A COMPARATIVE STUDY OF FRESHMEN ARTS AND SCIENCES MAJORS AS TO THEIR PERCEPTIONS OF HUMAN NATURE AND TENDENCIES TOWARD DOGMATISM

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Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
DOCTOR OF EDUCATION
May, 1971

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ACKNOWLEDGMENTS

Sincere gratitude is expressed to all persons who had a part in making this dissertation possible, including the students who gave of their time to participate in the study.

I want to express my sincerest appreciation to the following people who have contributed greatly to the completion of this study.

Dr. Price Ewens, chairman of my committee, whose sincere concern, unselfish devotion of time, and personal efforts were given so generously.

Dr. Dan Wesley, member of my committee and "personal counselor", for his unending encouragement.

Dr. Kenneth Sandvold, a member of my committee, for his advice and interest in my work.

Mr. Don Ely, for his assistance in evaluating appropriate statistical procedures and interpretation of the results.

Joyce King, for her efforts beyond the call of duty in typing the final copy.

Dennis and Peggye Wall, for their generosity, thoughtfulness, and assistance.

My brother, Dr. John Bayless, whose brotherly concern and acceptance has always helped to keep my goals and values within focus.

My father and mother, who deeply influenced my growth and development, and who exhibited great faith in me through their prayers and encouragement.

My dearest wife, Pat, for her constant support and patience. Her love has made it all worthwhile.

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CHAPTER I

NATURE OF THE PROBLEM

Introduction

Psychologists and educators are recognizing, to an increasing extent, the significance of attitudes as factors in personality. An attitude is a relatively enduring organization of beliefs about an object or situation predisposing one to respond in some preferential manner. Attitudes are strongly involved in an individual's behavior and belief system.

Many problems, however, must yet be solved before the conscious fostering of desirable attitudes can become anything more than a pious wish. A closer look at a person's attitudes, as they affect values and behavior, should aid in educational development of that person. As educators, we are concerned with the development of the "whole person" because the whole individual or the total experience is more important than the sum of its parts. Higher education has little research which specifically attempts to build a theoretical base upon which to plan curriculum changes aimed at development of the "whole person". The relationships of students' belief systems to the processes of higher education need further research and clarification. Curriculum planners, student personnel workers, and others may be able to benefit from a better understanding of the degree to which students may be liberated in their thought processes and relationships with others.

Numerous studies have been made of the existing attitudes of certain groups. Some information has been acquired regarding the stability and permanence of attitudes, but comparatively little is known about the manner in which one perceives others and about the cognitive systems from which one's attitudes are formed and altered. This investigation is concerned with one particular group, college freshmen, and examines two characteristics in the realm of attitudes of these students. Specifically, this study seeks knowledge of the manner in which students perceive the nature of man (philosophy of human nature), and the degree to which they are open or closed minded (degree of dogmatism).

Philosophy of Human Nature

As a person functions in social situations one of the things he develops is a collection of attitudes toward individuals, groups of individuals, and institutions. Attitudes are important because they are closely allied to action. Francis Bacon warned us that we should constantly guard against the falsity of some attitudes in order to sort out the truth. He wrote:

> ...the idols and false notions which are now in possession of the human understanding, and have taken deep root therein, not only so beset men's minds that the truth can hardly find entrance, but even after entrance obtained, they will again in the very instauration of the sciences meet and trouble us, unless men being forewarned of the danger fortify themselves as far as may be against their assaults. (13:361)

Bacon went on to assert that there are specific areas which beset men's minds and which must be guarded against so that true learning might take place. These areas he called "Idols of the Mind". One of the Idols he

termed the "Idols of the Tribe" and went on to explain that "human nature" was an integral function:

> The Idols of the Tribe have their foundation in human nature itself, and in the tribe or race of men. For it is a false assertion that the sense of man is the measure of things. On the contrary, all perceptions as well as of the mind are according to the measure of the individual and not according to the measure of the universe. And the human understanding is like a false mirror, which receiving rays irregularly, distorts and discolours the nature of things by mingling its own nature with it. (13:361)

It appears, based on Bacon's hypotheses, that the attitudes we hold about "human nature" will have particularly far-reaching consequences in the ways we interact toward other people and other people's ideas; consequently, how we view others affects how and what we learn. How and what we learn affects our attempts to solve the social problems of our generations.

If we assume that Bacon was right and that we should be cognizant of "idols and false notions" (which) "have their foundation in human nature itself" (13:361), we can also assume that a crucial task of higher education today should be to help provide the individual student with a better understanding of human nature. We often categorize our curriculum into areas in which we can study behavior that is most often related in some way to "human behavior" or the "nature of man". However, we do not question the outcomes of such study to determine what students' views are or have become toward the nature of man. Wrightsman emphasizes the need for such study of people's philosophies of human nature when he writes:

> For most of us, "human nature" is a prevasive and useful concept. We rely on it frequently to justify our own behavior and the behavior of others. Our beliefs about it influence everything from the way we bargain with a used car dealer to our expectations about a nuclear war. Yet research psychologists and sociologists have almost completely ignored the

> scientific study of people's attitudes toward their fellow man. We seem so intent on making it explicit that there is no such thing as "THE human nature" that we appear unaware that the average man believes that there is and that he employs his philosophy of human nature in his dealings with others. (64:1)

Dogmatism

Chisholm has written that most people do not confront problems in "open-minded" ways:

> In many of the most important questions of life it is evident that the minds of large numbers, indeed almost all, of the human race are not freely open to consider how true or untrue old ideas are, or to consider any advantages which might be found in new ideas. Old ideas and customs are generally called "good" or "sound" and new ideas, or experimental thinking or behavior, are usually labeled "bad", "unsound", "communist", "heretical", or any of many other words. (13:56)

Since our society is confronted with closed-mindedness, it has become a basic tenet of present educational theory that the process of education should enable one to become a more "open-minded" individual. If this be the case, a person's philosophy of human nature should somehow be related to his own system of tolerance-intolerance, openness-closedness of mind. Rokeach upholds the practicality of this assumption as exemplified by the following statement:

> There are three types of acceptances and rejections which are ordinarily regarded as more or less distinct; the acceptance and rejection of ideas, of people, and of authority. The first is classified as a cognitive phenomenon, the second involves the phenomenon of prejudice or intolerance, and the third, authoritarianism. Is it not possible, however, that the way we accept or reject ideas, people and authority all go together? Perhaps they are but different facets of the same thing, related to each other in a one-to-one fashion within the belief system. Thus, if we know something about the way a person relates himself to the world of ideas, we may also be able to say in what way he relates himself to the world of people, and to authority. (52:57)

Therefore, when defining curriculum goals in higher education we are concerned primarily with the need for students to develop patterns of effective thinking. It becomes the process rather than the content alone with which we are concerned. As Daniel Bell indicates, a university cannot remake a man or a world, but it can liberate the minds of young people in order to increase their awareness of man's potentiality. (9:152)

Statement of the Problem

Assuming that one's philosophy of human nature and one's degree of dogmatism are changeable and related to effective learning, the purpose of this study is to compare beginning freshman students in the College of Arts and Sciences at Oklahoma State University on the basis of these variables. Since it is also assumed that the curriculum should reflect the need to "liberate" one's mind, this study will focus upon relationships that might exist between a student's major field of study and his philosophy of human nature and his degree of open-closed mindedness.

Basic to this study are the questions: Is there a relationship between a person's philosophy of human nature, his degree of dogmatism, and his selection of a major field of study? What relationships exist among Arts and Sciences freshman students' degrees of dogmatism and philosophies of human nature when compared on the bases of ability and achievement? Also to be considered is the question: Is there a significant change in a student's philosophy of human nature and degree of dogmatism as a result of the impact of his first semester in college?

Organization of the Study

Chapter I of this study introduces one to the theoretical framework, leading to the statement of the problem, which is elaborated upon by means of a review of related research studies in Chapter II. Procedures and instruments used in the study are presented in Chapter III. Also included are the definitions of terms used in the study, the hypotheses to be tested, and the forms of methodological attack. Chapter IV presents the results of the investigation by an analysis of the data. The summary, findings, and recommendations for future study are stated in Chapter V.

CHAPTER II

REVIEW OF SELECTED LITERATURE

Introduction

There has been substantial research gauging the impact of college upon students. However, research in higher education has primarily focused upon the psycho-social characteristics of students based upon the impact of the student's socio-physical environment rather than upon the effects of the impact of his curricular environment. "Research in this area is only beginning and the results so far are not consistent." (22:190).

Numerous studies have been made in recent years which address themselves to the emperical question: Do students enrolled in different major fields show distinctive characteristics? This review of literature will focus upon studies of student differences by major fields of study based upon two theoretically definable and emperically measurable characteristics of people.

The text of the following review of literature will be developed in three sections which when integrated provide the theoretical framework for the investigation to follow in Chapters III, IV and V. The first section will include a review of literature pertaining to differences and similarities among college and university students as categorized by curriculum subject areas. The second section will be concerned with

studies pertinent to the variable--philosophy of human nature. In the third section the concept of dogmatism will be explained, and reports of research findings, which relate to the present study, will be reviewed.

Studies of Similarities and Differences Among Students by Major Fields of Study

In the most comprehensive attempt to date to integrate and to summarize the research related to student characteristics by curricular fields, Feldman and Newcomb (22) found that there is great diversity in characteristics of students among the major fields.

Some of these characteristics are evident before students formally enter a major field. Students with different demographic backgrounds differentially select certain fields. Sex distribution is also found to vary among the selections. However, the main import of these considerations is that:

> ...pre-existing differences in characteristics typical of students initially choosing different curricula tend to become more pronounced following experience in those major fields. (22:170)

Feldman and Newcomb continue to assert that:

> Evidence is clear...that differential experiences in the several major fields do have impacts beyond those attributable to initial selection into those fields. (22:193)

Generally, students by major field of study differ on the following kinds of variables: patterns of values, political-economic attitudes, religious conservatism, career orientations, intellectual ability, intellectual dispositions, authoritarianism, psychological well-being, and personality characteristics. (22:170)

In order to determine some of the characteristics discussed above among eight major fields of study, Sternberg (56) administered the Allport Study of Values, the MMPI, and the Kuder Preference Schedule to students enrolled in bio-chemistry, chemistry, engineering, economics, mathematics, music, political science, and psychology. Sternberg reported in his conclusions that it would be more likely to predict relationships of interests, social values, and personality to one's major field of study than it would be possible to predict the same patterns for individuals within such groups.

In another study utilizing the MMPI and the Allport Study of Values as well as the ACE Psychological Examination, MacLean and others (35) found that students majoring in the arts consistently scored higher in aesthetic interests; whereas, those in the applied fields showed higher economic and political interests.

Studies consistently show that students differ by major field of study in their degree of politico-economic and social "liberalism". Scoring the highest on the liberalism continuum are students enrolled in the social sciences. Those scoring the lowest in liberalism studies are students in the areas of education, engineering, home economics, and agriculture. Humanities students generally fall into the middle of the category while students in the fields of natural sciences and business are in the middle to low categories. (22:161)

Gamson, Goodman, and Gurin (25) classified students by the degree to which they tended to be anti-administration and pro-student power on a questionnaire administered at the University of Michigan. It was found that social science majors were the most negatively outspoken toward the administration and the most pro-student power centered among

the various majors. Humanities students tended to be less active and direct and more moderate in their views. All were more active than students majoring in the physical sciences and mathematics.

