin's functional firmness of boundaries between the individual and his environment, Tolman's cognitive map, Bartlett's concept of schema which refers to the organization of previous experience which effects the individual's behavior in a current situation, Piaget's aspects of assimilation and differentiation of the environment, and Kelly's personal construct system. Many additional conceptualizations have elsewhere been described, and as a result this area, while rich in promise, is likewise full of confusion.

Theoretical justification for the cognitive approach can be found in the conclusions of diverse theorists on scientific method. Stevens (69), for example, holds that mentalistic concepts such as percepts, images, and ideas can be operationally defined. Boring (9) adds that verbal reports are legitimate when subjects discriminate between stimuli. Consistent with these views, cognitive attitudes are herein adopted as intervening variables which mediate between the stimulus situation of the college environment and the behavioral response of

achievement therein. Riggs (50) clarifies the process assumed to be involved as follows:

> We conceive of an individual's dominant tendency as operating to facilitate figure-ground organization so that valued meanings stand out while others drop back and, in effect, are rejected. . . . a person's dominant tendency gives consistency to all his evaluations. In this sense ordinary interests, large-scale values, attitudes, sentiments, preferences, and minor hedonic choices are related parts of the same psychological process, namely, evaluative organization of the perceived environment. (50, p. 437)

Going a step further, Bieri (7) states that,

> . . . perception is an active process involving a transformation of sensory data into a conceptual scheme consistent with the previous learning and experience of the individual - and - . . . . an understanding of these structural differences is of value in predicting the behavior of the individual. (7, p. 112)

Jones, et al. (29) add:

> It is as if each participant must come to an initial decision [no matter how tentative or erroneous] regarding the nature of the social situation in which he is involved. Out of this decision evolves a set to attend to, and to employ in certain ways, the information provided by the other person. (29, p. 155)

Kelly (30) holds that each individual develops his own personal repertoire of constructs by means of which he structures his world and tries to anticipate events. These constructs may be thought of as elements of a system by means of which the individual codifies his experience. Thus knowledge of the content and structure of constructs is basic for understanding both perception and behavior.

The importance of such sets as they vary from individual to individual for academic behavior and achievement would appear to be crucial. Through quantification of these systems, meaningful predictions about behavior should be augmented.

In over-all sympathy with these views, but utilizing self terminology, Rogers (52) summarizes his position as follows:

> As experiences occur in the life of the individual, they are either

(a) symbolized, perceived, and organized into some relationship to the self, (b) ignored because there is no perceived relationship to the self structure, (c) denied symbolization or given a distorted symbolization because the experience is inconsistent with the structure of the self. (52, p. 503) The organism reacts to the field as it is experienced and perceived. This perceptual field is, for the individual, 'reality'. (52, p. 484)

In the present conceptualization, both the self and the ideal-self are treated as attitudes within a framework similar to Rogers. Justification for this assumption is found in Manis's (37) statement that,

. . . (1) the self concept may be defined, in common-sense fashion, as the organized collection of attitudes, opinions, and beliefs an individual holds about himself, and (2) that, it is at least initially justified to assume that the self concept is not essentially different from any other set of attitudes, opinions, or beliefs collected by an individual about any given object or topic. (37, p. 362)

Thus the self concept is conceived as equivalent in function to other cognitive structures like those discussed in the preceding paragraphs. The ideal-self is considered as a composite of traits which we accept in ourselves and which we esteem highly in others.

Another matter of concern involves the stability of these structures over time. Bieri (7) expresses confidence in the enduring quality of cognitive structures as follows:

. . . . it is assumed that relatively consistent, enduring modes of cognitive schematization will characterize the individual's behavior across situations. Genetically, we assume that as the individual's cognitive system develops in one realm of experience, it will tend to generalize to some extent to new realms of experience subsequently encountered by the individual. (7, p. 112) . . . the manner in which an individual structures and cognizes one realm of events bears some relationship to how he structures another realm of events. (7, p. 116)

Moreover, the following experimental evidence indicates that stability characterizes these structures. Engel (19) has demonstrated the relative stability of the self concept over two years in adolescence, finding an over-all item-by-item correlation of .53 between Q-sorts obtained in 1954 and 1956, with an instrument of which the ten day

test-retest reliability was .68. Smith (62) found knowledge of a person's pre-existing attitudes appeared to be a better predictor of his responses to a heterogeneous, intercultural experience than was information about the intercultural experience itself. Gollin (24) reports findings supporting the hypothesis of generality of cognitive style, indicating an apparent relationship between organizing tendancies and behavior. Messick (43) found that apparently individuals did perceive attitudes in terms of definite structure, and when called upon to make judgments concerning attitude relationships, responded in terms of the dimensional frame of reference. Lecky (33) and Sarbin (56) have likewise defended the principle of constancy of cognitive structures.

It would appear then that the evidence for cognitive structures as enduring, mediating factors in behavior, is sufficient to justify their further empirical study. Intervening variables postulated for this purpose in the present study are areas and valences of the self, the ideal-self, and discrepancies between these levels.

Grade-Point Averages as a Measure of Achievement

Since letter grades after the first semester of college are the criteria in this study for determining "poorer" and "better" achievement, the reliability of these measures is germane.

Bendig (6) has investigated the reliability of letter grades as college achievement ratings, and concluded from his data that the usual evaluation system results in grades with a moderate degree of reliability. His calculated correlation was .80. However, Clark (13) discovered a Pearsonian correlation of usually somewhat less than .80

between first and second term grades. Thus, while grades as measures of college achievement are somewhat less than perfect, they do possess a reasonable degree of reliability and appear to be the best measure available. French (20) presents a cogent argument for the use of freshman as opposed to upperclass grades as the criteria for college achievement. He states that:

> . . . while students take a considerable variety of courses in the freshman year, their freshman programs are much more alike than their upperclass programs. For this reason 'average freshman grades' may be not only more quickly available but also more meaningful than average grades received when the students are working in different subject matter areas having different degrees of difficulty. (20, p. 67)

Moreover, a study by Brush (10) demonstrated that, in general, four year cumulative average validities do not differ consistently from freshman validities. From this viewpoint, the situation at East Texas State College is particularly desirable in that all freshman students enroll in a program of general education which ensures participation in a highly similar academic program for the period in which grades are to evaluate achievement.

The Relationship Between Cognitive Structures and Achievement

The search for factors related to achievement in college has constituted one of the larger areas of educational research. Most frequently these studies have utilized techniques of correlation and the usual area of concentration has been that of intelligence or aptitude. Linear relationships existing between various indices of scholastic aptitudes or capacities and college success have been computed. Segal (60), Durflinger (18), Travers (73), and Harris (26) have edited summaries of the results of some of the research studies in this area. In general the correlations discovered tend to be low, with the ma-

jority of findings showing correlations of between .30 and .50. These studies indicate that, although rank in high school class, achievement test, and scholastic ability tests, in that order, are the best single predictors of college success, higher predicability can be obtained when these measures are used together or in combination. Using multiple correlations, Segal and Durflinger report correlations having values between .70 and .75. Multiple correlations of from .60 to .70 are reported by Travers and Harris. Therefore, even when using combinations, correlations of ability and achievement are far from perfect.

In view of these facts additional approaches to those concerned with intellectual characteristics seem warranted. Of particular interest in the present connotation is Travers's (73) conclusion that the advantage of high school grades for prediction resides in the fact that they represent a greater work sample and involve personality variables essential to academic achievement. He adds immediately, however, that these variables presently are largely unknown.

Attesting to the difficulties inherent in the identification of these factors Rust and Ryan (55) assert that:

> Orientation in this field [non-intellectual factors] is particularly difficult because the literature presents a vast multiplicity of experimental variables, deals with all academic levels, and is characterized by a wide variation in the adequacy of experimental design. (55, p. 442)

Reviews of the literature dealing with relationships between academic achievement and factors designated as non-intellectual have been made by Harris (25), Stagner (64), and Travers (73). In general their conclusions parallel those of Rust and Ryan. Stagner states that, "Linear correlations of intelligence, achievement and personality measures are low and are probably so as a result of the inherent

nature of the relationship." (64, p. 655)

If true, this seems tantamount to admission that attempts to solve this problem are doomed from the outset. However, the question arises as to whether such pessimism is entirely justified. The difficulties of establishing linear relationships may reflect the non-existence of such relationships or merely the inability to measure them accurately with current instruments and techniques. Stagner, despite the above conclusion, admits that personality factors do have marked influence on the correlation of aptitude and achievement.

Sarbin's (56) statement illustrates the degree to which personality and cognitive structures are interwoven with complex behavior such as academic achievement.

> Included in the college student's role expectations are certain actions such as going to classes, listening to lectures, writing exams, organizing abstract material, using the library, etc., and certain qualities such as friendly, cooperative, good-natured, etc. . . If the actions and qualities which comprise this role are congruent with the self concept of a particular person, then there is a high probability that he will perform according to the role expectations of the professors and other members of the college community. (56, p. 250)

Wylie (76) states that, "Behavior is a function of the self-concept rather than being predictable simply from an observer's knowledge of so called objective reality." (76, p. 600) Bartlett's (4) classic studies of memory, moreover, showed that the individual's attitudes and expectations have a pronounced influence on the memory process. In colleges and universities today, memory surely may be taken to play a direct role in the achievement of individuals. In consideration of the strength and vigor of the many viewpoints pointing to some regularity of relationship between personality and motivation, attention must be directed to the interpretation advanced earlier that difficulties in this area may reflect merely the lack of

sophistication in measurement techniques. While the literature on methods of personality assessment is far too voluminous to be comprehensively reviewed, a brief summary will highlight some of the most important theoretical positions.

Davids (17) reports the following classification of current methods of assessment: (1) Direct methods - methods in which the subject is asked consciously to report about some feature of his personality. (2) Indirect methods - procedures that assess personality without the individual's conscious awareness of what he is revealing in his responses. (3) Projective methods - assessment procedures which require the subject to impose structure or completion upon some form of ambiguous or incomplete stimuli.

To assess the nature of the differences of these methods Davids measured neuroticism by all three and found his information from each source to be approximately the same. He concluded, "that the varied avenues of approach to personality assessment do, indeed, lead in the same direction, and regardless of method employed, the end product is likely to be similar." (17, p. 429) On the other hand Cattell (11) argues that deliberate self-evaluation should be avoided even if the answers are not treated at face value because severe distortion is probable. In his words these are "motivation-situation-allergic" responses. Since this controversy is likely to rage among psychologists for some time, in lieu of sufficient evidence for settling the issue, it will merely be pointed out that the present Q-sort method embodies aspects of each of the three methods listed above.

In any event it seems logical to conclude that the sophistication of techniques for personality assessment has not progressed to

the point where it can safely be interpreted that the failure to find stable correlations between personality and achievement sufficiently evidences their non-existence.

Thompson (71) for one is of the opinion that the measurement of personality factors is of "paramount importance to present-day education whether in its guidance, grouping, or admissions programs." (71, p. 398) Garrett (22) concurs in that,

> The data reveals that many colleges are basing their entrance requirements on factors which do not have adequate value in predicting success in college, and therefore, deny entrance to many students who should be admitted. (22, p. 130)

He further points out that while it is wasteful to have the unfit in college, it is likewise wasteful to keep the fit out of college. Ostrum (49), while conceding that instruments that measure abilities and aptitudes with a fair degree of accuracy have been developed, still holds the opinion that their use for predictions in learning situations has not proven so successful as had been hoped. Ability alone does not appear to constitute the entire answer to the problem. "Since the best validities reported . . . do not approach the limit made possible by the ascertained reliabilities, the theoretical best possible prediction of college grades is still far away." (20, p. 87) Thus the need for research utilizing new instruments, as well as novel adoptations of those currently in use, appears to have been clearly demonstrated.

Current Research in Personality Variables and Achievement

The group form of the Rorschach has been one of the instruments used in research into the personality-achievement area. Perhaps the most outstandingly successful attempt, as well as one of the most con-

troversial, was that of Munroe (47) who reported relating a number of Rorschach variables to subsequent success in college. Margulies (38) likewise concluded that the Rorschach could prove useful for predicting success and failure in school. Thompson (71) concurs, finding that the group Rorschach can be used in the prediction of academic success above and beyond the prediction possible from a standardized intelligence test. His reported correlations were .38 between test variables and first semester grades in psychology. Montaldo (45) also reports positive results. Beckham (5) in a study of high school students found that honor students possessed emotional maturity "far in excess" of a failure group and concluded that this is an important factor in high school success.

In direct contrast to these positive results is Cronbach's (15) finding that the claims made for objective treatment of the group Rorschach were not substantiated by his data. A direct repetition of Munroe's study, for example, found no significant correlations, suggesting that these findings were atypical and perhaps unique to Sarah Lawrence College. Similarly, McCandless (40) found that analysis of the conventional Rorschach categories failed to demonstrate any statistically important differences between groups of officier candidates who differed widely in academic achievement.

The position Rust and Ryan (55) have taken towards these controversial findings outlines the difficulties inherent in the use of an instrument designed for one purpose and subsequently employed for another. They say:

> It seems reasonable to assume that academic behavior is not independent of personal adjustment. Yet it does not seem reasonable to assume that such adjustment will have a uniform effect upon academic

proficiency. Efficiency in and motivation for study may be increased or decreased depending upon the nature and degree of the problems involved. For the most part a quantitative scoring of Rorschach variables cannot be designed to measure adjustment and then be expected to predict academic behavior as a by-product. (55, p. 452)

Other attempts, aside from those involving the group Rorschach, have been made to solve the achievement prediction problem. Altus (3) adapted the Minnesota Multiphasic Inventory for this purpose. Holding intelligence constant, he attempted to find significant relationships between the way college students responded to adjustment items and the type of grade average which they earned. His conclusion was that adjustment items can be found which are associated with academic achievement and which have no relationship with intelligence as currently measured.

In still another effort Ostrom (49), utilizing the occupational level key of the Strong Vocational Interest Blank, found a significant relationship between honor point ratio and both academic aptitude and occupational level. He, therefore, feels that occupational level is a valid motivational measure and has a place in a predictive battery. On the other hand in a separate study (48), this same investigator found no relationship between this measure and high school academic grade average.

Within much the same procedural framework several attempts have been made to relate Q-sort results to academic achievement with most of the attempts accompanied by some degree of success. Many, however, were limited in scope and concerned with discrepancy or with self regarding attitudes alone as unitary measures. The study most closely related to the present work is that conducted by Robinowitz (51) wherein the Q-sort measurement of attitudes was utilized in the attempt

to differentiate among different groups of high school achievers. Significant differences in differential use of area and valence statements were found between experimental and control subjects, thereby encouraging belief in the ability of the Q-sort procedure to sensitively measure qualities of the cognitive structure related to achievement. Also using a Q-sort, Turner, et al. (74) discovered an "emergent, composite picture of the college student high in self-ideal congruence [as contrasted with the student low in self-ideal congruence] is that of one who. . . has a higher scholastic average. . ." (74, p. 205)

Using other measures of the self-ideal-self discrepancy, Martire (39) likewise succeeded in establishing a relationship between a "kind" of motivational pattern and a "kind" of self discrepancy. Rust and Ryan (55) found achievement to be positively related to super-ego status as defined in their study. Teahan (70) found that high achievers were predominantly future oriented.