Prickert (46) analyzed tape recordings of graduate students from the major fields of English, mathematics, physics, and sociology. These tape recordings involved the students in discussion of various classes of ethical values and were analyzed to form the basis for a questionnaire which was sent to 400 undergraduates majoring in the same fields as the graduates. Analysis of the questionnaire lead Prickert to conclude that patterns of common attitudes can be used to differentiate by major field.

In order to examine the hypothesis that students who remain in a field of study resemble the typical student in that field whereas students who leave a field do not resemble students in that field, Holland and Nichols (27) conducted a longitudinal study of 332 men and 181 female National Merit Finalists. The students were compared using pre- and post-freshman year data which included a questionnaire designed to obtain information about their choice of a major field, their vocation, and their background history. An extensive list of seventeen different personality instruments was also administered.

Results generally supported the authors' original hypothesis that students who leave a particular field of study lack some of the personal attributes associated with students who remain in that field. For example, it was found that men who leave "Realistic" fields appeared to be irresponsible, original, tolerant of ambiguity, and complex in outlook. Also, men who leave the arts are more inclined to take risks than those who remain. (27:238)

In summary, the results of reported research have indicated that students tend to select their major field of study based upon background characteristics. These selections also tend to show sex distribution. However, regardless of a person's initial choice of major, the curricular environment offers him differential experiences which have impacts beyond initial selection.

Studies Related to the Concept of Philosophy of Human Nature

"One's philosophy of human nature can be considered an attitude." (65:4) It is an attitude which is constantly being referred to by the man on the street ("Why, it's just human nature to..."). (65:1) Freud (24) once wrote in a letter that he believed that "with few exceptions, human nature is basically worthless." One of the basic foundations of Fromm's (26:130) writing is that man has an essential, inborn nature and that society is created by man in order to fulfill this essential nature. In philosophy, religion, and literature we are surfeited with the debatable concepts whether man is, by nature, basically good or bad or capable of becoming either.

Although people continually refer to the manner in which others act and react in terms of their assumptions about human nature, social scientists only recently have become interested enough to emperically begin studying this pervasive but useful concept. The initiative and the bulk of research to date has been the contribution of Wrightsman, a Professor of Education at the George Peabody College for Teachers.

The instrument which Wrightsman developed in 1964 is called the PHN or Philosophies of Human Nature Scale. Investigators have used the

PHN since 1964 primarily to obtain normative data to determine if the instrument can differentiate between various groups of people based upon philosophical orientations. The purpose of this section is to draw together some of the more significant aspects of this research.

In one of the earliest studies, Ligon (32) sought to discover relationships which might exist between a person's religious background and his philosophy of human nature. The PHN was used in conjunction with a religious orientation scale to compare 106 college students. Findings indicated, although not strongly, that those who held humanitarian religious attitudes had a more favorable view of man's human nature than did those from a fundamentalistic religious background. Results lead the author to conclude that..."apparently religious education techniques are not proving effective in helping people integrate religious percepts into a functional philosophy of human nature."

Other studies of religiosity have lent some support to Ligon's findings. (36, 5, 28, 21) Mason reported that counselor trainees perceived man as significantly more altruistic on the PHN than did seminary students. (37)

Ashcraft (5) hypothesized that a person's philosophy of human nature could be used to predict how he would make judgments regarding the variability and complexity of other persons. One hundred freshman girls from the George Peabody College for Teachers were used to test the hypothesis. Findings were not conclusive but indicated that the manner in which one views the variability and complexity of human nature..."may be part of a total concept of cognitive complexity which can be related to findings of studies in other areas of perception and discrimination."

In an attempt to determine if one changes his philosophy of human nature due to a traumatic experience, Wrightsman and Noble (68) retested students on the PHN soon after the assasination of President John F. Kennedy. Students who felt a "great personal loss" with the President's death showed greater negative views toward human nature than did students less emotionally affected. By retesting the same students three months later, it was determined that the negative views were apparently temporary as students returned to their pre-assasination positions.

Wrightsman (63) administered the PHN to fifty-one males and forty females who were enrolled in the University of the Philippines. Along with the PHN, the TFI (Traditional Family Ideology) and Cross-culture scales were also used. The author found that the students viewed human nature as somewhat untrustworthy and selfish. No significant relationships could be found between the PHN, the TFI, and the Cross-culture scales.

Several studies have been conducted to determine beliefs of human nature held by students in various specialized training programs.

Twenty-five guidance counselors who were involved in a seven-week NDEA training institute were administered the PHN as well as the Dogmatism Scale, the Tennessee Self-concept Scale, and the Shallow Affect Scale. Results of these instruments were used to make form predictor variables which were then correlated with sociometric ratings by peers in the institute. (69)

The results of this study strongly indicated that "counselors who believe that man is capable of self-understanding and self-improvement are seen by their peers as more effective in interpersonal relationships including counseling." (70:216)

In a study comparing 176 graduate students in counseling psychology, clinical psychology, and vocational rehabilitation counseling, Dole, Notingham, and Wrightsman (17) found the following to be evident. On the Philosophies of Human Nature Scale, the students tended to have a neutral, although slightly favorable, attitude toward people. They also agree that human nature is basically complex and variable. The authors' results could not differentiate by vocational subspeciality of the students. However in another study this differentiation was found for it was shown that students in experimental psychology tend to have unfavorable views of man on the PHN. (71)

Miller (41, 55:25) compared the attitudes of graduate social work students, professional social workers, and undergraduate students toward human nature. His findings indicated that students who enter the social work field are more positive in their views of human nature than are undergraduate students, but not as positive in their views as are professional social workers.

The investigator concluded that "perhaps persons who enter social work education already possess basic values compatible with those expounded by the social work profession" (and) "that professional social work education" (does) "influence value orientation." (41:25)

Two separate attempts were undertaken to determine the effectiveness of different types of counseling practicums. In both studies the authors were unable to show any great change in the subjects' human nature orientation. It can generally be concluded from these studies that counselor trainees initially possess favorable perceptions of human nature which are not necessarily altered by the type of training received. (40, 3)

Normative data is reported by Wrightsman (70) for results of administration of the PHN at twenty colleges and universities. The schools were predominently southern; however, samples were also taken from Central Michigan College, the State University College of Fredonia, New York, the U. S. Air Force and Military Academies, and the University of Hawaii.

Students in these studies generally score in the neutral range on substantive subscales. They see human nature as neither trustworthy nor untrustworthy, as neither possessing will power nor not possessing will power, as neither altruistic nor unselfish, and as neither independent nor conforming. Students from colleges with primarily religious orientations tend to view human nature negatively as do students from Negro colleges.

Some differences can be shown on the PHN between male and female college students. Females consistently have more favorable views about the trustworthiness, strength of will, altruism, and independence present in human nature. Females also believe that human nature is more complex than do the males. (70)

In order to determine changes over a long period of time, Baxter (8) retested college freshmen and sophomores after one and two years respectively using the PHN. Students became more positive in their views toward man's complexity, trustworthiness, and altruism. Changes tended to be as great after one year as after two years.

In testing seven years of entering freshman classes at George Peabody College for Teachers, Baker (7, 65:29) found results which differ somewhat from Baxter's. Baker states that recent classes of

freshmen have significantly increased in their basic distrust of human nature and in their cynicism.

In summary, the years since Wrightsman first developed the Philosophy of Human Nature Scale have seen increasing research attempts made to define more clearly the manner in which people view the interpersonal aspects of man's nature. So far this research has not produced much substantive data and has only served to contribute normative data to an otherwise unstandardized instrument. The research has yet to show any strong predictive validity for the PHN to differentiate between groupings of people. Only a handful of studies have dealt with longitudinal attitude changes by use of pre- and post-test designs. No studies were found which used the PHN to determine the relationships of the scale to a person's undergraduate college major and his degree of dogmatism.

Studies Related to the Concept of Dogmatism

Few theories have received as much attention in the past decade as has the one developed by Rokeach which centers around the personality dimension of dogmatism. The theory is concerned with the openness and closedness of one's belief-disbelief system. Rokeach's theory evolved from earlier work done by Adorno who developed the "F" Scale, an instrument designed to measure authoritarianism. The theory of dogmatism, unlike the theory of authoritarianism, disavows the liberalism-conservatism dimension and instead focuses upon the total configuration of a person's belief system. Rokeach defines the system by stating the following:

> A belief system may be defined as having represented within it, in some organized psychological but not necessarily logical form, each and every one of a person's countless beliefs about physical and social reality. (52:2)

The entire structure of a belief-disbelief system can be described as varying along a continuum from open to closed. The extent to which a person's system is open is

> ...the extent to which the person can receive, evaluate, and act on relevant information from the outside on its own intrinsic merits unencumbered by irrelevant factors in the situation, arising from within the person or from the outside. (52:77)

To measure one's degree of dogmatism, Rokeach developed the Dogmatism Scale, Form E. Closed-mindedness refers to one scoring relatively high on this instrument whereas the open-minded individual scores relatively low.

Many studies have been reported which focus attention upon the college student by use of the Dogmatism Scale.

Ehrlich (20:149) investigated the relationship between the degree of learning, in an introductory sociology course, and dogmatism. His findings significantly indicate that dogmatism is inversely related to learning. Students who were low in dogmatism began the semester with a higher level of learning, learned more during the semester, and retained more of the information than did their more dogmatic colleagues. This study strongly supports the idea that closed cognitive systems inhibit learning regardless of one's intellectual capacity. In fact Rokeach and Ehrlich (20:52) established through controlled research that dogmatism is independent of academic aptitude, thus not dependent upon intelligence.

Christensen (15) replicated Ehrlich's study and found general support for his hypothesis that dogmatism and aptitude are independent variables. His results showed no correlation between the American College Examination and the Dogmatism Scale. However, Christensen warned us that more studies will have to be done before we can positively generalize about dogmatism and its relationship to classroom learning. His findings failed to confirm Ehrlich's conclusions that dogmatism is significantly related to course achievement.

Constin (16) attempted to reconcile the differences between Ehrlich's findings and those of Christensen, but could come to no firm conclusions other than to hypothesize that it is the type of knowledge which affects what is learned with dogmatism playing an important role in the person's perceptions of that knowledge.

Zagona and Zurcher (71) attacked the problem by categorizing college students into high and low dogmatic groups. The high dogmatic students were characterized by "intellectual lethargy" and an "unwillingness to relate" to the subject matter, to the instructor, and to other students. The low-dogmatic groups were characterized as just the opposite in their attitudes.

Adams and Vidulich (2) reported that high dogmatic individuals have greater difficulty than low-dogmatic individuals in learning incongruent, relative to congruent, associations. High scores on the Dogmatism Scale were shown to be related to inferior learning on complex tasks, irrespective of intelligence.

Rokeach's belief that closed-minded people are less able to integrate new beliefs into their cognitive systems because it is impossible to integrate information which cannot be recalled, was tested by

Kleck and Wheaton. (30) In this investigation open- and closed-minded students were asked to recall opinion-consistent and opinion-inconsistent information. Results showed that open-minded subjects were able to recall more information which was inconsistent with their opinions than were closed-minded subjects.

Dogmatism was interpreted as a defense mechanism which interferes with predecisional judgment in a study by Long and Ziller. (34) The Dogmatism Scale and four "decision measures to reserve judgment" were administered to seventy-two freshmen women. Between dogmatism and each of the four decision measures, a significant negative relationship was found demonstrating that non-dogmatic individuals tend to (1) engage in predecisional search, (2) require more time for psychophysical judgments, and (3) respond "don't know" to statements of opinion under conditions of inadequate information.

The Denny Doodlebug Problem was used by Filenbaum and Jackman (23) to determine relationships between dogmatism, anxiety, and problem solving. It was found that high dogmatic subjects performed more poorly and became more anxious on the doodlebug problem than low dogmatic subjects.

Rebhun (47) also found that dogmatism is directly related to anxiety. He compared test anxiety to dogmatism by administering the Sarason's Test Anxiety Scale to three groups of college students. His conclusions in part were that:

> ...high dogmatism may impair intellectual functioning due to anxiety generated in the learning situation - the dilema of high dogmatic people being a conflict between the need to achieve and the need to exclude new information. (47:40)

Ladd (31:138) concluded that "it is not the capacity to learn concepts which is impaired by (dogmatism) but rather the ability to readily adapt to such a task."

Several studies have been made which point to personality similarities and differences of people based upon their degree of dogmatism.

Plant, Telford, and Thomas (45:73) administered a battery of tests which included the Dogmatism Scale, the California Personality Index, the Study of Values and the School and College Ability Test to entering junior college freshmen. Without exception, results showed that highly dogmatic subjects were psychologically immature and could be characterized as being "impulsive, defensive, and conventional, and stereotyped in their thinking." Low dogmatic subjects were found to be calm, mature and forceful, out-going and enterprising, efficient and clear thinking, responsible and more likely to succeed in an academic setting. (45:74)

Byrne, Blaylock, and Golberg strongly concluded that closed-minded, dogmatic individuals utilize repressing, denying defenses more than open-minded individuals and that the dogmatic person tends to express negative feelings toward self and others. (14)

Three different personality instruments were used by Vacchiano, Strauss, and Schiffman (59:84) to identify correlates of the dogmatic person. Dogmatism was shown to be positively related on the Edwards Personal Preference Schedule to need for Succorance and negatively to needs for Change and Intraception. The Sixteen Personality Factor Questionnaire similarly indicated a positive relationship between dogmatism and conformity, restraint and conservatism.

The degree to which one is dogmatic appears to be directly related to the type of child-rearing practices which he has experienced.

Significant decreases seem to appear throughout the developmental stages in one's life if the individual is encouraged to change his belief-disbelief system. (59:85)

College students were compared by Rebhun (48:260) by use of the Dogmatism Scale and the Parental Attitude Research Instrument to determine the effects of parental attitudes upon their open- and closed-mindedness. A positive relationship was found which lead the author to conclude that:

> ...closed-minded people tend to hold parental attitudes which encourage their offspring not to intrude upon their belief-disbelief system and thus promote a similar dogmatic approach on their children.

Attendance at college significantly affects students' dogmatic attitudes consistently showing a decrease in individuals' closed-mindedness. (22:31) Feldman and Newcomb (22) concluded after an extensive review of the reserach on change that:

> Nearly without exception, the studies show seniors to be less authoritarian, less dogmatic, less ethnocentric, and less prejudiced than freshmen. Also, with very few exceptions these differences are relatively large and are statistically significant. Further, these differences are evident in such diverse colleges and universities as the University of Santa Clara (a Jesuit university in California), Bennington College (a small, select liberal arts college for women on the East Coast), and Michigan State University (a large state multiversity in the Midwest). (22:31)

Comparisons of college students with non-college students show that the former decrease more in dogmatism than the latter. (22:32)

The studies of changes in dogmatism have primarily been concerned with comparing freshmen with seniors or in retesting freshmen three and four years later. Few attempts have been made to compare freshmen with one another during their first semester in college.

CHAPTER III

DESIGN AND METHODOLOGY

Introduction

This chapter presents the hypotheses which developed from the rationale and theoretical framework as presented in Chapters I and II. Also discussed are the definitions of terms used throughout the study, the instruments used to test the hypotheses, the sample, methodology, and statistical procedures. Research limitations are stated so as to define the parameters of the study.

Hypotheses

As developed by the rationale earlier in this study, it is assumed for the purposes of this investigation that among Oklahoma State University College of Arts and Sciences freshmen there are no significant relationships between a student's degree of dogmatism, philosophy of human nature, and choice of major field of study, sex, ability, and achievement. The following hypotheses were presented for investigation:

Hypothesis I: Entering freshmen do not differ significantly in their perceptions of human nature when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Hypothesis II: Entering freshmen do not differ significantly in their perceptions of human nature when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Hypothesis III: Entering freshmen do not differ significantly in their degree of dogmatism when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Hypothesis IV: Entering freshmen do not differ significantly in their degree of dogmatism when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Hypothesis V: Upon the completion of one semester of college, freshmen do not differ significantly in their perceptions of human nature when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Hypothesis VI: Upon the completion of one semester of college, freshmen do not differ significantly in their perceptions of human nature when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Hypothesis VII: Upon the completion of one semester of college, freshmen do not differ significantly in their degree of dogmatism when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Hypothesis VIII: Upon the completion of one semester of college, freshmen do not differ significantly in their degree of dogmatism when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Hypothesis IX: There is no significant change in the perceptions of human nature of freshmen as a result of one semester of college when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Hypothesis X: There is no significant change in the perceptions of human nature of freshmen as a result of one semester of college when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Hypothesis XI: There is no significant change in the degree of dogmatism of freshmen as a result of one semester of college when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Hypothesis XII: There is no significant change in the degree of dogmatism of freshmen as a result of one semester of college when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Hypothesis XIII: Among Arts and Sciences freshmen there is no significant relationship between one's philosophy of human nature and degree of dogmatism.

Clarification of Terminology

The basic definitions of the principal terms in this study are presented below. The scope of this study is limited to these basic concepts.

Dogmatism - For purposes of this study, dogmatism is measured by Rokeach's Dogmatism Scale, Form E. Rokeach stated that dogmatism is

> ...a relatively closed cognitive organization of beliefs and disbeliefs about reality, organized around a central set of beliefs about authority which, in turn, provides a framework for patterns of intolerance and qualified tolerance toward others. (51:195)

Individuals who are high in dogmatism are presumed to have open belief-disbelief systems. Thus, a person scoring high on the Dogmatism Scale, Form E, is placed at one end of the continuum and is considered to be

closed-minded while a low score indicates an open-minded individual. There are no absolute levels of open- or closed-mindedness; most individuals are relatively open-minded or relatively closed-minded. Dogmatism is concerned with the structure rather than the content of beliefs, enabling the concept to cut across specific content. (51:196)

Philosophy of Human Nature - In this study philosophy of human nature is limited to Wrightsman's concept as contained in his Philosophy of Human Nature Scale (1964). It is designed to measure a person's beliefs about human nature, and, specifically, his beliefs about the interpersonal aspects of human nature. The scale is composed of seven dimensions of human nature; six of the dimensions are subscales. These six subscales are

(1) Trustworthiness vs. Untrustworthiness

(2) Altruism vs. Selfishness

(3) Strength of Will and Rationality vs. Lack of Will and Irrationality

(4) Independence vs. Conformity

(5) Simplicity vs. Complexity

(6) Similarity (between people) vs. Variability (between people)

Scores on the first four dimensions may be summed to give a general Favorability of Human Nature Score. (64:744) This study is concerned with all subscales and with the general Favorability of Human Nature Score.

Major Fields of Study - Five major fields of study will be used in this investigation as well as a sixth group comprised of those students who changed major fields of study between the beginning of the semester and the end of the semester:

(a) The Undeclared - This field includes all full-time (12 hours or more) students who have not decided upon a subject matter field for a major.

(b) The Humanities - This field includes all full-time (12 hours or more) students who have declared one of the following as a major: English, foreign languages, humanities, music, art, philosophy, religion, pre-seminary, speech, pre-library science.

(c) The Social Sciences - This field includes all full-time (12 hours or more) students who have declared one of the following as a major: economics, geography, history, political science, pre-law, psychology, social science, sociology.

(d) The Natural Sciences - This field includes all full-time (12 hours or more) students who have declared one of the following as a major: biological sciences, botany, microbiology, natural sciences, psysiology, wildlife/zoology, biochemistry, chemistry, geology, mathematics, physical sciences, physics.

(e) The Paramedical Sciences - This field includes all full-time (12 hours or more) students who have declared one of the following as a major: medical technology, pre-dental science, pre-dental hygiene, pre-medical science, pre-nursing, pre-optometry, pre-physical therapy, pre-pharmacy, pre-veterinary science, pre-osteopathy.

(f) The Major Field Changes - This field includes all full-time (12 hours or more) students who were in a different major field of study at the end of the semester than at the beginning of the semester.

Ability - A student's composite score on the American College Test (ACT) was used as the basis for determination of ability. Students were divided into two levels of ability for comparison purposes in this study, those at or above the mean composite ACT score for the population investigated and those below the mean.

Achievement - A student's first semester grade point average was used as the basis for determination of achievement. Students were divided into two levels of achievement for comparison purposes in this study, those at or above the mean for the population investigated and those below the mean.

Description of the Sample

The subjects in this study were drawn from all the freshmen enrolled in Arts and Sciences 1111 (Educational and Vocational Orientation) at Oklahoma State University during the fall semester of 1969-70 who were at the beginning and at the end of the semester in any of the major fields of study as earlier defined. The following is the purpose of the course as described in the Oklahoma State University Catalogue: "An orientation course for freshmen. Special attention is given to study techniques, evaluation of one's abilities, and the making of proper educational and vocational choices." (43:202)

All entering freshmen in the College of Arts and Sciences are required to enroll and to complete the course with a passing grade. It is considered as part of the lower division general studies requirement for graduation from the College. Only students enrolled in twelve or more hours and who completed the semester were considered in the original population. All the subjects were between the ages of seventeen

and nineteen. Students twenty years of age or older were excluded since they were not considered as representative of the typical freshman male or female.

Since this study was designed to explore relationships among certain defined major fields of study within the College of Arts and Sciences, students who declared major fields of study other than those within the defined parameters of the hypotheses either at the beginning or at the end of this investigation were excluded. Also not included were students who had not taken the American College Test since the composite score of this test was used to determine one's level of ability.

There were 927 students who fit the above criteria and to whom pre- and post-tests of the research instruments were administered. Of these 927 students, 426 were female and 501 were male.

Instrumentation and Collection of Data

The instruments used in this study consisted of two standardized attitude inventories and an academic aptitude test. These instruments were selected after reviewing significant literature which supported their usage for testing the variables in question. Each of these instruments is discussed briefly in the following paragraphs.

Philosophy of Human Nature Scale

The Philosophy of Human Nature Scale (PHN) was developed by Lawrence S. Wrightsman (1964) at the George Peabody College for Teachers. It is designed to measure a person's beliefs about human nature, and, specifically, his beliefs about the interpersonal aspects

of human nature. The scale is comprised of six dimensions of human nature; these subscales are defined as:

(a) Trustworthiness vs. Untrustworthiness. This subscale measures the extent to which one views people as trustworthy, moral, and ethical.

(b) Strength of Will and Rationality vs. Lack of Will and Irrationality. This subscale measures the extent to which one sees people as being able to understand themselves and able to change their outcomes by their own will power.

(c) Altruism vs. Selfishness. This subscale measures the extent to which one views people as being altruistic, unselfish, and sincerely interested in helping other people.

(d) Independence vs. Conformity. This subscale measures the extent to which one views people as being able to stand on their own feet uninfluenced by others.

(e) Simplicity and Understandable vs. Complex and Non-understandable. This subscale measures the extent to which one views people as being complex and difficult to understand as opposed to people being simple and easy to understand.

(f) Similarity (between people) vs. Variability (between people). This subscale measures the extent to which one sees people as being basically alike one another as opposed to people being different and unalike.