Taken in total, the evidence from these studies, while conflicting in nature, supports the conclusion that relationships between personality variables and achievement do exist and that further experimentation along these lines is justifiable. In view of the many complications, instant and complete success in this area can hardly be hoped for, but the critical need for this information appears to justify a spirit of tenacity in the face of high failure probability.

In conclusion, the concept of discrepancy which has received so much theoretical and experimental consideration merits further attention. Shoben (61) summarizes the issues involved as follows:

> . . . . . man's ability to assume an attitude toward the 'merely possible' suggests that the normal person has ideals and standards that he tries to live up to even though they often exceed his grasp. For an inte-

grative adjustment does not consist in the attainment of perfection but in a striving to act in accordance with the best principles of conduct that one can conceive. Operationally, this notion implies that there is an optimum discrepancy between one's self concept and one's ego ideal. Those for whom this discrepancy is too large /in favor, of course, of the ideal/ are likely to condemn themselves to the frustration of never approximating their goals and to an almost perpetually low self-esteem. Those whose discrepancies are too low, on the other hand, are probably less than integratively adjusted either because they are failing to fulfill their human capacity to envision themselves as they could be or because they are self-deceptively over-estimating themselves. (61, p. 188)

The findings concerning the relationship of discrepancy scores to behavior such as college achievement are controversial, however. Martire (39) hypothesized that subjects who showed high generalized achievement motivation would show greater discrepancies between the self and the ideal-self. In general his hypothesis was confirmed. Conversely, in experiments with performance and stress Miller (44) discovered need-achievement to be practically independent of the self-ideal discrepancy. McKenna, et al. (42) are also inclined to doubt the simple assumption that high degrees of self-ideal congruence indicate correspondingly high degrees of self-acceptance and adjustment. This interpretation may be a gross oversimplification. In verification of their position the foregoing authors found that the self concept was a better predictor than the ideal of the friend's perceived characteristics when self-ideal congruence was high with the opposite holding when it was low. Thus conflicts of inconsistencies within the ideal-self must be considered as well as those of self and/or discrepancies. Along the same line Mowrer (46) has proposed the tentative suggestion that therapy results in a change in the present self or ego as opposed to change in the ideal-self or super-ego. Rogers (53) has reached a similar conclusion. It is possible in the light of these considerations that correlations between ideal attitudes and achievement be-

havior might be more stable than those of either attitudes or discrepancy factors. The simultaneous study of all these factors together has not yet been undertaken to the knowledge of the writer. Single levels of the personality may be only part of the story and the present study seeks to broaden the scope of this approach.

Sex Differences in Cognitive Structures

The present position distinguishes between the sexes in its experimental design. Supporting the hypothesis of sex differences in cognitive structures is McKee's (41) statement that:

> . . . . the content of the self-conceptions of men and women will very likely reflect the differences in the esteem with which the two sexes are regarded. And further, the sex difference in discrepancy between what one believes one is and what one would like to be will also reflect this differential esteem. (41, p. 371)

Experimentally there is evidence with which to support this position. Margulies (38) found that successful girls showed even more marked differences from unsuccessful girls than did two groups of boys on Rorschach responses. Helper (27) found that for boys good adjustment is associated with the modeling of the self concept after the father, but the same is not true for girls modeling the mother. This points to possible differential sex dynamics in the functioning of these structures. Abelson (1), using high school grades as a predictor, found a significant sex difference at four of seven colleges and a highly significant over-all difference in favor of greater homogeneity of girl's college grades. Thus a sex difference for both of the variables in the present study, cognitive structures as well as achievement measures, must be taken into consideration.

Summary

In the foregoing chapter discussion has been centered upon selected examples from the literature on cognitive structures, achievement and other factors germane to the present undertaking. The position that cognitive structures do exist, are related to achievement, and can be measured, has been defended as one potentially fruitful approach to the problem of academic prediction.

CHAPTER III

INSTRUMENTS, SUBJECTS, AND PROCEDURE

Introduction

In this section a general description of Q-sort technique is presented, followed by an account of the procedure by which the present form of this instrument was developed. The School and College Ability Test is then described. Finally, the subjects and the procedures of the study are set forth.

Q-Sort Technique

In a Q-sort the subject is given a series of statements, in this instance sixty, and asked to sort them along a continuum from "most like" to "least like" according to a particular frame of reference. Distributions and value assignments used are presented in Figure 2. Statements are placed in frequencies from three through five, seven, nine, and twelve and hence to three at the opposite end of the distribution. The Q-values assigned to these placements range from one in "least like me" to nine in "most like me".

	Most Like						Least Like			
Discrimination	:	:	:	:	:	:	:	:	:	"Placing"
Frequencies	3	5	7	9	12	9	7	5	3	"Tied Ranks"
Q-Values	9	8	7	6	5	4	3	2	1	"Ordered Metric"

Figure 2. Distributions and value assignments used in the Q-sort.

Q-technique or the procedure for the correlation of persons, instead of tests, was developed by William Stephenson. Cronbach (14) has described the method as follows:

> In the Q-sort, we have a variant of the forced-choice procedure which has so many psychometic advantages. For one thing, this method or interrogation is much more penetrating than the common questionnaire where the person can say 'Yes' to all the favorable symptoms and 'No' to all unfavorable ones. The method is free from those idiosyncracies of response which cause some persons to respond 'Cannot say' twice as often as others, and so make their scores noncomparable. The forced choice requires every person to put himself on the measuring scale in much the same manner. Since more statements are placed in the middle piles, the subject is freed from many difficult and rather unimportant discriminations he would have to make if he were forced to rank every statement. (14, p. 378)

Additional advantages of the method have been enumerated by the same writer.

> First, the Q-sort. . . . . provides a flexible method for obtaining a qualitative description [or self-description] of the individual in a form for rigorous manipulation. . . . Second, the Q-sort permits comparison of many different personas which coexist as features of the same individual. . . . Third, correlation between persons provides a basis for studying the homogeneity of groups. . . . The fourth present use. . . . is to study changes, especially in therapy. (14, p. 377)

Moreover, since attitudes may be said to possess both ego and super-ego components, through self and ideal-self sorts, the technique offers a means for assessing both, as well as the relationship or congruence between them. Rating all items insures that any given item will be evaluated within the context of all other items. Stephenson (66) adds that in this method a population of traits is selected; these are put in an order of representativeness for the individual, those most characteristic of him being given high scores, and those least characteristic are scored low.

Thereby according to Mowrer (46), the Q-sort leads to the identification of personality types, whereas the correlation of tests leads to the isolation of personality traits or factors. Broadly speaking the

present research is seeking to identify the "type" of person who is a better achiever as opposed to the poorer achiever.

For the actual selection of items Cronbach (14) has provided the following criteria:

> First statements, while logically bearing on the same domain, should represent a large number of continua. Correlating persons seems to have no advantage if we present items which all fall into one scale dealing, say, with age or weight. Second, statements being compared should have about the same average degree of desirability, over the entire population. If statements range from black to white, the sorts of different persons will be about the same, and the method becomes insensitive. Third, each statement should have substantial variance, in that different persons put it in different piles. (14, p. 380)

Mowrer (46) adds that:

> By thus composing a S sort of what Kluckhohn and Mowrer have called 'panhuman' characteristics [and using a dichotomous distribution], one could insure the finding that different persons correlate highly, i.e., are quite homogeneous. If, on the other hand, one selected highly 'idiosyncratic' characteristics, such as place and date of birth, address of present residence, and full name of spouse as items, one could insure the finding that the correlation between persons is very low, i.e., that persons are very hetrogeneous. Or, by selecting characteristics, such as society-bound characteristics or role-bound characteristics which fall in between in the matter of universality, one could ensure results which would group, or 'factor', individuals into societies or into special roles [such as professions, religions, political parties, etc.] (46, p. 359)

And finally, Cronbach (16) issues the following warning:

> It is evident that any estimate of the similarity of particular profiles must be evaluated relative to the similarity of people in general on the measures in question. A high index of similarity between two persons might indicate that they are unusually alike, or might indicate that they possess in common only the characteristics most humans have. (16, p. 458)

The present Q-sort instrument was composed to be consistent with these ideas. With Stephenson's (65) presentation used as the model, three areas, four valences, and three levels were used. The levels were achieved by obtaining a self sort, an ideal-self sort, and computing discrepancies between these measures. The three areas were (1) self, (2) other (specifically teachers), and (3) intellectual or

institutional. These were selected to be consistent with certain educational aims described in Behavioral Goals of General Education in High School (21). It was the consensus among this group of educators that there are three directions behavioral growth must take if students are to competently carry on the common activities of life in a manner satisfactory to themselves and acceptable to society: (1) growth toward self realization, (2) growth toward desirable interpersonal relations in small (face to face) groups, and (3) growth toward effective membership or leadership in large organizations. Each of these is given some degree of representation in one of the three areas into which the Q-sort is divided. Each is held to bear relationship to academic achievement. The "self" area includes those ideas most intimately associated with the self as both object and instrument. Traits such as sophistication, optimism, superiority, moodiness, and freedom of expressing emotion make up the individual items. The "other" area involves attitudes concerning teaching and teachers. Liking teaching, success of teachers in other fields, and adequacy of teachers as models are samples of the items used. The "idea" area is best defined negatively in that it is composed of items that are not so intimately associated with self or interpersonal relations as are the first and second areas respectively. Sample items refer to ideas versus subject matter in education, liking for early morning classes, grade objectives, academic standards, and the tendency to live for the present.

While a degree of overlap exists between areas, it is assumed that individuals possess characteristic differences in the way they see themselves and/or prefer to describe themselves. That is, where

one person prefers self-referent statements, another may prefer other-referent ones, and still another, idea-referent types. The degree of distinctiveness of areas, as constituted, is felt to be sufficient for these tendencies to find expression in sorting behavior.

The valences are positive, neutral, ambivalent, and negative. A positive statement tends to enhance the value of any concept included in the instrument, while a negative form of the same statement tends to diminish its value. The ambivalent statement at one and the same time both enhances and diminishes the value, and neutrality is expressed in either a neither-nor form or as a statement of moderation.

The structure of the Q-sort, summarizing how items were combined into areas and valences, is presented in Figure 3.

	Positive	Neutral	Ambivalent	Negative
Self Area	1 Items 2 included 3 in 4 each 5 block			
Other Area				
Idea Area				

Figure 3. Schematic presentation of the internal structure of the Q-sort.

Valences were included in that they are more or less inherent in the

dimensions and patterns of complex attitudes. It appears that humans may like a particular thing, may dislike it, may both like and dislike at the same time, or may be indifferent to it altogether, and that the arrangement of these values varies from item to item. Placement of four valence expressions of an item along a continuum of "most like" to "least like" represents a more subtle measurement then may be obtained by rating a single item stated in one valence form.

Scores assigned to subjects upon which group comparisons are to be based are thus a composite of the value placements of five separate items. A self-positive score, for example, represents the pooled value of five self-positive statements. Such cluster scoring has been highly recommended by Stephenson (65), and Cronbach (16) has summarized its advantages,

> In the same manner that cluster scoring reduces the weight given to specifics, it also reduces the weight given to differences between persons arising from error of measurement. Hence cluster scores, and similarity measures based on them, will be more reliable than scores based on the items. (16, p. 471)

Stephenson (67) is now essentially using cluster scoring in his analysis of variance based on the Q-sort. In the light of these facts this method was considered highly advantageous for use in the present research.

A basic question concerning the form of the Q-sort involves forced sorts versus unforced sorts. In the former, the subject is forced to put a certain number of statements in each pile or bin, whereas, in the latter, he is free to put as many or as few in each pile as he might wish. Both Cronbach (14) and Jones (28) have suggested that the forced distribution procedures result in a significant loss of information due to the elimination of differences in scatter within profiles.

However, Block (8) has experimently investigated the relative merits of the two techniques and concludes that,

> The forced approach is more useful where item order is judged of paramount importance. In many instances, it seems likely that the variation introduced by unforced sorting can be attributed to peripheral or unimportant sources, or its meaning be expressed within the item order. Consequently, no great loss is suffered and many benefits are achieved in these circumstances by forcing all sorters into comparable data-systems. (8, p. 492)

In the light of this information the forced method was adopted for the present research with the feeling that at this stage, facilitation of comparisons between profiles more than compensated for the possible loss in additional metric information.

The actual selection of the items for the Q-sort was made almost entirely upon an empirical basis. The first step was the compilation of a population of statements. The majority of these were submitted by 48 students in a course in Introductory Psychology. Students were asked to write ten positive statements and ten negative statements reflecting attitudes toward self, teachers, and education. The group was of mixed classification, including freshmen, sophomores, juniors, and seniors. Many of the statements submitted were irrelevant and subject to immediate elimination. After duplications were likewise eliminated, the remaining statements were rewritten in positive, neutral, ambivalent, and negative form. Additional statements were then added. Some were taken from Rogers and Dymond's (53) self statements, and others were added by the investigator.

Together these statements made up four separate Q-sorts of a single area, four valences, and 96 items each. There was one self area sort, one teacher area sort, and two idea area sorts. Each sort was then administered to subjects enrolled in a course in Personality

Foundations required of all East Texas State College students. Four classes were used, thus ensuring an adequate sampling of students at E.T.S.C., with the majority of them freshmen. No one individual made more than one sort. All sorts were for "self" as actually seen to exist for the subject.

Two criteria were used for the selection of items to be retained in the final form of the instrument. The first consideration was the discriminating power of the item, and second was the content of the item per se. From this point of view the ideal distribution of an item sorted by thrity subjects would be three or four placements in each pile or bin from one through nine. That is, where three students rated this item as most like them, three others rated it as least like them, and so forth throughout the available nine classifications. Since four items within each sort were closely related in terms of different valence statements of the same subject matter, as well as the sampling limitations, this ideal could only be roughly approximated. In somewhat arbitrary fashion slightly more weight was given to the discriminability of positive and negative statements than to neutral and ambivalent ones at this particular stage of development.

In cases where two or more items discriminated between subjects in approximately the same degree, an item was retained if its subject matter or content was dissimilar to other items in the final form. The aim was to have items as psychologically distant from one another as possible. Theoretical meaningfulness was likewise taken into consideration. That is, if one item appeared to have ego-involvement for a subject and discriminated in similar manner to an item with less apparent ego-involvement, the former was retained. While these judg-

ments were often admittedly subjective in nature, in nearly all cases where a particular item was weighed relative to another item within this frame of reference, the advantage of one or the other seemed apparent and clear cut.

In this manner the original pool of items making up the four sorts were reduced. For example, of the 24 distinct items making up the self sort, eight were retained. Likewise, eight items each were retained from the teacher-sort and the two idea sorts. Each of these items was represented by four valence statements. This procedure resulted in a combined sort of 96 items, including the three areas and four valences. This instrument was in turn administered to 26 subjects similar to those described above. Items approximating a normal distribution across the nine classifications after this recombination were retained, while those which failed to discriminate between subjects were eliminated. Thus the Q-sort wasfurther reduced to a sort of 60 items, the final size of the instrument. This form was readministered to 33 subjects as a final check.