Scores on the first four dimensions (Trustworthiness, Strength of Will, Altruism, and Independence) may be summed to give a general favorability of Human Nature score.

The PHN uses Likert-type attitude scales to measure each dimension. There are fourteen items to each subscale with a possible range of scores on each subscale from +42 to -42. Scores on the subscales falling between -14 and -42 indicate a negative view. A positive view is indicated by a score falling between +14 and +42. The general Favorability of Human Nature score has a possible range from +168 to -168 as a result of the summation of the four subscales. (71:1)

The PHN is presently undergoing revision to obtain more complete normative data. In early studies designed to test the validity and reliability of the instrument, Wrightsman found that:

> The relationship among the first four subscales indicates that there is something common to the first four dimensions, as each of these six correlations is positive, above .30 and significantly different from zero. The highest correlations are among Trustworthiness, Altruism, and Independence; these range from .61 to .69, close in degree to the reliability coefficients for these subscales. Correlations between these variables and Strength of Will are appreciably lower, in the .30's. This seems to indicate that there is a common thread running through these four dimensions, a general belief that man is good or evil, which reflects itself to some degree in performance on each subscale. It is possible that a particular item on one of these subscales might show equally high correlation with another subscale. The use of a summary score for these four scales thus seems defensible as a measure of general evaluative orientation toward human nature, which may see man as good, as evil, or as neither. (64:747)

The instrument was administered to the subjects of this study during the first and last weeks of the semester in their orientation classes. The subjects were instructed, by explanation on the test booklet, to respond by circling values ranging from +3 to -3 for each item. A +3 meant the subject agreed very much with the item; whereas, at the other end of the continuum, a -3 meant the subject disagreed very much with the item. The test took approximately twenty minutes to administer. For scoring purposes, all items on both the pre- and post-tests were keypunched onto computer cards and a program written to score all scales. The Philosophy of Human Nature Scale is found in Appendix A.

Rokeach's Dogmatism Scale, Form E

The Dogmatism Scale, Form E, as developed by Milton Rokeach, was selected to measure the degree of open-mindedness and closed-mindedness in this study. The Dogmatism Scale is a general measure of the degree

to which a person's "total mind is an open or closed one." Those who score extremely high on this scale are seen to differ consistently from those who score extremely low in the formation of new belief systems, whether or not the systems are conceptual, perceptual, or esthetic in nature. The scale measures how people believe rather than what they believe for it focuses upon the structure rather than upon the content of the belief system. The essence of the differences between subjects who are open and closed is found to be in the ability to analyze and synthesize. Those who are more open are found to have greater ability to synthesize. (52) In defining the basic characteristic which describes how open or closed a person's belief system is, it is said to be

> ...the extent to which the person can receive, evaluate, and act on relevant information received from the outside on its own intrinsic merits, unencumbered by irrelevant internal pressures that interfere with the realistic reception of information are unrelated habits, beliefs, and perceptual cues, irrational ego motives, power needs, the need for self-aggrandizement, the need to allay anxiety, and so forth. (52:57)

Furthermore,

> The more open one's belief system, the more should evaluation and acting on information proceed independently on its own merits of the situation. Also, the more open the belief system, the more should the person be governed in his actions by internal self-actualizing forces and the less irrational inner forces. (42:58)

The Dogmatism Scale was developed and refined through several analyses until the present Form E with forty items evolved. Reliability is reported for this form for several different populations. They range from .64 for a group of Ohio State University students via the test-retest method over a period of five months to a .93 coefficient for residents of a Veterans Administration domiciliary. Rokeach defends

this level of reliability as quite satisfactory, especially if some consideration is given to the fact that quite a strange collection of items are contained in the test. (52:397)

Some questions have been raised as to the possibility of response bias being inherent in this type of instrument. Perhaps the greatest criticism has come from Peabody who insisted that because authoritarian instruments score every item in the same direction, agreement bias is allowed to be shown over the scale as a whole. Peabody also indicated that ambiguous items are used so that subjects must show agreement bias. (44)

Peabody and others have been unable to show positive examples of this type of bias existing. It is difficult to accept this type of criticism when one compares the many theoretically supported hypotheses. Rokeach cites numerous studies which revealed differences in the various measures of authoritarianism. He could find no justification for the response bias interpretation. (44)

The instrument was administered to the subjects of this study during the first and last weeks of the semester in their orientation classes. The subjects were instructed, by explanation on the test booklet, to respond by circling values ranging from +3 to -3 for each item. A +3 meant the subject agreed very much with the item; whereas, at the other end of the continuum, a -3 meant the subject disagreed very much with the item. The test took approximately twenty minutes to administer. For scoring purposes, all items on both the pre- and post-tests were keypunched onto computer cards. The Dogmatism Scale, Form E is found in Appendix B.

American College Testing Program Examination (ACT)

The ACT is a test designed for grade twelve and junior college students preparing to go to a four-year college. The test yields five scores: English usage (80 items), mathematics usage (40 items), social studies reading (52 items), natural science reading (52 items), and a composite score. The ACT Technical Report of 1965 reports that the test was designed to measure as directly as possible the abilities the student will have to apply in his college work. Although factual knowledge is assumed to a certain degree, the test emphasizes use of knowledge, criticism, evaluation, judgment, and organizational ability rather than knowledge of facts per se. The test-retest reliability of the ACT battery ranges from .67 to .84 over a two-year interval. (1) These conclusions are presented in Table I.

TABLE I

ACT TEST-RETEST RESULTS OVER A TWO-YEAR PERIOD
N = 63

	Test		Retest		
	Mean	S.D.	Mean	S.D.	Correlation
English	20.5	4.4	21.9	3.8	.73
Mathematics	19.3	5.0	19.9	5.6	.77
Social Studies	21.3	5.6	24.2	5.0	.67
Natural Sciences	20.8	5.1	22.1	4.9	.70
Composite	20.6	4.0	22.1	3.6	.84

(ACT Technical Report, 1965)
*See manual.

Since a single measure of ability was desired for this study, only the composite score was utilized. The composite score is defined as the mean of the four educational development scores and is viewed as an index of the total educational development of the study. Predictive validity based on the composite score is reported in the ACT Technical Report as .497. This is shown in Table II.

TABLE II

PREDICTIVE VALUE OF THE FIVE ACT TEST SCORES

Variables	Number of Colleges	Number of Students	Median r
English Test vs. College English GPA	112	54,335	.498
Mathematics Test vs. College Mathematics GPA	91	27,582	.374
Social Studies Test vs. College Social Studies GPA	119	42,990	.466
Natural Sciences Test vs. College Natural Sciences GPA	106	38,030	.374
Composite vs. College Overall GPA	122	59,164	.497

(ACT Technical Report, 1965)
*See manual.

ACT composite scores for subjects used in this study were obtained from the College of Arts and Sciences Student Services Office as were grade point averages for the semester.

Methods of Statistical Analysis

All tests were scored and these scores were entered on master data computer processing sheets along with grade point averages, ACT scores, and coding numbers for sex classification and major field of study classification. Facilities of the Oklahoma State University Computer Center were used for treatment processing.

The population consisted of 927 students for whom complete data was available. These data were first used for a correlational analysis to test possible significant relationships between scores obtained from the Philosophy of Human Nature Scale and the Dogmatism Scale. A mean grade-point average and a mean ACT score were then computed to determine achievement levels and ability levels. It was first desired to divide the students into three levels of achievement and three levels of ability. However, due to the necessity to equalize cell numbers for later covariance analysis, there were only enough students to divide randomly into two levels for achievement and two levels for ability. Students at or above the mean grade-point average of 2.462 were placed in the "higher-achievement group" and those below the mean were placed in the "lower-achievement group". Students at or above the mean composite ACT score of 24 were placed in the "higher-ability group" and those below the mean were placed in the "lower-ability group".

Analysis of variance was employed to consider all hypotheses dealing with scores for entering freshmen and all hypotheses dealing with change scores. Analysis of covariance was employed to consider all hypotheses dealing with possible differences between groups at the completion of the semester. In both statistical calculations, a three-factor mixed completely randomized design (CRD) was used.

When it was deemed appropriate, Duncan's multiple-range test was run to test for specific differences between means. Significant F values computed from analysis of variance or covariance treatments determined when Duncan's test was to be used.

Limitations of the Study

Whenever the design of a study calls for a pre-test and a post-test using the same instrument, there is danger that the initial exposure to the instrument will influence the responses obtained on the post-test. While there is a possibility of sensitization to the instruments used, the semester interval between the initial and the final administration of the tests should be a sufficient period of time to reduce the significance of instrument sensitization in this study.

The present study was limited to full-time freshman students enrolled in the College of Arts and Sciences at the Oklahoma State University during the 1969-70 fall term. The population was further limited to the students who were present during the first and last weeks of the semester since it was necessary to obtain both pre- and post-data on the population. Since the students were tested in their orientation classes, all freshmen did not complete the tests since some of them were unable to schedule orientation due to conflicts in scheduling. Others were not present during the testing sessions due to normal problems associated with college class absenteeism.

This study is also confined only to students carrying twelve or more hours of college credit. Freshman students twenty years of age or older were excluded since they were not considered as representative of the typical entering freshman.

Only those students who declared one of the majors within the defined major fields of study were included. Those who indicated on either the pre- or post-tests a major other than one of the majors within the major fields defined by this study were not included. It seemed logical that a population should be sought for the study which allied itself as closely as possible to the areas of study common to the College of Arts and Sciences at the Oklahoma State University. Students majoring in health, physical education and recreation were not included since there is little agreement among Oklahoma State University faculty members as to which "field of study" these students should be categorized. It was concluded that the major overlaps into several different fields.

It should be considered that this study was an exploratory study. As such, inferences are limited to the population studied. Conclusions can not infer causal relationships.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The presentation and analysis of data for this research will be reported as they relate to each of the hypotheses. Wherever statistical tests were employed to test the hypotheses, it was assumed that differences were not statistically significant unless they were at or above the .05 level of confidence. The format for this chapter will be that of stating each hypothesis, presenting an analysis of the related data, and presenting the data in tabular form.

Hypothesis I

Hypothesis I: Entering freshmen do not differ significantly in their perceptions of human nature when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Table III presents the significant and insignificant F values for the different perceptions of human nature variables treated with the Analysis of Variance technique. Appendix C presents the detailed results of the analysis of variance among the groups compared on the basis of the individual variables. Interpretation of these results are as follows.

TABLE III

F VALUES FOR ANALYSIS OF VARIANCE OF PERCEPTIONS OF HUMAN NATURE SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	d.f.	Trustworthiness		Strength of Will		Altruism		Independence		Simplicity		Similarity		Favorability	
		F	SL	F	SL	F	SL	F	SL	F	SL	F	SL	F	SL
Major Field	5	0.24	NS	1.18	NS	0.06	NS	1.79	NS	0.76	NS	1.06	NS	0.74	NS
Sex	1	20.13	.01	8.48	.01	27.86	.01	6.74	.01	1.94	NS	14.39	.01	28.63	.01
Ability	1	3.13	NS	0.85	NS	0.07	NS	0.37	NS	27.52	.01	3.26	NS	0.73	NS
Major Field x Sex	5	0.61	NS	0.58	NS	1.85	NS	2.14	NS	2.45	.05	0.60	NS	1.77	NS
Major Field x Ability	5	2.07	NS	1.50	NS	2.89	NS	1.06	NS	1.33	NS	1.19	NS	2.89	.05
Sex x Ability	1	2.37	NS	0.07	NS	1.30	NS	2.23	NS	1.41	NS	0.26	NS	1.81	NS
Major Field x Sex x Ability	5	0.43	NS	1.40	NS	1.65	NS	0.32	NS	1.54	NS	0.23	NS	0.42	NS

Total error degrees of freedom = 264.
The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.
The F value for significance at the .05 level with 1 and 264 degrees of freedom is 3.84.
The F value for significance at the .01 level with 5 and 264 degrees of freedom is 3.08.
The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

Trustworthiness

To ascertain if there were significant differences on the Trustworthiness dimension of human nature for major fields of study, males and females and ability levels, F values were calculated. There were no significant differences on any of the variables except the sex variable ($<.01$). Women were more trusting in their philosophy of human nature than were the men. For differences between major fields of study and ability levels, the null hypothesis was accepted. For the sex variable, the null hypothesis was rejected.

Strength of Will and Rationality

The null hypothesis was accepted for the variables, major field of study and ability, but rejected for the sex variable. The F value for sex revealed that males and females differed significantly at the .01 level of confidence. Women students scored higher than men students on this dimension, perceiving human nature as being more rational.

Altruism

A significant difference was found between males and females on the Altruism dimension of human nature ($<.01$). Women tended to see human nature as more altruistic than did the men. No interactive effects were found between sex and any other variables. Also, no significant differences were found between ability levels when considered alone or among major fields of study when considered alone. However, an F value of 2.89 was calculated for interactive effects between ability levels and major fields of study. This F was considered to be significant at the .05 level of confidence.

In order to determine where the difference by major field of study and ability existed, a Duncan's multiple-range test was calculated. This test revealed that the lower-ability students in the paramedical sciences differed significantly ($<.05$) from the lower-ability students who later changed majors, who were undecided, and who were majoring in the humanities field or in the social sciences. The paramedical students saw human nature as less altruistic than did students in other fields. It was also shown that higher-ability students who were undecided differed significantly ($<.05$) from students who changed majors during the semester. The unchanged students saw human nature as more altruistic than did the undecided students. No other significant differences were revealed. Based on main effects of sex and interactive effects of major field and ability, the null hypothesis was rejected.

Independence

The null hypothesis was accepted for perceptions of Independence for all main and interactive effects of major fields of study and ability levels. The hypothesis was rejected for differences between males and females as an F value of 6.74 was revealed which was significant at the .01 level. Women saw human nature as more independent from group pressure than did the men.

Simplicity

Without regard to their major fields of study or sex, freshmen differed significantly by ability level when compared on the basis of simplicity scores. This significance was at the .01 level with an F value of 27.52. The higher-ability students tended to see human nature

as more simplistic than did the lower-ability students. It was also revealed that differences existed based upon comparision by major field of study by sex ($F = 2.45 < .05$). Women in the humanities and social sciences tended to see human nature as being more complex than did the women in the natural and paramedical sciences.

The null hypothesis was rejected for all variables based on the results of main and interactive effects.

Similarity

The only F value for this dimension of human nature found to be significant was the F value comparing males to females disregarding their major field of study and ability levels ($F = 14.39 < .01$). Women viewed human nature as being more similar among people than did the men. Differences on all other main effect variables and interactive variables were found to be insignificant; thus, the null hypothesis was accepted for the variables dealing with major fields of study and ability. The null hypothesis was rejected for the variable, sex.

Favorability

No significant differences were found when freshmen were compared only among major fields of study and only between ability levels. The obtained F value for these students when compared only on possible differences between males and females was determined to be 28.63 which was significant above the .01 level of confidence. The females saw human nature as generally more favorable than did the men.

Significant differences were found among major fields of study when ability levels were also considered. Duncan's multiple range test

revealed that this difference among groups was specifically between the lower-ability students who were undecided and the lower-ability students who were majoring in any other field. The undecided students generally saw human nature as less favorable. Also, it was revealed that the higher-ability students who had changed major fields and students who were undecided differed significantly from students in the humanities, natural sciences, social sciences, and paramedical sciences. The undecided students were less favorable than the changed students who were less favorable than all other groups in their views of human nature.

Hypothesis II

Hypothesis II: Entering freshmen do not differ significantly in their perceptions of human nature when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Table IV presents the significant and insignificant F values for the different perceptions of human nature variables treated with the Analysis of Variance technique. Appendix D presents the detailed results of the analysis of variance among the groups compared on the basis of the individual variables for this hypothesis. Interpretation of these results is as follows.

Trustworthiness

The obtained F values for all variables on this dimension of human nature were found to be insignificant. There were no significant differences in Trustworthiness scores on either main effects or interactive

TABLE IV

F VALUES FOR ANALYSIS OF VARIANCE ON PERCEPTIONS OF HUMAN NATURE SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	d.f.	Trustworthiness		Strength of Will		Altruism		Independence		Simplicity		Similarity		Favorability	
		F	SL	F	SL	F	SL	F	SL	F	SL	F	SL	F	SL
Major Field	5	0.65	NS	0.78	NS	1.40	NS	0.20	NS	2.38	.05	0.33	NS	0.61	NS
Sex	1	1.22	NS	1.44	NS	5.87	.05	2.52	NS	0.98	NS	7.77	.01	3.35	NS
Achievement	1	0.14	NS	0.15	NS	0.18	NS	0.01	NS	8.52	.01	0.00	NS	0.07	NS
Major Field x Sex	5	0.93	NS	1.38	NS	3.80	.01	1.19	NS	0.95	NS	1.00	NS	1.68	NS
Major Field x Achievement	5	0.70	NS	0.92	NS	1.98	NS	1.10	NS	1.98	NS	2.07	NS	1.09	NS
Sex x Achievement	1	2.97	NS	0.01	NS	1.95	NS	0.82	NS	0.02	NS	7.12	.01	0.42	NS
Major Field x Sex x Achievement	5	1.20	NS	0.85	NS	1.12	NS	0.45	NS	0.56	NS	0.38	NS	0.48	NS

Total error degrees of freedom = 264.
The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.
The F value for significance at the .05 level with 1 and 264 degrees of freedom is 3.84.
The F value for significance at the .01 level with 5 and 264 degrees of freedom is 3.08.
The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

effects of major field of study, sex, and achievement; thus, the null hypothesis was accepted for all sources of variation.

Strength of Will and Rationality

The obtained F values for all variables on this dimension of human nature were found to be insignificant. There were no significant differences in Strength of Will and Rationality scores on either main effects or interactive effects of major field of study, sex, and achievement.

The null hypothesis for this dimension of human nature was accepted for all variables.

Altruism

The F value for this dimension was found to be an insignificant statistic when students were compared only on the basis of major field of study and only on the basis of achievement. However, when males and females were compared without regard to major field of study or achievement level, a significant difference was found for Altruism scores at the .05 level ($F = 5.87$). The women viewed human nature as more altruistic than did the men. When the students were compared by sex by major field of study, a significant difference was revealed at the .01 level of confidence ($F = 3.80$). In order to determine which specific means differed significantly from one another, Duncan's multiple-range test was applied. It was revealed that undecided men students differed significantly in Altruism scores from men majoring in the humanities, social sciences, and natural sciences. These undecided students saw human nature as being less altruistic than did the other groups. Also,

women in the paramedical sciences differed significantly from women who had changed majors and women in the humanities and natural sciences. These differences were all significant at the .01 level of confidence. The paramedical students saw human nature as more altruistic than did students in the other fields.

Based on main and interactive effects, the null hypothesis was rejected for all variables.

Independence

The obtained F values for all variables on this dimension of human nature were found to be insignificant. There were no significant differences in Independence perception scores on either main or interactive effects of major field of study, sex, and achievement.

For this dimension of human nature, the null hypothesis was accepted for all variables.

Simplicity

The only dimension of human nature which seemed to differ by major field of study without regard to sex or achievement level was Simplicity. An F value of 2.38 was found which was significant at the .05 level of confidence. Duncan's multiple-range test revealed that this difference was due to significant difference at the .05 level between scores obtained by all students who were undecided and all students majoring in the humanities. The undecided students viewed human nature as being less simplistic and more complex than did the humanities students.

Students also differed by achievement level for an F value of 8.52 was obtained which was significant at the .01 level of confidence. The higher-achievement students saw human nature as being more complex than did the lower-achievement students.

There was no significant difference found between males and females for either main or interactive effects. Also, no interactive effects were found to show significance for any other variables.

For the Simplicity perception of human nature, the null hypothesis was rejected for the variables, major field of study and achievement, but accepted for the variable, sex.

Similarity

The F values calculated for main and interactive effects based upon major field of study revealed no significant differences. There was also no significant difference found when achievement levels were compared without regard to major field of study or sex. However, an F value of 7.77 was determined to be significant at the .01 level for differences between males and females. Also, an F value of 7.12 was significant at the .01 level for differences between achievement levels when grouped according to sex. The females tended to view human nature as being more variable than did the men.

Based on main and interactive effects, the null hypothesis was rejected for the variables, sex and achievement, and accepted for the variable, major field of study.

Favorability

The null hypothesis for Favorability was accepted for all variables for only insignificant F values were calculated.

Hypothesis III

Hypothesis III: Entering freshmen do not differ significantly in their degree of dogmatism when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Table V presents the significant and insignificant F values for the pre-test dogmatism scores treated with the Analysis of Variance technique.

TABLE V

THE ANALYSIS OF VARIANCE OF DOGMATISM SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	186856.44	287			
Major Field	3097.42	5	619.48	1.00	NS
Sex	896.06	1	896.06	1.44	NS
Ability	3726.72	1	3726.72	6.00	.05
Major Field x Sex	8577.15	5	1715.43	2.76	.05
Major Field x Ability	4224.24	5	844.85	1.36	NS
Sex x Ability	754.01	1	754.01	1.21	NS
Major Field x Sex x Ability	1894.11	5	378.82	0.61	NS
Total Error	163848.86	264	620.64		

The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.

The F value for significance at the .05 level with 1 and 264 degrees of freedom is 3.84.

When students were compared only on the basis of their major fields of study without regard to sex or ability, no significant differences were found. The same insignificance was revealed when all males and all females were compared without regard to major field of study or ability. Differences were found between ability levels ($p < .05$, $F = 6.00$). The lower-ability students tended to be more dogmatic than were the higher-ability students. Significance at the .05 level of confidence ($F = 2.76$) was revealed for differences between major fields of study based upon differences between males and females.

Duncan's multiple-range test was used to compare means between sexes by major field of study. The test showed that men and women in the paramedical sciences differed significantly from men and women who were undecided and who were majoring in the humanities. The paramedical students were more dogmatic than the other groups.

Based on main effects for ability and interactive effects for major fields and sex, the null hypothesis was rejected for all variables.

Hypothesis IV

Hypothesis IV: Entering freshmen do not differ significantly in their degree of dogmatism when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Table VI presents the significant and insignificant F values for the pre-test dogmatism scores treated with the Analysis of Variance technique. Narrative interpretation of these results follows the statistical table.

TABLE VI

THE ANALYSIS OF VARIANCE OF DOGMATISM SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	187025.37	287			
Major Field	6679.77	5	1335.95	2.08	NS
Sex	690.63	1	690.63	1.07	NS
Achievement	153.10	1	153.10	0.24	NS
Major Field x Sex	2116.71	5	423.34	0.66	NS
Major Field x Achievement	3424.49	5	684.90	1.06	NS
Sex x Achievement	1682.06	1	1682.06	1.15	NS
Major Field x Sex x Achievement	2868.52	5	573.70	0.89	NS
Total Error	169410.24	264	641.70		

Unlike Hypothesis III where students were grouped by ability, all F values for all variables on Hypothesis IV were shown to be insignificant. This hypothesis was accepted for all sources of variation.