The results of this last pre-sort indicated that further changes needed to be made in the wording of a few items, but the majority were unchanged. Evidence from all pilot studies was utilized in the decisions concerning the final form of each statement. The items making up the Q-sort administered in the present research, together with the history of each item throughout the three preliminary sorts, are presented in Appendix A.

The discriminating power of single items is, however, but a single feature of the ideal Q-sort as presently conceived. A second aspect of theoretical excellence involves the over-all distribution

and balance between areas and valences. Here again, perfection can only be approximated due to the number of variables involved. The discriminating power of individual items cannot be sacrificed. Since any change in a valence will have repercussions in the reaction to areas, a resulting improvement in one direction can result in increased weakness in another. Thus, the quest for perfection in these dimensions might be endless. Moreover, existing bias in the population sampled may make it impossible to achieve perfect balance so that any one area and valence has the same placement potential as any other.

In the results of the preliminary Q-sorts a reasonable approximation of these goals was achieved despite these inherent difficulties. Balance between areas proved to be high. An individual subsequently described in terms of Q-sort scores, as self, other, or idea dominated, may, therefore, be presumed to be so as a result of his individual perceptual tendencies. Little apparent prejudice for one area as opposed to another appears to reside within the instrument as constructed. The analyses of area balance are presented in Appendix B.

The results for the valences were somewhat further from the ideal. Negative items, for example, in the standardizing population were skewed toward the "least like me" boxes. The difficulty of making negative statements equally attractive as were positive, ambivalent, and neutral ones seemed insurmountable, however. In addition, neutral items showed a tendency to cluster about the middle box, "neither like me, not unlike me". Both positive and ambivalent items disclosed a slight positive skewness toward "most like me". As a result there exists certain valence prejudices within the instrument. If account is taken of these limitations, the balance of the instrument seems reasonably high.

These figures are likewise presented in Appendix B.

In the ultimate use of the Q-sort, an ideal sort, as well as a self sort was to be made. To test the workability of the instrument for this function, a 60 item sort was also made under the ideal sort conditions by 31 subjects. The results are summarized in Appendix C. The distributions of the ideal-sorts differed considerably from the self sorts for the same group of subjects. Confidence in the ability of the instrument to describe the ideal-self as well as discrepancies between self and ideal-self is thereby enhanced.

A Q-sort has thus been constructed so that preliminary sorts have empirically established: (1) high levels of discrimination by individual items, (2) almost perfect balance of the area components so that with an unbiased population statements from any one area are as popular or unpopular as those from any other, (3) fair balance in the valence components, and (4) the ability to obtain differential placements by the same subjects on the different levels of self and ideal-self.

As these preliminary findings seem to demonstrate, Livson (35) reports experimental evidence that: "The Q-sort does seem to be able to say what the sorter wants to say despite the sorter's doubts that his true impressions are coming through." (35, p. 164) The technique would appear to be an adequately sensitive method with which to measure intervening cognitive variables.

Cooperative School and College Ability Test[1]

The purpose of this test is to aid in estimating the capacity of

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[1]Manual for the School and College Ability Test, Cooperative Test Division, Educational Testing Service, Princeton, New Jersey.

a student to undertake the next higher level of schooling. It consists of four sub-tests. Parts one and three are measures of developed ability in skills that are closely related to student success in the verbal kinds of school learning; parts two and four are measures of ability in quantitative skills of number manipulation and problem solving. The kinds of material in the four parts of the test are as follows: Part I - 30 sentence completion tasks, Part II - 25 numerical computation tasks, Part III - 30 vocabulary tasks, and Part IV - 25 numerical problem solving tasks. It was upon the results of The School and College Ability Test that the ability factor was controlled in the reported experiment.

Subjects

The School and College Ability Test was administered to approximately 600 entering freshmen at East Texas State College in the Fall of 1959. The scores of these individuals were rank ordered and the median calculated. The twenty-five males and twenty-five females scoring immediately above the median, plus the twenty-five males and twenty-five females scoring immediately below the median on this test were administered the Q-sort on October 14, 1959. Complete instructions given to the subjects are presented in Appendix D. At the end of the first semester of college, January of 1960, grade points were calculated for these one hundred subjects based upon a scoring system of four points for A's, three points for B's, two points for C's, one point for D's, and zero points for F's. This total was divided by the total hours taken by the student. Drop-outs were excluded from the investigation. Courses such as orientation, physical education, and other one hour

credit courses were excluded in the calculation of grade point averages.

The next step was to divide the total group into four groups as shown in Figure 4. The median grade point average for both males and females was calculated, and in each instance the twenty individuals scoring furthest above and below the medians were retained, while those nearest the medians were excluded from the study.

	Median Grade Point Average*				
	High			Low	
Group I					Group III
Male "better achievers"	20	5	5	20	Male "poorer achievers"
Group II					Group IV
Female "better achievers"	20	5	5	20	Female "poorer achievers"

*The ten males and ten females scoring nearest to each of the respective G.P.A. medians were dropped from the study.

Figure 4. Basis for grouping subjects.

Thus groups of "better achieving" males, "better achieving" females, "poorer achieving" males, and "poorer achieving" females, numbering twenty each, resulted. These were the subjects included in the study. The means of The School and College Ability Test for each group were then calculated to test whether the ability factor had been equalized. The t-values obtained are presented in Chapter IV.

Statistical Design of the Research

Because analysis of variance is a statistical method used for determining whether significant differences exist between groups, when several different kinds of variables are being investigated, it was the method chosen to test the null hypotheses listed on page 4.

The .05 and .01 per cent levels of probability were assumed. To clarify the procedure that was followed in the statistical analysis, the final compilation sheet used in assembling the data of the study is reproduced in Figure 5.

Matrix

Subject No. ____

Self Sort Totals

	Self	Teacher	Educational	
Positive	A1	B1	C1	1
Neutral	D	E	F	2
Ambivalent	G	H	I	3
Negative	J	K	L	4
	13	14	15	

Ideal Sort Totals

	Self	Teacher	Educational	
Positive	A5	B5	C5	5
Neutral	D	E	F	6
Ambivalent	G	H	I	7
Negative	J	K	L	8
	16	17	18	

Discrepancy Totals

	Self	Teacher	Educational	
Positive	A9	B9	C9	9
Neutral	D	E	F	10
Ambivalent	G	H	I	11
Negative	J	K	L	12
	19	20	21	

Figure 5. Final form on which data of the study was summarized. Score A1 is an additive of placement values of five self-positive statements. Scores 1, 5, and 9 are totals of all the positive statements irrespective of areas on the levels of self sort, ideal-sort, and discrepancy scores respectively. Scores 13, 16, and 19 are totals of all the self statements irrespective of valences on the three levels respectively. The other scores are derived in similar manner.

The actual form utilized in scoring, plus the forms for each of the

antecedent steps, are presented in Appendix E. Scores represented by numbers 1 through 21, and letters A through L, on each level in Figure 5 were tested to determine the significance of differences in the means of the four groups on each of these measures. Thus differences on both combined and single aspects of cognitive attitudes as herein structured were analyzed. Self, ideal, and discrepancy scores broken into four valences and three areas made up a total of 57 variables to be studied among the four groups.

The assumptions underlying use of the analysis of variance according to Wert, et al, (75) are: (1) the observations within each category must be random samples, and (2) the variances within the sub-groups are homogeneous, i.e., they are data from a single normally distributed population. According to these same authors these assumptions are not as strict as is sometimes supposed, however. They say: ". . . it is becoming more apparent that the analysis of variance technique is sufficiently satisfactory even where there is considerable departure from the strict fulfillment of the assumptions. (75, p. 184)

In the present instance randomness is felt to correspond to that found in cluster sampling. If, for example, every third house in a block is selected, every individual has had the chance of being found in this house. It is ultimately a matter of probability. In the same way and to some extent within the present study, every entering freshman has had the opportunity of earning a score which would have placed him within the experimental group. The assumption of a random sample from hypothetical populations of "better" and "poorer" achievers would appear to have been met to at least a moderate degree.

Summary

In this chapter the theoretical considerations underlying the Q-sort and the development of the present form of the instrument have been described. Two approaches seemed possible in the development of the instrument. The first would seek a theoretical basis for justification of the inclusion of a particular item, while the second would seek empirical evidence concerning the item's power to discriminate between persons. The present method represented somewhat of a compromise in that areas and valences were selected within a theoretical framework, but the items themselves were retained primarily upon an empirical basis. The results of preliminary sorts indicate that the instrument as derived does discriminate between persons. The procedure of the study has likewise been outlined.

CHAPTER IV

TREATMENT OF DATA AND ANALYSIS OF RESULTS

The following chapter is composed of a detailed account of the statistical treatment of the data, and the analysis of the results.

Grouping by Grade Point Average

The means and standard deviations of The School and College Ability Test scores for the groups of male and female, better and poorer achievers, are presented in Table I. The average age of the females was 18.2 (years) and the males 18.4 (years).

TABLE I

MEANS AND STANDARD DEVIATIONS FOR SCAT SCORES

	Male Better Achievers	Male Poorer Achievers	Female Better Achievers	Female Poorer Achievers
Mean	291.65	291.80	292.00	291.90
Standard Deviation	1.82	1.72	2.93	3.39

The results of the t-tests for the significance of the differences in group means for standard scores on The School and College Ability Test are presented in Table II.

None of the results were significant, and it may be concluded that there are no differences in scholastic ability in the four groups. The

grade point average of 2.32 for better achiever males, .881 for poorer achiever males, 3.015 for better achiever females, and 1.691 for poorer achiever females is apparently the result of factors other than ability.

TABLE II

t-VALUES FOR DIFFERENCES BETWEEN SCAT STANDARD SCORE MEANS

Groups	t-Value
Females better, females poorer	.09
Males better, males poorer	.26
Males better, females poorer	.28
Males better, females better	.44
Females better, males poorer	.26
Females poorer, males poorer	.11

Analysis of Variance

The analysis of variance for the self positive area is presented in Table III. Analyses are the same for the remaining 56 categories. Degrees of freedom are the same throughout, and the analysis is for sex, achievement, and interaction.

Attitudes: Analysis of Results

The first null hypothesis concerning attitudes was that attitudes towards self, teachers, and education are the same for the four groups. For achievement groups the hypothesis cannot be rejected for self or for education as may be seen by inspection of Tables XIII and XIX. However, for attitudes toward teachers, the null hypothesis must be re-

jected. Significant differences were found to exist in this area as reported in Table XV. For sex groups the null hypothesis is rejected for self, teachers, and education. Significant differences are reported in each of these areas in Tables XIII, XIX, and XV. Achievement groups differ in their attitudes towards teachers, and sex groups differ in their attitudes towards self, teachers, and education.

TABLE III

ANALYSIS OF VARIANCE OF SELF POSITIVE ATTITUDES

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square
Sex	1	130	130
Achievement	1	11	11
Interaction	1	45	45
Within	76	1464	19.3
Total	79	1650	

Sex $F_{1,76} = \frac{130}{19.3} = 6.74$

Achievement $F_{1,76} = \frac{11}{19.3} = < 1.00$

Interaction $F_{1,76} = \frac{45}{19.3} = 2.33$

The second null hypothesis relative to attitudes was that positive, neutral, ambivalent, and negative valences of the four groups are the same. For the achievement grouping the hypothesis cannot be rejected for any valence since the only significant findings were in the teacher areas as presented in Tables V, VII, IX, and XI. The total placement

of positive items does, however, approach significance as indicated in Table V. A tendency thus exists for better achievers to give positive items higher placement than do poorer achievers. For sex groups the null hypothesis cannot be rejected for positive, neutral or ambivalent valences. Significance is approached in the neutral valence, with a trend appearing for females to give higher placement to neutral items than the males in this study. For the negative valence the null hypothesis is rejected as the difference in placement of these items, irrespective of area, is significant at greater than the .01 level of confidence as reported in Table XI. Achievement groups do not differ in attitude valences, but sex groups differ in their use of negative statements for self description, with males placing negative statements higher than do females. A detailed discussion of these findings is presented in the following paragraphs.

Attitudes - Positive Valence

The means of the four groups for self positive, teacher positive, education positive, and total positive attitudes are presented in Table IV.

The F-values for the analysis of variance of the difference between these means are presented in Table V.

The means of the better achievers are higher than those of the poorer achiever for teachers, education, and total positive, indicating a tendency for this group to describe themselves by higher placement of positive items. The F-value of 3.39 for total positive, approaches, but falls short of the .05 level of confidence. The trend, however, becomes significant for the positive teacher items. Better achievers,

both male and female, give higher placement to teacher positive items than do poorer achievers. On the self level the trend is divergent with the mean of the male lower achievers exceeding that of the male higher achievers, whereas the reverse relationship is found for the females. This result is reflected in the analysis of variance results by the F-value of 2.33 for interaction on the self positive level.

TABLE IV

ATTITUDE MEANS POSITIVE VALENCE

	Males High	Males Low	Females High	Females Low
Self Positive	18.70	19.45	22.75	20.50
Teacher Positive	29.05	27.05	29.40	26.00
Education Positive	25.75	25.55	26.65	26.05
Total Positive	73.50	72.05	78.80	72.55

TABLE V

F-VALUES: DIFFERENCE BETWEEN MEANS, ATTITUDES-POSITIVE VALENCE

	Sex	Achievement	Interaction
Self Positive	6.74*	----	2.33
Teacher Positive	----	5.70*	----
Education Positive	----	----	----
Total Positive	1.92	3.39	1.31

* Significant at the .05 level of confidence

The sex difference in the placement of self positive items is significant at just short of the .01 level of confidence. The females in these groups describe themselves in higher positive terms than do the males.

It appears that as a group these entering freshmen attach greater value to teacher positive and educational positive items than to self positive items. Thirty eight per cent of the value of total positive statements is made up of teacher item placement, 35% by educational item placement, and only 27% by self item placement. Thus the conclusion may be entertained that these entering freshmen are more concerned with the teacher area than with either self or educational ideas. These calculations are presented and further discussed in the section comparing attitudes and ideal-attitudes following the section on ideal-attitudes.

Attitudes - Neutral Valence

The means of the four groups for self positive, teacher positive, education positive, and total positive attitudes are presented in Table VI.

The F-values for the analysis of variance of the difference between these means are presented in Table VII.

No consistent trend appears in the differences between means of the achievement groups and none of the F-values approach significance. Placement of neutral items by relatively different achievement level groups is the same. For sex groups a trend for differential placement of neutral items does exist and reaches significance for the educational neutral items. Females give these items higher place-

ment than do males, and there is a tendency for higher placement of all neutral items. However, for items dealing with teachers the trend is reversed, and though the difference is well short of significance, males tend to place these items higher than females.