Hypothesis V

Hypothesis V: Upon the completion of one semester of college, freshmen do not differ significantly in their perceptions of human nature when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Table VII presents the significant and insignificant F values for the different perceptions of human nature variables treated with the Analysis of Covariance Technique. Appendix E presents the detailed

TABLE VII

F VALUES FOR ANALYSIS OF COVARIANCE OF PERCEPTIONS OF HUMAN NATURE SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	d.f.	Trustworthiness		Strength of Will		Altruism		Independence		Simplicity		Similarity		Favorability	
		F	SL	F	SL	F	SL	F	SL	F	SL	F	SL	F	SL
Major Field	5	1.08	NS	0.66	NS	1.97	NS	1.75	NS	1.61	NS	0.50	NS	2.04	NS
Sex	1	4.49	.05	4.24	.05	0.77	NS	2.79	NS	6.00	.05	2.40	NS	2.77	NS
Ability	1	0.42	NS	0.00	NS	0.89	NS	0.32	NS	0.87	NS	2.70	NS	0.46	NS
Major Field x Sex	5	1.03	NS	0.58	NS	0.70	NS	1.70	NS	1.32	NS	0.72	NS	1.13	NS
Major Field x Ability	5	1.23	NS	0.61	NS	0.72	NS	1.42	NS	1.01	NS	0.36	NS	1.20	NS
Sex x Ability	1	0.14	NS	0.06	NS	0.07	NS	1.53	NS	0.44	NS	1.42	NS	0.34	NS
Major Field x Sex x Ability	5	0.20	NS	0.71	NS	0.67	NS	0.42	NS	0.66	NS	0.68	NS	0.33	NS

Total error degrees of freedom = 263.
The F value for significance at the .05 level with 5 and 263 degrees of freedom is 2.21.
The F value for significance at the .05 level with 1 and 263 degrees of freedom is 3.84.
The F value for significance at the .01 level with 5 and 263 degrees of freedom is 3.08.
The F value for significance at the .01 level with 1 and 263 degrees of freedom is 6.63.

results of the analysis of covariance among the groups compared on the basis of the individual variables. Narrative interpretation of these results are as follows.

Trustworthiness

The null hypothesis was accepted for the variables, major field of study and ability, but was rejected for the sex variable. The F value for sex revealed that males and females differed significantly at the .05 level of confidence. The F value for this variable was 4.49. Females tended to view human nature as being more trustworthy than did the men. No interactive effects for any variable proved significantly different.

Strength of Will and Rationality

As on the Trustworthiness dimension of human nature, the only variable demonstrating a significant F value on the Strength of Will and Rationality dimension was sex. Males and females, when compared without regard to major field of study or ability, differed significantly at the .05 level of confidence ($F = 4.24$). Females tended to see human nature as being more rational than did the men.

The null hypothesis was rejected for the variable sex but accepted for all other variables.

Altruism

The null hypothesis for Altruism was accepted for all variables and showed only insignificant F values.

Independence

The obtained F values for this dimension were found to be insignificant. There were no significant differences in Independence scores for any source of variation. The null hypothesis was accepted for all variables based on perception of Independence scores.

Simplicity

All main effects and interactive effects of major field of study and ability were shown to have insignificant F values. The only variable which revealed a significant difference was sex. Males and females, when compared without regard to major field or ability, differed at the .05 level of significance ($F = 6.00$). Females viewed human nature as being less simplistic and more complex than did the men.

For this dimension of human nature the null hypothesis was rejected for the sex variable but accepted for the variables, major field of study and ability.

Similarity

No significant differences were found either within or between variables for the perception of Similarity scores. Thus the hypothesis was accepted for this dimension of human nature for all variables.

Favorability

The obtained F values for this dimension were found to be insignificant. There were no significant differences in Favorability scores for any source of variation; thus, the null hypothesis was accepted for all variables.

Hypothesis VI

Hypothesis VI: Upon the completion of one semester of college, freshmen do not differ significantly in their perceptions of human nature when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Table VIII presents the significant and insignificant F values for the different perceptions of human nature variables treated with the Analysis of Covariance technique. Appendix F presents the more detailed results of the analysis of covariance among the groups compared on the basis of individual variables. Narrative interpretation of these results is as follows.

Trustworthiness

The null hypothesis was accepted for this dimension of human nature for no significant F values were revealed for any variables.

Strength of Will and Rationality

No significant differences were found when students were compared only on the basis of major field of study, sex, and achievement. Also, no significant differences were revealed on the interactive effects of sex and achievement or major field of study and achievement. However, when students were compared by major field of study by sex, a significant difference at the .05 level was shown ($F = 2.86$).

In order to determine where the difference existed among major fields, Duncan's multiple-range test for differences was employed. This test between means revealed that men who had changed majors during the

TABLE VIII

F VALUES FOR ANALYSIS BY COVARIANCE OF PERCEPTIONS OF HUMAN NATURE SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	d.f.	Trustworthiness F	SL	Strength of Will F	SL	Altruism F	SL	Independence F	SL	Simplicity F	SL	Similarity F	SL	Favorability F	SL
Major Field	5	1.78	NS	0.71	NS	2.00	NS	2.87	.05	1.24	NS	0.77	NS	2.59	.05
Sex	1	0.34	NS	1.30	NS	0.35	NS	0.08	NS	4.79	.05	3.67	NS	0.40	NS
Achievement	1	0.09	NS	1.31	NS	0.16	NS	1.65	NS	1.12	NS	1.68	NS	0.99	NS
Major Field x Sex	5	0.32	NS	2.86	.05	2.11	NS	1.02	NS	0.78	NS	0.75	NS	0.88	NS
Major Field x Achievement	5	0.11	NS	0.07	NS	0.86	NS	0.24	NS	0.17	NS	0.62	NS	0.33	NS
Sex x Achievement	1	0.44	NS	0.17	NS	0.23	NS	1.10	NS	0.14	NS	0.38	NS	0.21	NS
Major Field x Sex x Achievement	5	0.08	NS	2.02	NS	0.25	NS	0.12	NS	0.45	NS	1.01	NS	0.33	NS

Total error degrees of freedom = 263.
The F value for significance at the .05 level with 5 and 263 degrees of freedom is 2.21.
The F value for significance at the .05 level with 1 and 263 degrees of freedom is 3.84.
The F value for significance at the .01 level with 5 and 263 degrees of freedom is 3.08.
The F value for significance at the .01 level with 1 and 263 degrees of freedom is 6.63.

semester differed significantly from men in the natural sciences. The change group saw human nature as more irrational than did the natural sciences group.

For perceptions of Strength of Will and Rationality scores, the null hypothesis was rejected for the variables, major field of study and sex, but accepted for the variable, achievement.

Altruism

The null hypothesis was accepted for all variables on the Altruism dimension of human nature since no significant F values were revealed on any analysis of covariance test.

Independence

The null hypothesis was accepted for the Independence dimension for differences between sexes and differences between achievement levels. The same was true for all interactive variables. However, an F value of 2.87 revealed that differences between major fields of study were significant at the .05 level. Duncan's multiple-range test for mean differences showed that students in the humanities differed significantly from students in all other major fields. The humanities students tended to see human nature as more independent from group pressure than did the other groups.

Simplicity

The null hypothesis was accepted for all variables on the Simplicity dimension of human nature except for the sex variable. Males and females differed significantly in their perceptions of the simplicity

of human nature at the .05 level (F = 4.79). Mean comparisons showed that females tended to see human nature as more complex.

Similarity

The null hypothesis was accepted for perceptions of Similarity of human nature since no significant F values were revealed for any variable.

Favorability

The null hypothesis was accepted for the Favorability dimension for differences between sexes and differences between achievement levels. The same was true for all interactive variables. However, an F value of 2.59 revealed that differences between major fields of study were significant at the .05 level; thus, the hypothesis was rejected for this variable. Duncan's multiple-range test for mean differences showed that students in the change group and the undecided group differed significantly from students majoring in all other fields. The change and undecided students saw human nature as less favorable than did the other groups.

Hypothesis VII

Hypothesis VII: Upon the completion of one semester of college, freshmen do not differ significantly in their degree of dogmatism when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Table IX presents the significant and insignificant F values for the post-test dogmatism scores treated with Analysis of Covariance

technique. Narrative interpretation of these results follows the statistical table.

TABLE IX

THE ANALYSIS OF COVARIANCE OF DOGMATISM SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	106586.01	287			
Major Field	2102.34	5	420.47	1.17	NS
Sex	165.42	1	165.42	0.46	NS
Ability	2069.82	1	2069.82	5.76	.05
Major Field x Sex	3529.62	5	705.92	1.96	NS
Major Field x Ability	2196.08	5	439.22	1.22	NS
Sex x Ability	39.11	1	39.11	0.11	NS
Major Field x Sex Ability	1644.88	5	328.98	0.91	NS
Total Error	94838.75	263	359.24		

The F value for significance at the .05 level with 1 and 263 degrees of freedom is 3.84.

Students were shown to differ in their degrees of dogmatism by ability level without regard to their major field of study or sex ($p < .05$, $F = 5.76$). The lower-ability group tended to be more dogmatic than did the higher group. No other significant differences were found between main or interactive variables.

The null hypothesis for this dimension of human nature was accepted for the major field of study and sex variables but rejected for the ability variable.

Hypothesis VIII

Hypothesis VIII: Upon the completion of one semester of college, freshmen do not differ significantly in their degree of dogmatism when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

Table X presents the F values for the post-test dogmatism scores treated with the Analysis of Covariance technique. No significant difference was found for any variable. Thus, the null hypothesis was accepted for every source of variation.

TABLE X

THE ANALYSIS OF COVARIANCE OF DOGMATISM SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	279424.34	278			
Major Field	2280.19	5	456.04	0.47	NS
Sex	644.60	1	644.60	0.67	NS
Achievement	650.64	1	650.64	0.67	NS
Major Field x Sex	9898.61	5	1979.72	2.06	NS
Major Field x Achievement	4177.43	5	835.49	0.87	NS
Sex x Achievement	1270.39	1	1270.39	1.32	NS
Major Field x Sex x Achievement	6383.12	5	1276.62	1.33	NS
Total Error	254119.36	263	962.57		

Hypothesis IX

Hypothesis IX: There is no significant change in the perceptions of human nature of freshmen as a result of one semester of college when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

To determine if students changed significantly after one semester of college, analysis of variance tests were made on the differences between pre- and post-test scores for each variable of the hypothesis on each perception of human nature. Table XI presents the significant and insignificant F values for these tests. Appendix G presents the more detailed results of the analysis of variance among the groups compared on the basis of the individual variables. Narrative interpretations of these results are given below.

Trustworthiness

The obtained F values for all variables on this dimension of human nature were found to be insignificant. There were no significant differences in Trustworthiness scores on either main effects or interactive effects of major field of study, sex, and ability; thus, the null hypothesis was accepted for all variables.

Strength of Will and Rationality

The null hypothesis was accepted for all variables on this dimension of human nature for no significant differences were revealed on any source of variation.