TABLE VI

ATTITUDE MEANS NEUTRAL VALENCE

	Males High	Males Low	Females High	Females Low
Self Neutral	28.50	28.15	29.45	31.05
Teacher Neutral	26.90	25.35	25.35	24.90
Education Neutral	25.80	25.55	27.50	28.45
Total Neutral	81.20	79.05	82.30	84.40

TABLE VII

F-VALUES: DIFFERENCE BETWEEN MEANS, ATTITUDES-NEUTRAL VALENCE

	Sex	Achievement	Interaction
Self Neutral	3.95	----	1.08
Teacher Neutral	1.45	1.45	----
Education Neutral	5.86*	----	----
Total Neutral	3.27	----	1.42

* Significant at the .05 level of confidence

Attitudes - Ambivalent Valence

The means of the four groups for self ambivalent, teacher am-

bivalent, education ambivalent, and total ambivalent attitudes are presented in Table VIII.

TABLE VIII

ATTITUDE MEANS AMBIVALENT VALENCE

	Males High	Males Low	Females High	Females Low
Self Ambivalent	26.45	26.15	26.45	27.95
Teacher Ambivalent	28.00	28.50	28.85	28.25
Education Ambivalent	26.75	28.25	27.55	27.50
Total Ambivalent	81.20	82.90	82.85	83.70

The F-values for the analysis of variance of the difference between these means are presented in Table IX.

TABLE IX

F-VALUES: DIFFERENCE BETWEEN MEANS, ATTITUDES-AMBIVALENT VALENCE

	Sex	Achievement	Interaction
Self Ambivalent	1.17	----	----
Teacher Ambivalent	----	----	----
Education Ambivalent	----	----	----
Total Ambivalent	----	----	----

There are no apparent trends for either sex or achievement groups to use ambivalent items in a differential manner. Thus ambivalent statements do not appear to discriminate between either sex or achieve-

ment groups.

Attitudes - Negative Valence

The means of the four groups for self negative, teacher negative, education negative, and total negative attitudes are presented in Table X.

TABLE X

ATTITUDE MEANS NEGATIVE VALENCE

	Males High	Males Low	Females High	Females Low
Self Negative	23.10	22.40	20.60	20.30
Teacher Negative	18.65	21.80	16.85	19.70
Education Negative	22.35	21.80	18.60	19.35
Total Negative	64.10	66.00	56.05	59.35

The F-values for the analysis of variance of the difference between these means are presented in Table XI.

The difference between the achievement groups in the placement of teacher negative items is significant at greater than the .01 level of confidence. The poorer achievers show a strong tendency to give these items higher placement than do the better achievers. There is likewise, although well short of significance, a tendency for this to be true of total placement of negative statements, the F-value equaling 1.82.

The trend for differential placement of negative items according to sex is the most extreme yet encountered. In the education and total areas the difference is significant at well beyond the .01 level

of confidence, and in the self and teacher areas the difference is just short of significance at the .05 level of confidence. The females in this sample appear to consistently give lower placement to negative statements than do the males, particularly with educational statements. The males appear to be considerably more willing to describe themselves in negative terms in all areas.

TABLE XI

F-VALUES: DIFFERENCE BETWEEN MEANS, ATTITUDES-NEGATIVE VALENCE

	Sex	Achievement	Interaction
Self Negative	3.67	----	----
Teacher Negative	3.65	8.65**	----
Education Negative	10.85**	----	----
Total Negative	14.57**	1.82	----

** Significant at the .01 level of confidence

Attitudes - Self Area

The means of the four groups for self positive, self neutral, self ambivalent, self negative, and total self attitudes are presented in Table XII.

The F-values for the analysis of variance of the difference between these means are presented in Table XIII.

There is no difference between the various achievement groups in their placement of self statements, irrespective of the valence considered. The sex difference, however, is significant in the positive valence and in the total self placements. Moreover, differences in

trend for both neutral and negative valences appear. Thus, males seem to handle self statements of all valences on the attitudinal level somewhat differently than do females. They tend to give positive, neutral, and ambivalent statements over-all lower placement (less like the self) and negative items higher placement. The conclusion may be entertained that the self concept of males in this study is generally lower than that of the females.

TABLE XII

ATTITUDE MEANS SELF AREA

	Males High	Males Low	Females High	Females Low
Self Positive	18.70	19.45	22.75	20.50
Self Neutral	28.50	28.15	29.45	31.05
Self Ambivalent	26.45	26.15	26.45	27.95
Self Negative	23.10	22.40	20.60	20.30
Total Self	96.75	96.15	99.25	99.80

TABLE XIII

F-VALUES: DIFFERENCE BETWEEN MEANS, ATTITUDES-SELF AREA

	Sex	Achievement	Interaction
Self Positive	6.74*	----	2.33
Self Neutral	3.95	----	1.08
Self Ambivalent	1.17	----	----
Self Negative	3.67	----	----
Total Self	4.97*	----	----

* Significant at the .05 level of confidence

Attitudes - Teacher Area

The means of the four groups for teacher positive, teacher neutral, teacher ambivalent, teacher negative, and total teacher attitudes are presented in Table XIV.

TABLE XIV

ATTITUDE MEANS TEACHER AREA

	Males High	Males Low	Females High	Females Low
Teacher Positive	29.05	27.05	29.40	26.00
Teacher Neutral	26.90	25.35	25.35	24.90
Teacher Ambivalent	28.00	28.50	28.85	28.25
Teacher Negative	18.65	21.80	16.85	19.70
Total Teacher	102.60	102.70	100.45	98.85

The F-values for the analysis of variance of the difference between these means are presented in Table XV.

The difference between the achievement groups is significant at greater than the .01 level of confidence in the use of teacher negative statements, and at greater than the .05 level of confidence in the use of teacher positive statements. The better achievers give higher placement to the teacher positive items and lower placement to the teacher negative items than do the poorer achievers of both sexes. In this instance the placement of the two classes of items is both complimentary and consistent, although the negative items discriminate to a finer degree than do the positive ones.

There is a significant difference between the sex groups in the

total placement of teacher items, with males receiving the higher values. The sex difference in the use of teacher negative items just misses being significant. The males tend to assign these statements higher values than do the females. In view of the higher achievement of the females in the sample, this finding is highly consistent with the findings for the achievement groups.

TABLE XV

F-VALUES: DIFFERENCE BETWEEN MEANS, ATTITUDES-TEACHER AREA

	Sex	Achievement	Interaction
Teacher Positive	----	5.70*	----
Teacher Neutral	1.45	1.45	----
Teacher Ambivalent	----	----	----
Teacher Negative	3.65	8.65**	----
Total Teacher	4.89*	----	----

* Significant at the .05 level of confidence
** Significant at the .01 level of confidence

Since the primary focus of interest in the present research is in differences between better and poorer achievers, irrespective of sex, item analyses were made of the teacher positive and teacher negative statements. Results for the positive items are presented in Table XVI.

A general trend thus exists for the better achievers to place each of these items in a higher category than do the poorer achievers. The only exception to this was found with Item 20, where the males followed the general tendency, but where the females reversed the placement, resulting in a negative value for the difference between

the means for this item. The most discriminating item was number two which reads, "I feel I would like being a teacher." Next was Item 17 reading, "I feel teachers would be successful in positions other than teaching."

TABLE XVI

ANALYSIS OF TEACHER POSITIVE ITEMS

Items Making Up This Category	Means Males & Females High	Means Males & Females Low	Difference
Item 2	6.25	4.85	1.40
Item 17	6.075	5.10	.975
Item 20	5.525	5.75	(.225)
Item 35	6.00	5.60	.40
Item 50	5.375	5.225	.15
Total Mean	5.845	5.305	2.70

Results for the negative items are presented in Table XVII.

The trend here is for the better achievers to give lower placement to negative teacher items than do the poorer achievers. Interestingly, Items 20 and 50 on the positive level, coresponding to Items 32 and 59 on the negative level, do not discriminate between groups in either instance. Item 20 reads, "I feel that teachers treat students as equals." Item 50 reads, "I feel at ease when talking to teachers." Both these items have a personal connotation and express directly or indirectly a relationship between sorter and teacher. Item 2, quoted earlier, offers a simple choice. No stigma is attached to not liking teaching as a vocation. Item 17 which was

quoted earlier, and Item 35 which reads, "I feel teachers are good models for adult behavior patterns," call for direct evaluation of teachers as a group with, however, the relationship aspects somewhat modified. It appears as though on attitude levels teacher items discriminate between better and poorer achievers to a greater degree than do either self or educational referent items. Furthermore, it appears that the more impersonal and non-relational these items, the more discrimination they provide.

TABLE XVII

ANALYSIS OF TEACHER NEGATIVE ITEMS

Items Making Up This Category	Means Males & Females High	Means Males & Females Low	Difference
Item 14	7.00	9.75	(2.75)
Item 29	6.60	8.80	(2.20)
Item 32	7.25	7.30	(.05)
Item 47	5.75	6.70	(.95)
Item 59	8.85	8.95	(.10)
Total Mean	7.09	8.30	(6.05)

Perhaps it is not the degree to which students perceive of themselves as having difficulty or ease in their relationships with teachers which is important for subsequent performance as a student, but the extent to which group stereotypes have been accepted for thinking of teachers.

Attitudes - Education Area

The means of the four groups for education positive, education

neutral, education ambivalent, education negative, and total educational attitudes are presented in Table XVIII.

TABLE XVIII

ATTITUDE MEANS EDUCATIONAL AREA

	Males High	Males Low	Females High	Females Low
Education Positive	25.75	25.55	26.65	26.05
Education Neutral	25.80	25.55	27.50	28.45
Education Ambivalent	26.75	28.25	27.55	27.50
Education Negative	22.35	21.80	18.60	19.35
Total Educational	100.65	101.15	100.30	101.35

The F-values for the analysis of variance of the difference between these means are presented in Table XIX.

TABLE XIX

F-VALUES: DIFFERENCE BETWEEN MEANS, ATTITUDES-EDUCATIONAL AREA

	Sex	Achievement	Interaction
Education Positive	----	-----	----
Education Neutral	5.86*	-----	----
Education Ambivalent	----	-----	----
Education Negative	10.85**	-----	----
Total Educational	----	-----	----

* Significant at the .05 level of confidence
** Significant at the .01 level of confidence

No differences between the achievement groups exist in this area on any valence or in the total of the placements. For sex groups neutral educational items are placed on a differential basis at greater than the .05 level of confidence. Negative educational item differences are significant at greater than the .01 level of confidence. The neutral items are given higher placement by the females than by the males. Conversely, the negative educational items are given higher placement by males than by females. Since the females were relatively better achievers than the males, these results may be taken to mean that negative attitudes towards educational ideas are a possible handicap for subsequent achievement.

Ideal Attitudes - Analysis of Results

The first null hypothesis concerning ideal-attitudes was that ideal-attitudes towards self, teachers, and education were the same for the four groups. For achievement groups the hypothesis cannot be rejected according to the evidence obtained. As presented in Tables XXX, XXXII, and XXXIV the .05 level of confidence is not achieved. However, in several instances significance is approached. For the sex groups the null hypothesis must be rejected. These groups differ in their self-ideal-attitudes (Table XXX), in teacher-ideal-attitudes (Table XXXII), and in education-ideal-attitudes (Table XXXIV). The nature of these differences is discussed in further detail in the section following each of these tables. Interaction was found to be significant on two occasions (Tables XXX and XXXIV), indicating that the use of ideal statements for self and education may be differential for achievement dependent on sex.

The second null hypothesis relative to ideal-attitudes was that positive, neutral, ambivalent, and negative valences of the four groups are the same. For the achievement groups the hypothesis is rejected since a significant difference at greater than the .05 level of confidence and near the .01 level of confidence was found in the differential use of negative statements as presented in Table XXVII. For sex groups the null hypothesis must likewise be rejected since differences were found beyond the .05 and .01 levels of confidence as presented in Tables XXI, XXV, and XXVII.

Achievement groups thus were found to differ in the use of valence statements at the ideal-attitude level and the sex groups to differ in the use of both area and valence statements. The detailed discussion of these differences follows.

Ideal Attitudes - Positive Valence

The means of the four groups for ideal self positive, ideal teacher positive, ideal education positive, and total positive ideal-attitudes are presented in Table XX.

TABLE XX

IDEAL-ATTITUDE MEANS POSITIVE VALENCE

	Males High	Males Low	Females High	Females Low
Ideal Self Positive	23.45	24.25	30.60	26.90
Ideal Teacher Positive	32.50	29.40	32.85	32.50
Ideal Education Positive	26.65	28.25	29.35	28.20
Total Positive	82.60	81.90	92.80	87.60

The F-values for the analysis of variance of the difference between these means are presented in Table XXI.

TABLE XXI

F-VALUES: DIFFERENCE BETWEEN MEANS, IDEAL-ATTITUDES-POSITIVE VALENCE

	Sex	Achievement	Interaction
Ideal Self Positive	18.43**	1.61	3.83
Ideal Teacher Positive	2.58	2.58	1.66
Ideal Education Positive	1.80	----	1.91
Total Positive	15.35**	2.12	1.20

** Significant at the .01 level of confidence

For achievement groups no significant differences are found in positive valence, ideal-attitude placements. For sex groups a significant difference at beyond the .01 level of confidence is found for total placement as well as in the self area. Positive ideal statements in general are given higher placement by females than by males, and this is particularly true of self positive statements. There is a general trend for interaction variables to be higher than was found on the attitude level. Interaction is close to significance on the self level. Apparently, the female better achievers tend to place self positive items higher when describing themselves on the ideal level than do the poorer achievers, whereas the male better achievers tend to give these same items lower placements than do the male poorer achievers. It should be noted that the difference is much larger for the females than for the males, and that the lower female mean is well

above the higher male mean. Higher positive ideals tend to be an advantage to the females taken as better achievers than males, and moreover within the female sex this same higher placement continues to accompany better achievement. The same general tendency is reflected in the non-significant F-value of 2.12 for total positive achievement groups.

Ideal Attitudes - Neutral Valence

The means of the four groups for ideal self neutral, ideal teacher neutral, ideal education neutral, and total neutral ideal-attitudes are presented in Table XXII.

TABLE XXII

IDEAL-ATTITUDE MEANS NEUTRAL VALENCE

	Males High	Males Low	Females High	Females Low
Ideal Self Neutral	30.30	30.05	32.20	31.05
Ideal Teacher Neutral	27.25	27.25	26.40	25.40
Ideal Education Neutral	29.65	26.65	28.95	30.20
Total Neutral	87.20	83.95	87.55	86.65

The F-values for the analysis of variance of the difference between these means are presented in Table XXIII.

No significant differences were found in the neutral valences between achievement groups. The same is true for grouping by sex, although the placement of ideal teacher neutral items approaches significance. The only significant item in this category is the

interaction value for education neutral. In this instance the male better achievers give such items higher placement than do the male poorer achievers, whereas the female poorer achievers reverse this trend. In general, however, neutral statements on the level of ideal-attitudes do not appear to discriminate between the groups composing this study.

TABLE XXIII

F-VALUES: DIFFERENCE BETWEEN MEANS, IDEAL-ATTITUDES-NEUTRAL VALENCE

	Sex	Achievement	Interaction
Ideal Self Neutral	1.89	----	----
Ideal Teacher Neutral	3.49	----	----
Ideal Education Neutral	2.17	----	4.89*
Total Neutral	----	1.67	----

* Significant at the .05 level of confidence

Ideal Attitudes - Ambivalent Valence

The means of the four groups for ideal self ambivalent, ideal teacher ambivalent, ideal education ambivalent, and total ambivalent ideal-attitudes are presented in Table XXIV.

The F-values for the analysis of variance of the difference between these means are presented in Table XXV.

For the achievement groups no significant differences are found for ambivalent valences on the ideal-attitude level. For sex groups the difference is significant at better than the .05 level of confidence for the total of ambivalent statements as well as for educational and

teacher ambivalent statements. Males tend to place ambivalent statements higher in describing themselves on the ideal level than do females. This in particular is true of educational ambivalent statements. Ambivalence is apparently better tolerated in the ideal-attitudes of males than of females. If this is true, since females as a group achieved in excess of males, then ambivalence in ideal-attitudes might possibly be a handicap for grade-point achievement.

TABLE XXIV

IDEAL-ATTITUDE MEANS AMBIVALENT VALENCE

	Males High	Males Low	Females High	Females Low
Ideal Self Ambivalent	23.50	23.40	22.95	22.90
Ideal Teacher Ambivalent	24.90	25.65	24.05	23.45
Ideal Education Ambivalent	26.20	25.70	23.55	24.95
Total Ambivalent	74.60	74.75	70.55	71.30

TABLE XXV

F-VALUES: DIFFERENCE BETWEEN MEANS, IDEAL-ATTITUDES-AMBIVALENT VALENCE

	Sex	Achievement	Interaction
Ideal Self Ambivalent	----	----	----
Ideal Teacher Ambivalent	4.05*	----	----
Ideal Education Ambivalent	5.44*	----	1.84
Total Ambivalent	5.76*	----	----

* Significant at the .05 level of confidence

Ideal Attitudes - Negative Valence

The means of the four groups for ideal self negative, ideal teacher negative, ideal education negative, and total negative ideal-attitudes are presented in Table XXVI.

TABLE XXVI

IDEAL-ATTITUDE MEANS NEGATIVE VALENCE

	Males High	Males Low	Females High	Females Low
Ideal Self Negative	17.20	19.70	14.65	15.50
Ideal Teacher Negative	17.25	17.60	15.70	18.30
Ideal Education Negative	21.15	22.10	18.75	20.65
Total Negative	55.60	59.40	49.10	54.45

The F-values for the analysis of variance of the difference between these means are presented in Table XXVII.

TABLE XXVII

F-VALUES: DIFFERENCE BETWEEN MEANS, IDEAL-ATTITUDES-NEGATIVE VALENCE

	Sex	Achievement	Interaction
Ideal Self Negative	13.84**	3.35	----
Ideal Teacher Negative	----	2.69	1.63
Ideal Education Negative	4.44*	2.43	----
Total Negative	11.41**	7.28**	----

* Significant at the .05 level of confidence
** Significant at the .01 level of confidence

For the total placement of negative statements on the ideal level, the difference in the achievement groups is significant at greater than the .01 level of confidence. The lower achievers show a tendency to give higher placement to these negative items than do the better achievers. For sex groupings the difference is likewise significant for total negative items as well as for self items, in particular, and educational items to a lesser degree. In each instance the males tend to place negative items higher than do females. The ideal placement of negative items thus successfully discriminated between the achievement groups composing the present study.

In view of the success of these statements an item analysis was made for all negative items. The results are presented in Table XXVIII.

As may be seen only two items (32 and 30) reverse the trend for higher placement by the lower achieving groups. The tendency thus appears to be general and spread over all negative items regardless of area. Individual differences in items within areas are noticeable, however, with the brunt of discrimination carried by two items in each area, 13 and 46 on the self level, 14 and 47 on the teacher level, and 45 and 48 on the educational level. A willingness to place these items (and the others to a lesser degree) relatively higher in a self description of ideal-attitudes seems to accompany relatively poorer grade-point achievement. The same is true for males versus females, in that males place such statements higher than do females. Since the same relationships did not hold for the complimentary positive ideal-attitude statements, it appears that a kind of defensiveness may be involved. Whereas achievement groups tend to give equivalent placement to positive items displaying perhaps a generalized desire toward positive ideal-self

description, a concurrent inability to contain self doubt in the use of negative statements may be postulated. Thus the individual who tends toward poorer achievement may find it impossible, even on the ideal level, to refrain from placing negative statements relatively higher than will those whose success potential is greater.

TABLE XXVIII

ITEM ANALYSIS OF IDEAL-NEGATIVE STATEMENTS

		Means Males & Females High	Means Males & Females Low	Difference
Self Items	13	1.925	2.90	(.975)
	16	4.375	4.425	(.05)
	31	2.95	3.05	(.10)
	46	3.975	4.375	(.40)
	58	2.70	2.85	(.15)
		15.925	17.60	(1.675)
Teacher Items	14	3.40	4.30	(.90)
	29	3.575	3.725	(.15)
	32	3.275	3.075	.20
	47	3.25	3.70	(.45)
	59	2.975	3.15	(.175)
		16.475	17.95	(1.475)
Education Items	15	5.10	5.225	(.125)
	30	4.05	3.975	.075
	45	2.975	3.95	(.975)
	48	3.75	4.125	(.375)
	60	4.075	4.10	(.025)
		19.95	21.375	(1.425)
Total		52.35	56.925	(4.575)
Over-all Mean		3.49	3.795	

Ideal-Attitudes - Self Area

The means of the four groups for ideal self positive, ideal self neutral, ideal self ambivalent, ideal self negative, and total ideal self attitudes are presented in Table XXIX.

TABLE XXIX

IDEAL-ATTITUDE MEANS SELF AREA

	Males High	Males Low	Females High	Females Low
Ideal Self Positive	23.45	24.25	30.60	26.90
Ideal Self Neutral	30.30	30.05	32.20	31.05
Ideal Self Ambivalent	23.50	23.40	22.95	22.90
Ideal Self Negative	17.20	19.70	14.65	15.50
Ideal Self Total	94.45	97.40	100.40	96.35

The F-values for the analysis of variance of the difference between these means are presented in Table XXX.

For the achievement groups no significant differences are found in the use of self statements on the ideal level. For sex groups differences are found at well beyond the .01 level of confidence. These differences were described earlier in the discussions accompanying Tables XXI and XXVII. Of additional interest here is the significant interaction effect found for placement of self statements of all valences. The female better achievers place these statements generally higher than do the female poorer achievers, whereas for males the reverse relationship is obtained. Differential meanings of self ideal-attitudes for the two sexes appears to exist. For females high place-

ment of self-area, ideal-attitudes appears to be related to better achievement, and high self ideals may be considered an asset. For males, however, it would appear that relatively higher ideals are a handicap. These differences might well bear a relationship to the more positive attitudes toward self found to exist for the females of this study. High self-area attitudes perhaps lead to toleration of high self-area, ideal-attitudes, whereas individuals relatively lower in self attitudes cannot tolerate the higher levels of ideal-attitudes.

TABLE XXX

F-VALUES: DIFFERENCE BETWEEN MEANS, IDEAL-ATTITUDES-SELF AREA

	Sex	Achievement	Interaction
Ideal Self Positive	18.43**	1.61	3.83
Ideal Self Neutral	1.89	----	----
Ideal Self Ambivalent	----	----	----
Ideal Self Negative	13.84**	3.35	----
Ideal Self Total	2.68	----	5.45*

* Significant at the .05 level of confidence
** Significant at the .01 level of confidence

Ideal-Attitudes - Teacher Area

The means of the four groups for ideal teacher positive, ideal teacher neutral, ideal teacher ambivalent, ideal teacher negative, and total ideal teacher attitudes are presented in Table XXXI.

The F-values for the analysis of variance of the difference

between these means are presented in Table XXXII.

TABLE XXXI

IDEAL-ATTITUDE MEANS TEACHER AREA

	Males High	Males Low	Females High	Females Low
Ideal Teacher Positive	32.50	29.40	32.85	32.50
Ideal Teacher Neutral	27.25	27.25	26.40	25.40
Ideal Teacher Ambivalent	24.90	25.65	24.05	23.45
Ideal Teacher Negative	17.25	17.60	15.70	18.30
Ideal Teacher Total	101.90	99.90	99.00	99.65

TABLE XXXII

F-VALUES: DIFFERENCE BETWEEN MEANS, IDEAL-ATTITUDES-TEACHER AREA

	Sex	Achievement	Interaction
Ideal Teacher Positive	2.58	2.58	1.66
Ideal Teacher Neutral	3.49	----	----
Ideal Teacher Ambivalent	4.05*	----	----
Ideal Teacher Negative	----	2.69	1.63
Ideal Teacher Total	1.10	----	----

* Significant at the .05 level of confidence

No significant differences are found for the ideal teacher area between achievement groups. For sex groups a significant difference at better than the .05 level of confidence is found for teacher ambivalent statements. Males tend to give such items higher placement than do the

females of the study.

Ideal-Attitudes - Education Area

The means of the four groups for ideal education positive, ideal education neutral, ideal education ambivalent, ideal education negative, and total ideal educational attitudes are presented in Table XXXIII.

TABLE XXXIII

IDEAL-ATTITUDE MEANS EDUCATION AREA

	Males High	Males Low	Females High	Females Low
Ideal Education Positive	26.65	28.25	29.35	28.20
Ideal Education Neutral	29.65	26.65	26.95	30.20
Ideal Education Ambivalent	26.20	25.70	23.55	24.95
Ideal Education Negative	21.15	22.10	18.75	20.65
Ideal Educational Total	103.65	102.70	100.60	104.00

The F-values for the analysis of variance of the difference between these means are presented in Table XXXIV.

For the achievement groups no significant differences are found for ideal educational area statements. For sex groups significant differences are found in both ambivalent and negative statements. Males tend to place both these educational valences higher than do females in the ideal-attitude category. Interaction was likewise found to be significant for the neutral valence, indicating that placement is differential for achievement groups within sex cate-

gories.

TABLE XXXIV

F-VALUES: DIFFERENCE BETWEEN MEANS, IDEAL-ATTITUDES-EDUCATION AREA

	Sex	Achievement	Interaction
Ideal Education Positive	1.80	----	1.91
Ideal Education Neutral	2.17	----	4.89*
Ideal Education Ambivalent	5.44*	----	1.84
Ideal Education Negative	4.44*	2.43	----
Ideal Educational Total	----	----	2.46

* Significant at the .05 level of confidence

Comparison of Attitudes and Ideal-Attitude Means

A comparison of positive attitudes and positive ideal-attitudes discloses, by and large, the same relationships of areas on both levels. That is, the teacher area is given the greatest value in both cases, with the educational area next, and the self area being assigned the lowest values. These figures are presented in Table XXXV.

The means of negative statements for the same two levels of attitude and ideal-attitudes are presented in Table XXXVI.

Table XXXV indicates that in using positive statements for both ideal-attitudes and attitudes, the teacher area receives the highest values (most like one's self and most like the self you want to be). With negative statements on the attitudinal level, Table XXXVI, these results are mirrored in the findings that the teacher area was given the lowest values and self areas the highest. This would seem to

indicate that to these students both teacher and educational referent statements are more important than self referent ones. However, in Table XXXVI in the means for negative statements on the ideal level, the more logical arrangement is found. Here lowest values are given to self referent statements and highest to educational referent ones.

TABLE XXXV

MEANS OF POSITIVE STATEMENTS ARRANGED BY AREA FROM HIGHEST TO LOWEST VALUES

		Males High	Males Low	Females High	Females Low
Positive Attitudes					
Highest	Teacher	29.05	27.05	29.40	
	Education	25.75	25.55	26.65	26.05
	Teacher				26.00
Lowest	Self	18.70	19.45	22.75	20.50
Positive Ideal-Attitudes					
Highest	Teacher	32.50	29.40	32.85	32.50
	Education	26.65	28.25		28.20
Lowest	Self	23.45	24.25	30.60	26.90
	Education			29.35	

Apparently something can be expressed about the self using negative ideal statements which does not come through using positive ideal statements or in the use of either valence on the level of attitudes. Since negative ideal statement placements discriminated between achievement groups more successfully than did any other category, these findings are taken as having considerable significance

for the purpose of the study. It might be noted that seldom has such a category been included in measurement devices utilized in the study of achievement variables.

TABLE XXXVI

MEANS OF NEGATIVE STATEMENTS ARRANGED BY AREA FROM HIGHEST TO LOWEST VALUES

		Males High	Males Low	Females High	Females Low
Negative Attitudes					
Highest	Self	23.10	22.40	20.60	20.30
	Education	22.35	21.80	18.60	
Lowest	Teacher	18.65	21.80	16.85	19.70
	Education				19.35
Negative Ideal-Attitudes					
Highest	Education	21.15	22.10	18.75	20.65
	Teacher	17.25		15.70	18.30
Lowest	Self	17.20	19.70	14.65	15.50
	Teacher		17.60		

Further comparative placement results are given in Table XXXVII.

The males in this study assign lower values to positive self referent statements than to any other valence. Even negative statements are considered more descriptive of the self than are positive statements. Female lower achievers have made positive and negative placements almost equivalent, and only with the female better achievers do positive statements exceed the negative by any appreciable amount. Even on the ideal level neutral statements are apparently more attractive than are

positive ones.

TABLE XXXVII

MEANS OF SELF ATTITUDES AND IDEAL-ATTITUDES ARRANGED BY VALENCE FROM HIGHEST TO LOWEST VALUES

		Males High	Males Low	Females High	Females Low
Self Attitudes					
Highest	Neutral	28.50	28.15	29.45	31.05
	Ambivalent	26.45	26.15	26.45	27.95
	Negative	23.10	22.40		
Lowest	Positive	15.70	19.45	22.75	20.50
	Negative			20.60	20.30
Ideal Attitudes					
Highest	Neutral	30.30	30.05	32.20	31.05
	Positive		24.25	30.60	26.90
	Ambivalent	23.50	23.40	22.95	22.90
	Positive	23.45			
Lowest	Negative	17.20	19.70	14.65	15.50

Discrepancy Scores - Analysis of Results

The first null hypothesis concerning discrepancy scores was that for areas of self, teachers, and education, scores would be the same for the four groups. For the achievement groups the hypothesis cannot be rejected since no significant differences were found. The results are presented in Tables XXXIX, XLI, XLIII, and XLV. For grouping by sex, once again the null hypothesis cannot be rejected as the

results presented in these same tables disclose no F-values significant at the .05 level of confidence.

The second null hypothesis relative to discrepancy was that positive, neutral, ambivalent, and negative valence discrepancy scores are the same. For the achievement groups the hypothesis cannot be rejected as no significant differences were obtained. The results are presented in Tables XXXIX, XLI, XLIII, and XLV. For the sex groups the hypothesis has to be rejected in that a significant difference was found in the use of ideal ambivalent statements as presented in Table XLIII.