TABLE XI

F VALUES FOR ANALYSIS OF VARIANCE OF PERCEPTIONS OF HUMAN NATURE CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	d.f.	Trustworthiness		Strength of Will		Altruism		Independence		Simplicity		Similarity		Favorability	
		F	SL	F	SL	F	SL	F	SL	F	SL	F	SL	F	SL
Major Field	5	0.74	NS	1.09	NS	2.00	NS	2.32	.05	1.34	NS	0.41	NS	1.00	NS
Sex	1	0.02	NS	1.08	NS	0.25	NS	0.78	NS	4.09	.05	0.13	NS	2.89	NS
Ability	1	0.03	NS	0.03	NS	0.59	NS	0.82	NS	0.01	NS	0.66	NS	0.00	NS
Major Field x Sex	5	0.59	NS	0.87	NS	0.87	NS	2.18	NS	0.90	NS	0.93	NS	2.36	.05
Major Field x Ability	5	1.13	NS	0.27	NS	0.31	NS	1.05	NS	0.85	NS	1.24	NS	0.44	NS
Sex x Ability	1	0.03	NS	0.13	NS	0.00	NS	0.66	NS	3.76	NS	1.43	NS	2.44	NS
Major Field x Sex x Ability	5	0.14	NS	0.65	NS	1.46	NS	0.63	NS	2.10	NS	0.59	NS	0.50	NS

Total error degrees of freedom = 264.
The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.
The F value for significance at the .05 level with 1 and 264 degrees of freedom is 3.84.
The F value for significance at the .01 level with 5 and 264 degrees of freedom is 3.08.
The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

Altruism

The null hypothesis for all variables for Altruism was accepted since all variables showed only insignificant F values.

Independence

The only significant difference found on this dimension was among major fields of study ($F = 2.32$, $p < .05$). Differences between males and females, ability levels, and all interactive effects based on major field of study, sex, and ability were shown to be insignificant.

In order to determine what major fields of study differed significantly, the Duncan's multiple-range test was applied. Undecided students differed significantly from paramedical students in their Independence scores at the .05 level of confidence. The undecided students felt that human nature generally is not independent from group pressure. No significant differences were found between any other major fields of study.

The null hypothesis for this dimension of human nature was accepted for the sex and ability variables but rejected for the major field of study variable.

Simplicity

Males and females differed significantly in their degree of change on Simplicity scores from the beginning of the semester to the end of the semester. This difference in change was significant at the .05 level with an F value of 4.09. Females tended to become more simplistic in their views of human nature. Males and females did not differ

significantly by major field of study or by ability level. Also, no significant differences were found for the variables major field of study and ability when considered alone or when considered interactively.

For the Simplicity dimension of human nature, the null hypothesis was rejected for the sex variable but accepted for the major field of study and ability variables.

Similarity

The obtained F values for all variables on this dimension of human nature were found to be insignificant. There were no significant differences in Similarity scores on either the main effects or interactive effects of major field of study, sex, or ability; thus, the null hypothesis was accepted for all variables.

Favorability

When students' change scores were compared only by major field of study, only by sex, and only by ability, no significant differences were found. Also, no significant differences were found when students were compared by major field and ability grouping, and sex and ability grouping. However, significant differences were found among students when compared on the basis of major field of study by sex. Duncan's multiple-range test for differences between means revealed that men in the humanities were less favorable than the men in the natural and paramedical sciences. It was also shown that women in the undecided group saw human nature less favorably than did women in any other group.

The null hypothesis was rejected for major field of study and sex based on the interactive effects of the two variables; however, the null hypothesis was accepted for the variable, ability.

Hypothesis X

Hypothesis X: There is no significant change in the perceptions of human nature of freshmen as a result of one semester of college when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

To determine if students changed significantly after one semester of college, analysis of variance tests were made on the differences between pre- and post-test scores for each variable of the hypothesis on each perception of human nature. Table XII presents the significant and insignificant F values for these tests. Appendix H presents the more detailed results of the analysis of variance among the groups compared on the basis of the individual variables. Narrative interpretation of these results is as follows.

Trustworthiness

The null hypothesis was accepted for the Trustworthiness dimension of human nature for no significant F values were obtained for any variable.

Strength of Will and Rationality

The null hypothesis was accepted for this dimension of human nature for no significant F values were obtained for any variable.

TABLE XII

F VALUES FOR ANALYSIS OF VARIANCE OF PERCEPTIONS OF HUMAN NATURE CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	d.f.	Trustworthiness F	SL	Strength of Will F	SL	Altruism F	SL	Independence F	SL	Simplicity F	SL	Similarity F	SL	Favorability F	SL
Major Field	5	1.10	NS	0.48	NS	1.28	NS	2.16	NS	1.95	NS	0.64	NS	1.04	NS
Sex	1	0.01	NS	0.55	NS	0.68	NS	0.95	NS	3.27	NS	0.08	NS	2.22	NS
Achievement	1	0.46	NS	1.46	NS	0.00	NS	0.90	NS	0.27	NS	1.21	NS	0.02	NS
Major Field x Sex	5	0.24	NS	2.15	NS	4.19	.01	1.37	NS	1.41	NS	0.40	NS	1.11	NS
Major Field x Achievement	5	0.42	NS	0.59	NS	0.73	NS	0.48	NS	0.45	NS	0.61	NS	0.72	NS
Sex x Achievement	1	1.35	NS	0.13	NS	0.16	NS	0.11	NS	0.00	NS	4.39	.05	1.90	NS
Major Field x Sex x Achievement	5	0.33	NS	1.94	NS	0.75	NS	0.04	NS	0.24	NS	1.00	NS	0.64	NS

Total error degrees of freedom = 264.
The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.
The F value for signiifcance at the .05 level with 1 and 264 degrees of freedom is 3.84.
The F value for significance at the .01 level with 5 and 264 degrees of freedom is 3.08.
The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

Altruism

When students' change scores were compared only by major field of study, only by sex, and only by achievement levels, no significant differences were found. Also, no significant differences were found when students were compared by major field and achievement together and by sex and achievement together. However, significant differences were found at the .01 level among students when compared on the basis of major field of study by sex ($F = 4.19$). Duncan's multiple-range test for differences between means revealed men in the social sciences changed significantly from the men who were undecided and men who were majoring in the natural and paramedical sciences. Also, men in the paramedical sciences became more altruistic than the undecided men.

The null hypothesis, based on interactive effects, was rejected for the variables, major field of study and sex, and accepted for the achievement variable.

Independence

No significant difference was found for any variable. Thus, the null hypothesis was accepted for every source of variation.

Simplicity

No significant difference was found for any variable. Thus, the null hypothesis was accepted for every source of variation.

Similarity

No significant differences were found for any main effects of major field of study, sex, or achievement. Also, no interactive effects were

significant except for students grouped by sex and achievement. On this source of variation an F value of 4.39 was revealed which was significant at the .05 level of confidence. Duncan's multiple-range test revealed that this difference was based on significant change among women of the higher-ability group.

For this dimension of human nature, the null hypothesis was rejected for the variables sex and achievement but accepted for the variable, major field of study.

Favorability

No significant F values were found for any source of variation. Thus, the null hypothesis was accepted for all variables.

Hypothesis XI

Hypothesis XI: There is no significant change in the degree of dogmatism of freshmen as a result of one semester of college when compared on the basis of: (a) major field of study, (b) sex, (c) ability.

Table XIII presents the F values for the differences in the pre- and post-test scores for dogmatism treated with the Analysis of Variance technique. No significant F values were found for any source of variation. Thus, the null hypothesis was accepted for all variables.

Hypothesis XII

Hypothesis XII: There is no significant change in the degree of dogmatism of freshmen as a result of one semester of college when compared on the basis of: (a) major field of study, (b) sex, (c) achievement.

TABLE XIII

THE ANALYSIS OF VARIANCE OF DOGMATISM CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	117715.56	287			
Major Field	1862.03	5	327.41	0.90	NS
Sex	16.53	1	16.53	0.04	NS
Ability	172.67	1	172.67	0.42	NS
Major Field x Sex	3441.10	5	688.22	1.66	NS
Major Field x Ability	1813.56	5	362.71	0.86	NS
Sex x Ability	87.78	1	87.78	0.20	NS
Major Field x Sex x Ability	995.54	5	199.11	0.48	NS
Total Error	109326.41	264	414.11		

Table XIV presents the F values for the differences in the pre- and post-test scores for dogmatism treated with the Analysis of Variance technique. No significant F values were found for any source of variation. Thus, the null hypothesis was accepted for all variables.

Hypothesis XIII

Hypothesis XIII: Among Arts and Sciences freshmen, there is no significant relationship between one's philosophy of human nature and degree of dogmatism.

For each test score a Pearson product-moment correlation coefficient was calculated to determine the relationship between scores obtained from the Rokeach Dogmatism Scale and the Philosophy of Human Nature Scale. Correlations were run for each pre-test score (beginning

of the semester) and for each post-test score (at the end of the semester). Scores for the total number of students (N = 927) were used to make the calculations. The various dimensions of the Philosophy of Human Nature Scale were considered to be significantly correlated with the Dogmatism Scale if the obtained r value equaled or exceeded the tabled value at the .05 level of significance for the appropriate degrees of freedom ($r = \pm .19$, d.f. = 926). Both positive and negative relationships were considered. Table XV presents these relationships. A narrative interpretation follows the table.

TABLE XIV

THE ANALYSIS OF VARIANCE OF DOGMATISM CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	308286.19	287			
Major Field	6575.38	5	1315.07	1.21	NS
Sex	1701.29	1	1701.29	1.57	NS
Achievement	833.60	1	833.60	0.77	NS
Major Field x Sex	1016.03	5	203.21	0.19	NS
Major Field x Achievement	7965.85	5	1593.17	1.47	NS
Sex x Achievement	1292.08	1	1292.08	1.19	NS
Major Field x Sex x Achievement	2818.96	5	563.79	0.52	NS
Total Error	286083.15	264	1083.65		

TABLE XV

CORRELATION BETWEEN DOGMATISM AND PHILOSOPHY OF HUMAN NATURE DIMENSIONS FOR ALL FRESHMEN - PRE- and POST-TESTS

Variable	Group	Mean	S.D.	Correlation Coefficient
Trustworthiness	Pre-Tests	1.89	11.51	-0.17
	Post-Tests	1.81	11.94	-0.19*
Rationality	Pre-Tests	12.72	9.88	-0.09
	Post-Tests	10.83	10.13	-0.18
Altruism	Pre-Tests	-2.52	12.21	-0.12
	Post-Tests	-1.93	13.28	-0.16
Independence	Pre-Tests	0.37	10.76	-0.13
	Post-Tests	0.15	11.57	-0.18
Simplicity	Pre-Tests	9.14	11.36	-0.17
	Post-Tests	10.50	11.58	-0.18
Similarity	Pre-Tests	10.37	9.14	-0.20*
	Post-Tests	10.29	9.99	-0.15
Positive Favorability	Pre-Tests	19.51	15.69	-0.23*
	Post-Tests	20.82	17.51	-0.20*

*Significant at the 5 percent level of confidence.

To be significant at the .05 level of confidence a correlation coefficient of .19 is required.

Dogmatism Mean for Pre-Test = 153.54, S.D. = 25.48 (N = 927).
Dogmatism Mean for Post-Test = 153.62, S.D. = 30.51 (N = 927).

Results of the Analysis for Hypothesis XIII

The null hypothesis was accepted for the dimensions of Rationality, Altruism, Independence, and Simplicity on both pre- and post-test scores. However, upon examination of Table XV, it is apparent that the post-test correlations for all of these dimensions were approaching significance at the .05 level of confidence. The null hypothesis was also accepted for the dimension of Trustworthiness on pre-test analysis, but rejected on post-test analysis as an r of -0.19 was calculated. On the Similarity dimension the null hypothesis was rejected for pre-test analysis ($r = -0.20$), but accepted for post-test analysis. The general Favorability of Human Nature Score correlated significantly with Dogmatism on both pre-test and post-test analysis. All r's were negative indicating that Philosophy of Human Nature scores were inversely related to Dogmatism scores.