Thus, the achievement groups are the same in discrepancy scores for both areas and valences. The sex groups, while the same for areas, differ significantly in valence usage. The results are discussed in detail in the paragraphs which follow.

Discrepancy - Positive Valence

The means of the four groups for self positive, teacher positive, education positive, and total positive discrepancy scores are presented in Table XXXVIII.

The F-values for the analysis of variance of the difference between these means are presented in Table XXXIX.

For the achievement groups no differences were found in discrepancies between attitudes and ideal-attitudes using positive statements. For the sex groups no significant differences were found but significance was approached for total positive and teacher positive statements. The females in the study tend to have greater discrepancies, and the trend is observable in all but the educational scores. Thus, females tend to place positive statements higher on the

ideal level than on the attitude level (greater distance between such statements) than do the males. Since in general females as a group were better achievers than males as a group, the greater discrepancy discovered may be considered an asset in achievement. Within the female group, however, it should be noted that larger self and educational discrepancies are accompanied by better achievement, but in the teacher area the opposite effect is rather strikingly displayed. In this instance greater discrepancies are accompanied by poorer achievement.

TABLE XXXVIII

DISCREPANCY MEANS POSITIVE VALENCE

	Males High	Males Low	Females High	Females Low
Disc. Self Positive	(4.75)	(4.80)	(7.85)	(6.40)
Disc. Teacher Positive	(3.45)	(2.35)	(3.45)	(6.50)
Disc. Education Positive	(.90)	(2.70)	(2.70)	(2.15)
Total Positive Disc.	(9.10)	(9.85)	(14.00)	(15.05)

TABLE XXXIX

F-VALUES: DIFFERENCE BETWEEN MEANS, DISCREPANCY-POSITIVE VALENCE

	Sex	Achievement	Interaction
Disc. Self Positive	2.51	----	----
Disc. Teacher Positive	3.28	----	3.28
Disc. Education Positive	----	----	1.21
Total Positive Disc.	3.48	----	----

For teacher positive discrepancies the means of the females are larger than those of the males. There is, moreover, differential placement for achievement groups within the sex groups since the F-value for interaction approaches significance.

Discrepancy - Neutral Valence

The means of the four groups for self neutral, teacher neutral, education neutral, and total neutral discrepancy scores are presented in Table XL.

TABLE XL

DISCREPANCY MEANS NEUTRAL VALENCE

	Males High	Males Low	Females High	Females Low
Disc. Self Neutral	(1.80)	(1.90)	(2.75)	(0.00)
Disc. Teacher Neutral	(.35)	(1.90)	(1.05)	(.50)
Disc. Education Neutral	(3.85)	(1.10)	(1.45)	(1.75)
Total Neutral Disc.	(6.00)	(4.90)	(5.25)	(2.25)

The F-values for the analysis of variance of the difference between these means are presented in Table XLI.

Discrepancies between attitudes and ideal-attitudes using neutral statements were not significant for either sex or achievement groups. There was a slight tendency throughout this category for interaction F-values to be larger than any of the F-values for differences between groups, once again indicating differential placement by sex within the achievement groups.

TABLE XLI

F-VALUES: DIFFERENCE BETWEEN MEANS, DISCREPANCY-NEUTRAL VALENCE

	Sex	Achievement	Interaction
Disc. Self Neutral	----	1.16	1.32
Disc. Teacher Neutral	----	----	1.00
Disc. Education Neutral	----	1.25	1.92
Total Neutral Disc.	----	1.01	----

Discrepancy - Ambivalent Valence

The means of the four groups for self ambivalent, teacher ambivalent, education ambivalent, and total ambivalent discrepancy scores are presented in Table XLII.

TABLE XLII

DISCREPANCY MEANS AMBIVALENT VALENCE

	Males High	Males Low	Females High	Females Low
Disc. Self Amb.	2.95	2.75	3.50	5.05
Disc. Teacher Amb.	3.10	2.85	4.80	4.80
Disc. Education Amb.	.55	2.55	4.00	2.55
Total Ambivalent Disc.	6.60	8.15	12.30	12.40

The F-values for the analysis of variance of the difference between these means are presented in Table XLIII.

The achievement groups did not differ significantly in discrepancy

scores for ambivalent statements. For sex groups the difference between total scores was significant at greater than the .05 level of confidence. The females tend to place ambivalent statements higher on the attitude level, relative to these same statements on the ideal level, than do the males. It might be said, therefore, that the female's attitudes are more ambivalent and their ideal-attitudes less so. The trend was consistent for all levels except that of teacher statements. Interaction approached significance on the education ambivalent discrepancy scores. The successful females had greater discrepancies in this area than the less successful females, whereas the less successful males had greater discrepancies than did the more successful males.

TABLE XLIII

F-VALUES: DIFFERENCE BETWEEN MEANS, DISCREPANCY-AMBIVALENT VALENCE

	Sex	Achievement	Interaction
Disc. Self Amb.	1.52	----	----
Disc. Teacher Amb.	3.28	----	----
Disc. Education Amb.	3.51	----	3.57
Total Ambivalent Disc.	6.99*	----	----

* Significant at the .05 level of confidence

Discrepancy - Negative Valence

The means of the four groups for self negative, teacher negative, education negative, and total negative discrepancy scores are presented in Table XLIV.

TABLE XLIV

DISCREPANCY MEANS NEGATIVE VALENCE

	Males High	Males Low	Females High	Females Low
Disc. Self Negative	5.90	2.70	5.95	4.80
Disc. Teacher Negative	1.40	4.20	1.15	1.40
Disc. Education Negative	1.20	(.30)	(.15)	(1.30)
Total Negative Disc.	8.50	6.60	6.95	4.90

The F-values for the analysis of variance of the difference between these means are presented in Table XLV.

TABLE XLV

F-VALUES: DIFFERENCE BETWEEN MEANS, DISCREPANCY-NEGATIVE VALENCE

	Sex	Achievement	Interaction
Disc. Self Negative	----	2.55	----
Disc. Teacher Negative	1.98	1.98	1.31
Disc. Education Negative	1.39	1.80	----
Total Negative Disc.	----	----	----

None of the differences between groups were significant for either sex or achievement for discrepancy scores derived from the placement of negative statements. An interesting trend is encountered in the figures in Table XLV, however. Negative educational statements tend to receive higher placement on the ideal-attitudinal level than on the level of attitudes. Thus, three of the four figures are nega-

tive values. As can be seen all equivalent means for self and teacher negative statements are positive, indicating that higher placement occurred when describing attitudes. It would appear logical to find negative statements placed higher when describing the self than when describing the ideal self. These facts may be interpreted to mean that negative feelings about educational ideas are considerably more acceptable to these students than are negative statements concerning either teachers or self as object.

Discrepancy - Area Totals

In the interest of brevity the individual area means and F-values have not been reproduced as they were for both attitudes and ideal-attitudes. Means for the discrepancies in self positive, neutral, ambivalent, and negative valences may be found in the first row of figures in Tables XXXVIII, XL, XLII, and XLIV. The same procedure may be followed for both teacher and education areas. F-values are presented for the analysis of variance of the differences between these means in Tables XXXIX, XLI, XLIII, and XLV. The means of the four groups for total self area, total teacher area, and total education area discrepancy scores are presented in Table XLVI.

TABLE XLVI

DISCREPANCY MEANS - TOTAL SCORES FOR THREE AREAS

	Males High	Males Low	Females High	Females Low
Disc. Self Total	2.30	(1.25)	(1.15)	3.45
Disc. Teacher Total	.70	2.80	1.45	(.80)
Disc. Education Total	(3.00)	(1.55)	(.30)	(2.65)

The F-values for the analysis of variance of the difference between these means are presented in Table XLVII.

TABLE XLVII

F-VALUES: DIFFERENCE BETWEEN MEANS, TOTAL SCORES FOR THREE AREAS

	Sex	Achievement	Interaction
Disc. Self Total	----	----	5.77*
Disc. Teacher Total	----	----	1.40
Disc. Education Total	----	----	1.29

* Significant at the .05 level of confidence

The only significant result discovered in the use of total area statements was for interaction of self discrepancy scores inclusive of all valences. More successful females and less successful males had discrepancies where the over-all ideal-attitude placement was higher than the over-all attitude placement. Conversely, less successful females and more successful males made over-all higher placements of self attitude statements than of self ideal-attitude statements.

CHAPTER V

SUMMARY AND CONCLUSIONS

General Summary of the Investigation

This investigation compared groups of better and poorer achievers, male and female, in terms of Q-sort scores for attitudes, ideal-attitudes, and discrepancy scores. These categories were in turn broken into areas of self, teacher, and education, and into positive, neutral, ambivalent, and negative valences. Null hypotheses that the better and poorer achievers and the two sexes were the same on the resulting 57 tabulations were tested.

The primary purpose of the study was to isolate factors, within the cognitive structure of the individual, which are associated with better and poorer achievement during the first semester of college. It was assumed that commonalities in these structures which have measurable effects upon subsequent achievement levels exist between individuals.

In the Fall of 1959 at East Texas State College, the entire entering class, totaling approximately 600 individuals, was given The School and College Ability Test. The twenty-five males and twenty-five females scoring just below the median, and the same number scoring just above the median were then given the Q-sort test. At the end of the first semester grade point averages were calculated for these one hundred individuals. The ten males and ten females whose averages

were nearest the median for their respective groups were dropped from the study. This procedure resulted in four groups for which Q-sort results were compared: (1) Male better achievers, (2) Male poorer achievers, (3) Female better achievers, and (4) Female poorer achievers. The independent variables then were sex and achievement, and the dependent variables were the 57 separate Q-sort measures. The Q-sort instrument itself was empirically developed specifically to serve the purposes of this study. Normative groups were composed of students at this same college.

The data were treated statistically by the method of analysis of variance. The method adopted allowed differences between sex groups, achievement groups, snd interaction between sex and achievement to be evaluated simultaneously for each separate Q-sort measurement.

Summary of Results

One of the first and most impressive findings concerned the differential achievement level of the males and females composing the study. The over-all mean grade point average for females was 2.353 and for males 1.605, representing a difference of three-quarters of a grade point (.748). While this difference is considerably less than differences between male better and poorer achievers (1.439) and female better and poorer achievers (1.324), it is, nevertheless, large enough that the sex differential may be regarded as a different kind of achievement grouping for present purposes. Therefore, it seems justifiable to conclude that the sex variable must be controlled in achievement research. From these results it looks as though achievement were not common to the two groups but is at least in part unique to

each. Achievement in males may need to be studied quite apart from achievement in females.

A second finding and one which points to the urgency for continuing research in the achievement area is the range of grade point achievement encountered in these subjects. For males the range was from 3.11 to 0 (zero), and for females from 3.81 to .56. Remembering that all subjects were of nearly equal ability as measured by The School and College Ability Test, the dramatic effects of other factors has been forcefully demonstrated.

One of the contentions of the present theoretical position was that discrepancies between self and ideal self might have limited value conceived as a unilinear factor related to achievement. It was postulated that in one instance discrepancy might lead to greater achievement and conversely might in the next, lead to poorer achievement. Justification of this point of view is inferred from the fact that no significant differences were found between achievement groups in discrepancy scores for any area or valence. On the other hand, significant differences were found for achievement groups for both attitudes and ideal-attitudes. Moreover, one significant interaction figure was found for discrepancy self total scores which was well beyond the .05 level of confidence, indicating that self discrepancy has differential meaning in terms of achievement for males and females. There were in addition two F-values for interaction of discrepancy scores above 3.00, one above 2.00 and six above 1.00. On the level of the ideal self there were two significant interaction F-values, one above 3.00, one above 2.00, and five above 1.00. Conversely, on the attitude level no significant interaction effects were found,

none above 3.00, one above 2.00, and finally only one over 1.00. Taken in total these findings seem to justify at least the tentative assumption that attitudes may have a more linear relationship to achievement across sex boundaries, whereas in a very general sense both ideal-attitudes and discrepancies tend to have curvilinear relationships to achievement in terms of sex grouping. It is important to note that it is not argued that these aspects of attitudes are not related to achievement, but only that these relationships may turn out to be curvilinear in nature. Only further research can provide answers to these questions. The present conclusion is that discrepancy does not have a simple linear relationship with achievement or at least such relationships could not be demonstrated in the present samples. Not a single F-value for any area or valence, individual or total, approached significance for the discrepancy scores.

A further conclusion is that attitudes towards teachers are more important for better achievement than are attitudes towards the self or education. Furthermore, there exists some reason for concluding that negative statement usage is superior to positive statement for distinguishing between achievement groups. In effect it appears as if a person might describe himself either positively or negatively, or might place items concerned with educational ideas either high or low (whether positive or negative), and still achieve either "better" or "poorer" as defined in this study. However, this same person's handling of positive and negative teacher items does seem to prejudice his achievement potential. If positive teacher items are given low placements or even more importantly, if negative teacher items are placed high, there is a tendency for this individual

to achieve in the "poorer" category. This difference was significant at greater than the .01 level of confidence for negative statements and at greater than the .05 level of confidence for positive statements.

On the ideal-attitude level the use of negative statements differentiated between achievement levels more than did any other valence used in the study. Thus, an individual might tend to describe himself in ideal terms with high or low placement of positive, neutral, or ambivalent statements, and still achieve in either category. However, if he tends to place negative items high in the ideal description, he is more likely to achieve in the "poorer" category. This difference was significant at just below the .01 level of confidence.

A major question for future research concerns the degree to which these results are a function of the presence of the non-discriminating areas and valences included in the study. If for the moment, it is assumed that these significant differences would increase when separated from the unsuccessful areas and valences, i.e., those which did not discriminate between achievement groups, then theoretically an instrument might be devised along the following lines. The sort would be made up of perhaps 60 items, thirty positive and thirty negative. Thirty of these items would be self referent and thirty teacher referent, resulting in an instrument possessing two areas and two valences. Thus in the present instrument where teacher negative attitudes were made up of five items, in this revision there would be fifteen items. In the same way where negative items were made up of twenty items in the present

study (three areas), in the revision there would be thirty items divided into two areas. If the significant differences found in the present study are not a function of all elements which made up the instrument, but would increase their powers of discrimination in the existing direction through greater representation, these findings might become useful for individual prediction.

It appears that instruments for differentiation between achievement groups on non-academic factors, as was the contention, can profitably be broken into parts even as the whole is retained. For example none of the area differences in the use of negative statements on the ideal level alone was sufficient to attain significance. The total of these statements, however, approached the .01 level of confidence. Therefore, total valence usages appear to be important. On the other hand on the attitude level, the total teacher area was not found to be significant nor were teacher neutral or ambivalent statements. Both positive and negative statements were, however. In this case breaking totals into component parts disclosed significant differences which were obscured in the total. Furthermore, the assumption of differences in levels appears to have been justified. Certain attitudinal components were found to be related to achievement. Likewise alternative features of ideal-attitudes were found to be related to achievement. These were, however, structurally different though obtained from the same stimulus media. Still a third level, that of discrepancy, was not found to discriminate. Some evidence that these levels are differentially related to achievement appears to have been demonstrated.

Still another finding which appears to be of considerable theo-

retical, as well as practical importance, is the degree of difference in cognitive structure found to exist between males and females. Thus in attitudes, females were found to differ from males in two components at better than the .01 level of confidence, in four at better than the .05 level of confidence. Thus, six of nineteen possible differences were found to be significant. Moreover, four of the remaining values were greater than 3.00 and three greater than unity. Only six of the nineteen were found to be less than unity.

For ideal-attitudes females differed from males in four components at better than the .01 level of confidence and in four additional at better than the .05 level of confidence. Thus, eight of nineteen possible differences were found to be significant on the ideal-attitude level. Furthermore, of the remaining differences, one F-value was above 3.00, three above 2.00, three above 1.00, and only four were less than unity.

Therefore in terms of a Q-sort, females may be said to differ a great deal in their self descriptions and to an even greater degree in their ideal sorts. While attitudinal differences between sexes have been postulated and given experimental verification by numerous studies, the degree of difference which was found to exist here seems to justify re-emphasis.

Two final factors appear to merit discussion. The first is the apparent concern which incoming college students at this institution have with teachers. In the light of the reported findings, the college teacher is apparently unavoidably involved in student's attitudes towards teachers as an integral part of the learning process. The last of these factors was the degree of negative feelings making up

the self attitudes of these students. They appear to enter college full of self doubt and dominated by feelings of depreciation toward the self. The impact of their subsequent experience, i.e., their success or failure, may be seen as possessing the utmost importance for the future of these tendencies.

Concluding Statement

The results of this study are offered as an exploratory attempt toward isolating variables which ultimately might make prediction of college grade achievements possible in other-than-ability terms. In the more immediate sense it is hoped that the findings might prove useful to counselors, as well as others, who share responsibility for the experiences of the entering college freshman.

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A P P E N D I X A

Q-SORT ITEMS TOGETHER WITH PLACEMENT HISTORY IN PRELIMINARY SORTS

	"Least Like"					"Most Like"				
Box No.	1	2	3	4	5	6	7	8	9	
1. I feel I am a superior person.										
3.	11	4	5	4	3	3	3	0	0	= 33
2.	5	4	3	6	5	1	1	0	1	= 26
1.	5	8	2	2	6	3	1	1	2	= 30
	21	16	10	12	14	7	5	1	3	= 89
5. I feel I am neither a superior nor an inferior person.										
3.	0	0	1	2	2	0	4	7	17	= 33
2.	0	0	1	1	4	6	3	8	3	= 26
1.	0	2	2	4	10	4	3	2	3	= 30
	0	2	4	7	16	10	10	17	23	= 89
9. I sometimes feel I am a superior person and sometimes that I am inferior.										
3.	1	0	2	7	10	5	2	6	0	= 33
2.	0	1	1	3	6	7	5	2	1	= 26
1.	0	2	3	3	6	8	4	2	2	= 30
	1	3	6	13	22	20	11	10	3	= 89
13. I feel I am an inferior person.										
3.	6	5	5	7	4	2	3	1	0	= 33
2.	7	4	5	5	1	3	0	1	0	= 26
1.	3	3	6	8	3	4	2	1	0	= 30
	16	12	16	20	8	9	5	3	0	= 89
4. I feel I am sophisticated.										
3.	1	5	6	8	9	2	1	0	1	= 33
2.	1	5	4	4	4	6	1	1	0	= 26
1.	5	3	3	6	5	4	1	3	0	= 30
	7	13	13	18	18	12	3	4	1	= 89
8. I feel I am neither sophisticated nor unsophisticated.										
3.	1	0	3	5	3	3	15	1	2	= 33
2.	0	0	5	7	7	5	1	0	1	= 26
1.	0	1	2	5	11	4	3	3	1	= 30
	1	1	10	17	21	12	19	4	4	= 89
12. I sometimes feel that I am sophisticated and at other times that I am unsophisticated.										
3.	0	2	3	4	12	5	4	3	0	= 33
2.	0	0	2	5	6	4	6	3	0	= 26
1.	1	3	1	5	14	4	1	1	0	= 30
	1	5	6	14	32	13	11	7	0	= 89

16. I feel I am unsophisticated.

3.	1	3	5	4	7	8	2	0	3	=	33
2.	0	4	4	2	4	5	2	3	2	=	26
1.	1	4	4	4	10	2	3	2	0	=	30
	2	11	13	10	21	15	7	5	5	=	89

19. I feel I am optimistic.

3.	0	2	1	3	11	8	3	5	0	=	33
2.	0	1	1	4	5	1	5	4	5	=	26
1.	0	1	1	4	7	5	5	5	2	=	30
	0	4	3	11	23	14	13	14	7	=	89

23. I feel I am about average in optimism and pessimism.

3.	0	0	1	3	9	8	6	4	2	=	33
2.	0	1	1	3	15	3	2	0	1	=	26
1.	0	1	5	9	9	5	1	0	0	=	30
	0	2	7	15	33	16	9	4	3	=	89

27. I sometimes feel I am optimistic and sometimes that I am pessimistic.

3.	0	0	2	4	9	8	5	2	3	=	33
2.	1	0	1	1	2	9	7	3	2	=	26
1.	0	2	2	6	5	5	7	3	0	=	30
	1	2	5	11	16	22	19	8	5	=	89

31. I feel I am pessimistic.

3.	0	7	7	10	7	2	0	0	0	=	33
2.	3	6	5	6	3	1	1	1	0	=	26
1.	3	6	4	6	6	2	1	1	1	=	30
	6	19	16	22	16	5	2	2	1	=	89

34. I feel I express my emotions freely.

3.	2	5	5	5	6	2	5	2	1	=	33
2.	2	1	1	5	0	8	7	2	0	=	26
1.	2	1	3	4	5	8	3	1	3	=	30
	6	7	9	14	11	18	15	5	4	=	89

38. I feel I am about average in the freedom with which I express my emotions.

3.	0	1	1	2	4	8	6	6	5	=	33
2.	0	2	0	3	8	9	2	1	1	=	26
1.	1	1	5	6	8	6	3	0	0	=	30
	1	4	6	11	20	23	11	7	6	=	89

42. I sometimes feel I express my emotions freely and at other times that I do not.

3.	0	0	3	1	2	9	9	8	1	=	33
2.	0	2	3	5	1	7	5	2	1	=	26
1.	0	0	4	3	4	5	6	6	2	=	30
	0	2	10	9	7	21	20	16	4	=	89

46. I feel I do not express my emotions freely.

3.	2	4	6	5	10	3	0	1	2	=	33
2.	2	5	6	7	3	1	1	1	0	=	26
1.	0	0	7	7	6	4	3	1	2	=	30
	4	9	19	19	19	8	4	3	4	=	89

49. I am not moody.

3.	6	2	1	9	6	3	3	0	3	=	33
2.	5	3	4	4	1	4	3	2	0	=	26
1.	5	5	5	2	5	3	4	1	0	=	30
	16	10	10	15	12	10	10	3	3	=	89

52. I am neither moody nor not moody.

3.	0	1	0	3	5	10	7	2	5	=	33
2.	0	3	0	6	11	3	2	1	0	=	26
1.	0	2	3	9	13	1	1	0	1	=	30
	0	6	3	18	29	14	10	3	6	=	89

55. I sometimes feel I am moody and sometimes that I am not.

3.	0	3	0	3	5	10	4	4	4	=	33
2.	0	1	2	2	3	5	7	4	2	=	26
1.	0	0	2	5	5	9	4	4	1	=	30
	0	4	4	10	13	24	15	12	7	=	89

58. I am moody.

3.	5	6	4	4	3	4	2	2	3	=	33
2.	2	2	1	2	4	4	3	4	4	=	26
1.	1	2	2	1	8	5	3	3	5	=	30
	8	10	7	7	15	13	8	9	12	=	89

2. I feel I would like being a teacher.

3.	1	3	2	3	3	7	5	1	8	=	33
2.	4	2	1	4	1	0	4	5	5	=	26
1.	6	0	2	4	2	2	3	6	5	=	30
	11	5	5	11	6	9	12	12	18	=	89

6. I have neutral feelings about being a teacher.

3.	4	1	7	5	7	3	2	1	3	=	33
2.	1	2	4	9	7	3	0	0	0	=	26
1.	5	0	4	5	13	2	1	0	0	=	30
	10	3	15	19	27	8	3	1	3	=	89

10. I sometimes feel I would like being a teacher and sometimes feel I would dislike it.

3.	0	3	3	4	5	3	9	4	2	=	33
2.	1	3	1	6	6	4	5	0	0	=	26
1.	3	1	4	3	4	5	5	4	1	=	30
	4	7	8	13	15	12	19	8	3	=	89

14. I feel I would dislike being a teacher.

3.	6	8	3	3	5	3	2	1	2	=	33
2.	3	2	5	6	2	1	1	3	3	=	26
1.	5	2	3	3	7	0	2	5	3	=	30
	14	12	11	12	14	4	5	9	8	=	89

17. I feel teachers would be successful in positions other than teaching.

3.	0	1	2	3	4	12	7	4	0	=	33
2.	0	0	1	2	5	8	4	2	4	=	26
1.	0	1	2	4	2	7	9	4	1	=	30
	0	2	5	9	11	27	20	10	5	=	89

21. I feel teachers would be average in positions other than teaching.

3.	1	2	0	4	8	7	4	6	1	=	33
2.	1	1	1	2	17	4	0	0	0	=	26
1.	0	3	7	4	12	2	2	0	0	=	30
	2	6	8	10	37	13	6	6	1	=	89

25. I sometimes feel teachers would be successful in positions other than teaching and sometimes that they would be failures.

3.	1	0	2	4	5	11	4	5	1	=	33
2.	0	0	1	2	3	8	6	6	0	=	26
1.	0	2	0	2	3	9	10	3	1	=	30
	1	2	3	8	11	28	20	14	2	=	89

29. I feel teachers would be failures in positions other than teaching.

3.	4	8	6	5	8	1	1	0	0	=	33
2.	3	5	5	7	3	1	2	0	0	=	26
1.	1	5	3	6	11	2	1	1	0	=	30
	8	18	14	18	22	4	4	1	0	=	89

20. I feel that teachers treat students as equals.

3.	1	1	4	3	8	9	2	4	1	=	33
2.	0	0	2	9	3	4	4	4	0	=	26
1.	0	0	1	1	3	9	12	3	1	=	30
	1	1	7	13	14	22	18	11	2	=	89

24. I feel teachers neither treat students as equals nor as inferiors.

3.	0	2	3	7	15	1	4	0	1	=	33
2.	0	1	2	7	10	5	1	0	0	=	26
1.	1	1	8	8	8	2	2	0	0	=	30
	1	4	13	22	33	8	7	0	1	=	89

28. I sometimes feel teachers treat students as equals and sometimes that they treat them as inferiors.

3.	0	2	2	6	11	2	7	2	1	=	33
2.	0	0	1	7	1	9	8	0	0	=	26
1.	0	1	2	3	6	13	3	2	0	=	30
	0	3	5	16	18	24	18	4	1	=	89

32. I feel that teachers treat students as inferiors.

3.	3	3	13	6	7	1	0	0	0	=	33
2.	0	3	8	6	3	3	3	0	0	=	26
1.	3	5	6	6	5	4	1	0	0	=	30
	6	11	27	18	15	8	4	0	0	=	89

35. I feel teachers are good models for adult behavior patterns.

3.	0	0	4	2	10	12	2	2	1	=	33
2.	0	0	0	7	8	8	2	0	1	=	26
1.	0	0	2	3	9	8	6	2	0	=	30
	0	0	6	12	27	28	10	4	2	=	89

39. I feel teachers are average models for adult behavior patterns.

3.	1	1	1	4	4	7	7	7	1	=	33
2.	0	0	1	8	11	3	1	2	0	=	26
1.	0	4	5	5	10	5	1	0	0	=	30
	1	5	7	17	25	15	9	9	1	=	89

43. I sometimes feel teachers are good models for adult behavior patterns and sometimes that they are poor.

3.	0	2	1	2	6	7	6	7	2	=	33
2.	0	1	0	3	4	6	7	3	2	=	26
1.	0	1	2	2	8	6	6	3	2	=	30
	0	4	3	7	18	19	19	13	6	=	89

47. I feel teachers are poor models for adult behavior patterns.

3.	4	7	8	8	3	2	0	1	0	=	33
2.	1	5	8	5	5	2	0	0	0	=	26
1.	1	2	10	8	8	1	0	0	0	=	30
	6	14	26	21	16	5	0	1	0	=	89

50. I feel at ease when talking to teachers.

3.	2	2	3	8	1	3	6	7	1	=	33
2.	0	0	0	3	3	9	5	4	2	=	26
1.	0	2	2	1	4	8	6	6	1	=	30
	2	4	5	12	8	20	17	17	4	=	89

53. I feel neither at ease nor tense and nervous when talking to teachers.

3.	1	2	3	8	9	6	0	3	1	=	33
2.	0	0	3	4	10	7	1	1	0	=	26
1.	1	1	1	6	11	5	2	3	0	=	30
	2	3	7	18	30	18	3	7	1	=	89

56. I sometimes feel at ease and sometimes feel tense and nervous when talking to teachers.

3.	0	5	4	3	3	5	5	5	3	=	33
2.	0	1	0	2	7	9	5	0	2	=	26
1.	0	0	1	4	6	7	5	3	4	=	30
	0	6	5	9	16	21	15	8	9	=	89

59. I feel tense and nervous when talking to teachers.

3.	3	5	7	9	2	5	0	1	1	=	33
2.	3	3	4	7	3	4	2	0	0	=	26
1.	0	6	8	4	6	4	1	1	0	=	30
	6	14	19	20	11	13	3	2	1	=	89

3. I prefer being taught ideas rather than subject matter.

3.	0	2	3	5	14	3	3	3	0	=	33
2.	0	2	2	7	3	5	2	1	4	=	26
1.	0	1	3	3	4	7	4	5	3	=	30
	0	5	8	15	21	15	9	9	7	=	89

7. I have no preference either for being taught ideas over subject matter or for subject matter over ideas.

3.	1	3	5	5	13	5	0	1	0	=	33
2.	1	1	3	7	6	5	0	3	0	=	26
1.	1	3	6	5	11	4	0	0	0	=	30
	3	7	14	17	30	14	0	4	0	=	89

11. I sometimes prefer being taught ideas and sometimes prefer being taught subject matter.

3.	0	1	3	3	9	8	7	2	0	=	33
2.	0	0	2	3	4	8	7	1	1	=	26
1.	0	4	2	2	8	11	2	1	0	=	30
	0	5	7	8	21	27	16	4	1	=	89

15. I prefer being taught subject matter rather than ideas.

3.	0	2	9	3	9	0	4	5	1	=	33
2.	1	1	3	5	5	4	3	3	1	=	26
1.	1	3	4	4	7	5	3	2	1	=	30
	2	6	16	12	21	9	10	10	3	=	89

18. I like early morning classes.

3.	1	4	4	3	5	5	7	3	1	=	33
2.	2	3	2	4	4	5	2	3	1	=	26
1.	5	0	1	5	5	5	4	4	1	=	30
	8	7	7	12	14	15	13	10	3	=	89

22. I have no feeling for or against early morning classes.

3.	0	2	6	10	7	3	2	3	0	=	33
2.	0	2	1	6	11	4	1	1	0	=	26
1.	0	1	6	4	11	7	0	1	0	=	30
	0	5	13	20	29	14	3	5	0	=	89

26. I sometimes like early morning classes and sometimes dislike them.

3.	0	1	0	4	7	10	9	0	2	=	33
2.	0	1	2	2	5	7	4	5	0	=	26
1.	0	1	3	3	10	6	3	4	0	=	30
	0	3	5	9	22	23	16	9	2	=	89

30. I dislike early morning classes.

3.	1	3	6	6	8	5	2	2	0	=	33
2.	0	2	4	5	4	4	4	3	0	=	26
1.	2	1	2	10	5	4	0	2	4	=	30
	3	6	12	21	17	13	6	7	4	=	89

33. I feel I should make high grades.

3.	7	12	2	6	1	1	3	1	0	=	33
2.	0	1	1	5	4	6	2	3	4	=	26
1.	2	2	3	6	5	6	4	0	2	=	30
	9	15	6	17	10	13	9	4	6	=	89

37. I feel I should make average grades.

3.	0	0	3	4	1	4	11	8	2	=	33
2.	7	4	4	4	4	2	1	0	0	=	26
1.	4	2	4	4	8	3	2	2	1	=	30
	11	6	11	12	13	9	14	10	3	=	89

41. I sometimes feel I should make high grades and sometimes feel content if my grades are passing.

3.	2	2	8	4	3	7	1	3	3	=	33
2.	1	2	6	6	2	4	2	1	2	=	26
1.	1	5	2	5	7	6	2	1	1	=	30
	4	9	16	15	12	17	5	5	6	=	89

45. I am content with my grades if they are passing.

3.	7	3	6	8	1	1	3	3	1	=	33
2.	10	8	4	4	0	0	0	0	0	=	26
1.	12	4	5	4	0	1	2	2	0	=	30
	29	15	15	16	1	2	5	5	1	=	89

36. I tend to live for the present rather than for either the past or the future.

3.	0	2	6	6	6	2	5	3	3	=	33
2.	2	0	4	4	4	1	3	8	0	=	26
1.	2	0	4	5	5	2	4	8	0	=	30
	4	2	14	15	15	5	12	19	3	=	89

40. I tend to live equally for the present, the past, and the future.

3.	3	0	3	5	5	8	2	5	2	=	33
2.	4	3	1	5	10	1	1	1	0	=	26
1.	4	3	2	6	11	2	1	1	0	=	30
	11	6	6	16	26	11	4	7	2	=	89

44. I sometimes tend to live for the present and sometimes for the past and future.

3.	0	4	2	3	10	7	4	2	1	=	33
2.	0	0	1	2	5	9	5	3	1	=	26
1.	0	0	1	3	6	10	6	3	1	=	30
	0	4	4	8	21	26	15	8	3	=	89

48. I tend to live more for the past and the future than for the present.

3.	4	5	10	5	6	2	1	0	0	=	33
2.	0	4	3	6	6	4	0	1	2	=	26
1.	0	4	4	7	7	5	0	1	2	=	30
	4	13	17	18	19	11	1	2	4	=	89

51. I feel today's academic standards are too low.

3.	0	2	7	5	10	5	2	2	0	=	33
2.	0	1	5	2	7	3	4	3	1	=	26
1.	0	1	4	5	6	6	5	3	0	=	30
	0	4	16	12	23	14	11	8	1	=	89

54. I feel today's academic standards are about right.

3.	0	5	3	4	8	6	4	2	1	=	33
2.	0	1	1	7	9	4	3	1	0	=	26
1.	0	0	1	4	15	7	1	1	1	=	30
	0	6	5	15	32	17	8	4	2	=	89

57. I sometimes feel today's academic standards are too low and sometimes that they are too high.

3.	0	1	3	6	14	3	4	2	0	=	33
2.	0	0	1	5	9	6	5	0	0	=	26
1.	0	0	3	1	13	7	5	0	1	=	30
	0	1	7	12	36	16	14	2	1	=	89

60. I feel today's academic standards are too high.

3.	5	3	3	12	8	2	0	0	0	=	33
2.	1	3	8	5	7	1	1	0	0	=	26
1.	1	4	5	7	8	2	1	1	1	=	30
	7	10	16	24	23	5	2	1	1	=	89

APPENDIX B

ANALYSIS OF THE STANDARDIZING SORTS INDICATING BALANCE OF CUMULATIVE AREA AND VALENCE PLACEMENTS

TABLE B-I

The Distribution of Areas and Valences Obtained by the Second Preliminary Sort Where the Instrument was Composed of 96 Items (Only the Placement of the 60 Items Finally Retained are Summarized)

	"Least Like Me"								"Most Like Me"
Box No.	1	2	3	4	5	6	7	8	9
Valences*									
Positive	28%	21%	20%	25%	19%	25%	27%	37%	47%
Neutral	19%	19%	18%	28%	44%	23%	11%	17%	10%
Ambivalent	4%	11%	15%	19%	20%	37%	49%	29%	23%
Negative	49%	49%	47%	28%	17%	15%	13%	17%	20%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Areas									
Self	38%	40%	32%	28%	30%	34%	37%	38%	40%
Teachers	23%	25%	31%	38%	36%	36%	35%	26%	32%
Education	39%	35%	37%	34%	34%	30%	28%	36%	28%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

*Perfect balance for valences would exist if each value were twenty-five per cent. For areas perfect balance would be represented by thirty-three and one-third per cent.

TABLE B-II

The Distribution of Areas and Valences Obtained by the Third Preliminary Sort Where the Instrument was Composed of 60 Items

	"Least Like Me"						"Most Like Me"		
Box No.	1	2	3	4	5	6	7	8	9
Valences									
Positive	32%	28%	24%	24%	25%	26%	25%	23%	20%
Neutral	12%	12%	17%	24%	25%	26%	32%	34%	44%
Ambivalent	4%	16%	17%	20%	28%	34%	34%	33%	23%
Negative	52%	44%	42%	32%	22%	14%	9%	10%	13%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Areas									
Self	36%	30%	26%	31%	32%	34%	36%	33%	52%
Teachers	32%	35%	34%	33%	32%	36%	32%	37%	31%
Education	32%	35%	40%	36%	36%	30%	32%	30%	17%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

TABLE B-III

Distribution of Areas and Valences Cumulated for all the Preliminary Sorts for the Final 60 Items of the Q-Sort (In the Perfectly Balanced Instrument Under Box 9 of the Valences There Would be Four in Each of the Categories, Under Box 8, Eight in Each, etc.)

	"Least Like Me"							"Most Like Me"	
Box No.	1	2	3	4	5	6	7	8	9
Valences*									
Positive	7%	7%	9%	15%	17%	17%	13%	10%	5% = 100%
Neutral	3%	5%	10%	17%	30%	15%	9%	7%	4% = 100%
Ambivalent	1%	5%	7%	12%	21%	23%	17%	10%	4% = 100%
Negative	9%	14%	18%	19%	18%	9%	5%	5%	3% = 100%
Total	20%	31%	44%	63%	86%	64%	44%	32%	16%
Areas									
Self	5%	8%	10%	15%	21%	16%	12%	7%	6% = 100%
Teachers	4%	7%	11%	16%	21%	17%	12%	8%	4% = 100%
Education	5%	8%	12%	17%	23%	15%	10%	7%	3% = 100%
Total	14%	23%	33%	48%	65%	48%	34%	22%	13%

*Perfect balance would exist if the figures for areas and valences were the same in each box.

APPENDIX C

ANALYSIS OF PLACEMENT ON THE PRELIMINARY IDEAL-SORT SHOWING THE BALANCE OF AREAS AND VALENCES

TABLE C-I

Distribution of Areas and Valences for the Last 60 Item Preliminary Sort on an Ideal-Sort Instruction Basis for 31 Subjects

	"Least Like Me"								"Most Like Me"
Box No.	1	2	3	4	5	6	7	8	9
Valences									
Positive	18%	16%	16%	15%	22%	25%	37%	45%	46%
Neutral	3%	12%	12%	17%	28%	35%	34%	37%	41%
Ambivalent	13%	21%	27%	30%	30%	33%	23%	12%	8%
Negative	66%	51%	45%	38%	20%	7%	6%	6%	5%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Areas									
Self	54%	40%	23%	28%	25%	36%	34%	37%	56%
Teachers	28%	32%	37%	34%	30%	36%	34%	40%	21%
Education	18%	28%	40%	38%	45%	28%	32%	23%	23%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

A P P E N D I X D

INSTRUCTIONS TO THE SUBJECTS

Directions for Card Sorting

Sort 1.

The way you sort the cards shows how you think they describe you, how much each statement is like you or unlike you, going from most like you on the extreme left end to most unlike you on the extreme right end. As you go out toward the left, from the middle column, each column is more and more like you. The words used to describe these greater differences in degree from the center are: somewhat, fairly, quite, and most. Similarly, as you go out toward the right from the middle column, each column is less and less like you. You will notice the instructions are given on each column card; for example

3 Cards Column 9 MOST like you

There are 60 cards in each of these decks. Each card has a statement of how people think, feel, act, and so on. For any person, they are more or less true or not true, or in between. You are to work with one deck at a time, finishing one before you do the next. What you are to do is this: Sort the cards of a deck into 9 Columns. To help you in this, you have a small pack of 9 cards labelled Column 9, Column 8, Column 7, and so on. First then, put these 9 cards out in a row on the table:

COL 9 COL 8 COL 7 COL 6 COL 5 COL 4 COL 3 COL 2 COL 1

Next, you will notice you are told how many cards to put in each column:

3 5 7 9 12 9 7 5 3

It is best not to cover one card with another, but to place them in columns below the Column cards. In this way you can see all the cards, to read and compare and shift them until you have them placed right, and the right number in each column.

As you go through the deck for the first time, you may put any number of cards in any column to start with. Or you may simply put some cards to the left, some to the right, and some in the middle, then shifting them about as you read and compare them. When you do have the right number in each column, put the cards in each column in a pile, and place the Column Card for that pile on top of it. Then starting from left end put each pile on top of the pile to the right, until all cards are in one pile. Put your identification card on top, place a rubber band around, and go on to the next deck.

Sort 2.

The way you are to sort the cards this time shows what you want to be going from most like you want to be on the extreme left end to most unlike you want to be on the extreme right end. As you go out toward the left, from the middle column, each column is more and more like you want to be: as you go out toward the right, from the middle column, each column is more and more unlike you want to be. Again, the words used to describe these differences in degrees as you go out from the center are: somewhat, fairly, quite, most. Similarly, as you finish, place the cards together as you did the first deck.

VERBAL INSTRUCTIONS

You have been given two sets of cards.

The first card sort you are to make is for yourself as you really are. The second for yourself as you would like to be. Detailed instructions for what you are to do have been given you on a separate sheet.

Any information revealed in these sorts will be confidential and will not effect you personally in any way. The results are for the purpose of scientific research solely. The data will be meaningless if you are not completely open and truthful in your responses.

Please cooperate. Will you now read the instruction sheet?

Note to Adviser:

When the hour is nearly up, please pass out the "tardy" excuses to avoid having the late finishers make a hurried completion.

NOTIFICATION TO THE SUBJECTS

Dear Student:

You have been selected from the Freshman Class of '59 for participation in a research project. Will you, therefore, please report to Room ____ on Wednesday morning, October 14, at 9:30 A.M. instead of to the auditorium for the Guidance 101 meeting? Attendance will be taken for this meeting in Room ____. It is vitally important that you be present. Please make every effort to attend.

Thank you.

Sincerely,

Everette D. Erb
Dept. Student Personnel
& Guidance

Subjects were given the above letter at a Guidance 101 meeting on October 7, 1959. This is a required freshman orientation course. Good rapport seemed reasonable to expect since students seem to welcome an excused absence.

A P P E N D I X E

DATA COMPILATION FORMS FOR Q-SORT RESULTS

o. _____ Subject _____

roup _____ Age _____ Sex _____

Classification _____

SELF SORT

olumn

9	—	—	—									
8	—	—	—	—	—							
7	—	—	—	—	—	—	—					
6	—	—	—	—	—	—	—	—	—			
5	—	—	—	—	—	—	—	—	—	—	—	—
4	—	—	—	—	—	—	—	—	—			
3	—	—	—	—	—	—	—					
2	—	—	—	—	—							
1	—	—	—									

IDEAL SORT

Column

9	—	—	—									
8	—	—	—	—	—							
7	—	—	—	—	—	—	—					
6	—	—	—	—	—	—	—	—	—			
5	—	—	—	—	—	—	—	—	—	—	—	—
4	—	—	—	—	—	—	—	—	—			
3	—	—	—	—	—	—	—					
2	—	—	—	—	—							
1	—	—	—									

Individual Record Sheet Subject No. 119

Self S.	Ideal I.	Discrepancy D.		S.	I.	D.		S.	I.	D.	Total Valen
			2				3				
			17				18				
			20				33				
			35				36				
			50				51				Posit
P.			T.T.P.				T.E.P.				
			6				7				
			21				22				
			24				37				
			39				40				Neutr
			53				54				
N.			T.T.N.				T.E.N.				
			10				11				
			25				26				
			28				41				
			43				44				
			56				57				Ambi vale
A.			T.T.A.				T.E.A.				
			14				15				
			29				30				
			32				45				
			47				48				
			59				60				Negat
.Ng.			T.T.Ng.				T.E.Ng.				
al S.			Total T				Total E.				

Matrix

Subject No. ____

elf sort Totals

	Self	Teacher	Educational
Positive			
Neutral			
Ambivalent			
Negative			

Ideal sort Totals

	Self	Teacher	Educational
Positive			
Neutral			
Ambivalent			
Negative			

Discrepancy Totals

	Self	Teacher	Educational
Positive			
Neutral			
Ambivalent			
Negative			

VITA

Everette Duane Erb

Candidate for the Degree of

Doctor of Education

Thesis: A Q-SORT STUDY OF ATTITUDES AND ACHIEVEMENT

Major Field: Psychology

Biographical:

Personal Data: Born at Wellman, Iowa, June 29, 1921, the son of Rollin L. and Grace Anna Erb.

Undergraduate Study: Bachelor of Arts degree received from the University of Iowa, Iowa City, Iowa, in 1955.

Graduate Study: Master of Education degree received from East Texas State College, Commerce, Texas, in 1958. Requirements for the Doctor of Education degree completed in 1960 at Oklahoma State University.

Experiences: Accountant, California Oil Company, Denver, Colorado; Sales Manager, Maplecrest Turkey Farms, Denver, Colorado; Instructor and Director of Development, East Texas State College, Commerce, Texas.

Member of The American Personnel and Guidance Association, Incorporated, National Vocational Guidance Association, Incorporated, and Kappa Delta Pi.

Date of Final Examination: May, 1960.