CHAPTER V

SUMMARY

This study was concerned with comparing first semester freshmen in the College of Arts and Sciences at the Oklahoma State University as to their perceptions of human nature and tendencies toward dogmatism. Comparisons were made among major fields of study and by sex on the bases of ability groupings and achievement groupings. The population consisted of 927 students who were, during the fall semester of 1969-70, tested with the same instruments at the beginning of the semester and again at the end of the semester.

The instruments used in this study were the Philosophy of Human Nature Scale as developed by Wrightsman and the Dogmatism Scale, Form E as developed by Rokeach. In order to make comparisons based on ability, students' American College Test composite scores were obtained. First semester grade-point averages were used to make comparisons based on achievement.

This investigation divided students into groupings based on major field of study, sex, and ability and then into groupings based on major field of study, sex, and achievement with two three-factor mixed completely randomized designs for statistical treatments. The analysis of variance was used to compare students on the basis of pre-test scores and change scores. The analysis of covariance was used to compare

students on the basis of post-test scores. When significant differences were found, Duncan's multiple-range test was used to make comparisons between specific means.

The Pearson product-moment correlation coefficient was computed to determine possible relationships between dimensions of the Philosophy of Human Nature Scale and the Dogmatism Scale for pre- and post-test data. The calculations for correlations were based on the total number (N = 927) of students on pre- and post-tests of the instruments.

Wherever statistical tests were employed, it was assumed that differences were not statistically significant unless they were at or above the .05 level of confidence.

Significant Findings

Hypothesis I

Hypothesis I stated that entering freshmen would not differ in their perceptions of human nature when compared on the bases of major field of study, sex, and ability. Summaries of salient findings are enumerated below.

(1) The students tended to differ most significantly on the basis of sex upon entrance to college. Males and females differed in their perceptions on all dimensions except in their views toward the simplistic nature of man. Women generally saw man's human nature as being more trusting, rational, altruistic, independent, similar, and favorable than did the men. Comparisons based on major field of study by sex revealed that men and women were generally homogeneous in their perceptions. However, women in the humanities and social sciences tended to

see human nature as being more complex than did women in the natural sciences or paramedical fields.

(2) Students' ability levels had little effect upon their perceptions of human nature. When students were compared by ability without regard to their major field of study or sex they differed only in their perceptions of the complexity of human nature. The higher-ability students tended to see human nature as being more simplistic than did the lower-ability students. When the students were compared by major field of study by ability level, it was shown that lower-ability students in the paramedical sciences saw human nature as being less altruistic than did lower-ability students who later changed majors, who were undecided, and who were majoring in the humanities or in the social sciences. Undecided higher-ability students saw human nature as less altruistic than did students who later changed majors.

Hypothesis II

Hypothesis II stated that entering freshmen would not differ in their perceptions of human nature when compared on the bases of major field of study, sex, and achievement. Summaries of the more significant findings are enumerated below.

(1) Students did not view human nature differently on the basis of any comparisons in their trustworthiness, strength of will and rationality, independence, or favorability perceptions.

(2) Some differences were shown in entering students' altruistic perceptions and in their perceptions of the simplicity and similarity of human nature: (a) Women viewed human nature as being more altruistic and more variable than did the men; (b) Undecided men were more

altruistic in their views of human nature than were the men in the humanities, social sciences, and natural sciences; (c) Women paramedical students saw human nature as more altruistic than did women who later changed majors or were in the humanities or natural sciences; (d) Higher-achievement students generally saw human nature as being more complex than did the lower-achievement students.

Hypothesis III

Hypothesis III stated that entering freshmen would not differ in their degrees of dogmatism when compared on the bases of major field of study, sex, and ability.

Results revealed that lower-ability students tended to be more dogmatic than were the higher-ability students. It was also shown that men and women in the paramedical sciences were more dogmatic than were men and women who were undecided and who were majoring in the humanities.

Hypothesis IV

Hypothesis IV stated that entering freshmen would not differ in their degrees of dogmatism when compared on the basis of major field of study, sex, and achievement.

Results upheld the hypothesis for all variables since no significant differences were revealed.

Hypothesis V

Hypothesis V stated that freshmen would not differ at the end of their first semester of college in their perceptions of human nature

when compared on the bases of major field of study, sex, and ability. Summaries of salient findings are enumerated below.

(1) Students were homogeneous when compared on all variables in their perceptions of altruism, independence, similarity, and favorability.

(2) Students did differ by sex in their trustworthiness, rationality, and simplicity perceptions of human nature. Women tended to see man's nature as being more altruistic, more rational, and more trusting than did the men.

(3) No differences were found for students on any perception when compared by major field of study or ability.

Hypothesis VI

Hypothesis VI stated that freshmen would not differ at the end of their first semester of college in their perceptions of human nature when compared on the bases of major field of study, sex, and achievement. Summaries of salient findings are enumerated below.

(1) Students did not differ on any comparison variable in their human nature perceptions of trustworthiness, altruism, or similarity.

(2) Women differed from men over-all in their perceptions of the simplicity of human nature. The women perceived human nature as being more complex than did the men.

(3) When students were compared on the basis of major field of study without regard to their sex or achievement levels, it was shown that they differed in their perceptions of the favorability of human nature and in the independence of human nature. Generally, students who changed major fields during the semester and students who were

undecided saw human nature as less favorable than did the other groups. Humanities students tended to see human nature as more independent from group pressure than did the other groups.

Hypothesis VII

Hypothesis VII stated that freshmen would not differ at the end of their first semester of college in their degrees of dogmatism when compared on the bases of major field of study, sex, and ability.

Only one significant finding was revealed based on this hypothesis. It was shown that students differed by ability level when major field of study and sex were not considered. The lower-ability group tended to be more dogmatic than did the higher-ability group.

Hypothesis VIII

Hypothesis VIII stated that freshmen would not differ at the end of their first semester of college in their degrees of dogmatism when compared on the bases of major field of study, sex, and achievement.

No significant differences were revealed when this hypothesis was tested.

Hypothesis IX

Hypothesis IX stated that students' perceptions of human nature change scores would not be significantly different when compared on the bases of major field of study, sex, and ability. Significant findings are enumerated below.

(1) Students did not show significant differences on any comparisons in their human nature perceptions of trustworthiness, strength of will and rationality, altruism, or similarity.

(2) Without regard to their sex or ability level, undecided students and paramedical students differed in their independence perceptions of human nature. The undecided students did not feel as strongly concerning the independence from group pressure of human nature as did the paramedical students.

(3) Over-all, females tended to become more simplistic in their perceptions of human nature than did the men.

(4) Men in the humanities became less favorable than the men in the natural sciences. Also, women who were undecided saw human nature less favorably than did women in any other group.

Hypothesis X

Hypothesis X stated that students' perceptions of human nature change scores would not be significantly different when compared on the bases of major field of study, sex, and achievement. Significant findings are enumerated below.

(1) No significant differences were revealed for any comparison variable for perceptions of trustworthiness, strength of will and rationality, independence, simplicity, or favorability.

(2) Students did differ in their altruistic perceptions when compared by major field of study by sex. Men in the social sciences became more altruistic than undecided men. Also, women who were undecided differed significantly from women in the humanities and social sciences. The latter groups became more altruistic.

(3) Higher-ability women over-all changed significantly from the lower-ability women by perceiving human nature as being more variable.

Hypothesis XI

Hypothesis XI stated that students' dogmatism change scores would not be significantly different when compared on the bases of major field of study, sex, and ability.

Findings revealed that there were no significant differences in change scores based on any comparison.

Hypothesis XII

Hypothesis XII stated that students' change scores would not be significantly different when compared on the bases of major field of study, sex, and achievement.

Findings revealed that there were no significant differences in change scores based on any comparison.

Hypothesis XIII

Hypothesis XIII stated that there would be no significant relationship between one's philosophy of human nature and his degree of dogmatism.

General favorability of human nature perceptions were found to be inversely related to dogmatism as were the perceptions of Trustworthiness and Similarity. All other perceptions were shown to be approaching significance with an inverse relationship.

Conclusions and Recommendations

In general, despite the findings of some statistically significant differences, the results of this study suggest that first semester freshmen at Oklahoma State University are rather homogeneous in their perceptions of human nature and tendencies toward dogmatism when compared on the bases of their major field of study, sex, ability levels, and achievement levels. Where differences were found to exist, they were generally related to differences between males and females in their perceptions of human nature. In general, women were more favorable toward the nature of man than were the men. Women perceived human nature as being more trusting, altruistic, rational, and independent from group pressure than did the men.

Although a review of the literature of studies completed indicates that significant differences normally occur between men and women when compared on their tendencies toward dogmatism, this study could not substantiate such differences.

When students were grouped by ability as opposed to achievement, ability tended to be more effective for making comparisons. However, in analyzing the findings, it is difficult to determine any general patterns related to differentiation by ability or achievement. Perhaps further limits placed on ability levels and achievement levels might be able to differentiate more statistically significant differences related to these variables. Comparing students by high, middle, and low ability and achievement might be such a limitation.

The results of the study cannot lend support to the assumption that students can be identified by major field of study upon their perceptions of human nature or degrees of dogmatism. This could be due to

the broad categories into which different subject matter majors were placed when "fields of study" were defined. It is concluded that more well-defined and specific major fields should be studied. It is also suggested that academic majors outside the College of Arts and Sciences be compared with academic majors similar to those used in this study.

Very little change was found to occur in the population investigated over the period of one semester. This was true for comparisons made on students' perceptions of human nature and on students' tendencies toward dogmatism. Additional research on the matter of change might be more meaningful if a period of time longer than one semester is used. Although no attempt was made in this study to relate the variables under consideration to students who did not persist in college, perhaps subsequent research could determine whether relationships exist between these variables and college persistence.

There is some indication that freshmen students' philosophies of human nature and degrees of dogmatism are inversely related. However, correlation coefficients where significant were not large enough to make firm predictions. Perhaps if more specific groupings of students were compared to determine existing relationships based upon the instruments used in this study, more significant correlations could be determined.

Future research should attempt to determine if differences among freshmen are a natural result of the impact of the freshman year or are more highly related to differences which exist before students enter college. Socio-economic aspects of the students' home environments would be one such area for investigation.

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APPENDIX A

PHILOSOPHY OF HUMAN NATURE SCALE

Philosophy of Human Nature Scale

This questionnaire is a series of attitude statements. Each represents a commonly held opinion and there are no right or wrong answers. You will probably disagree with some items and agree with others. We are interested in the extent to which you agree or disagree with matters of opinion.

Read each statement carefully. Then, on the separate answer sheet, indicate the extent to which you agree or disagree by circling a number by the number for each statement. The numbers and their meanings are indicated below:

If you agree strongly - circle +3

If you agree somewhat - circle +2

If you agree slightly - circle +1

If you disagree slightly - circle -1

If you disagree somewhat - circle -2

If you disagree strongly - circle -3

First impressions are usually best in such matters. Read each statement, decide if you agree or disagree and the strength of your opinion, and then circle the appropriate number on the answer sheet. Be sure to answer every statement.

If you find that the numbers to be used in answering do not adequately indicate your own opinion, use the one which is closest to the way you feel.

PHN Scale

1. Great successes in life, like great artists and inventors are usually motivated by forces they are unaware of.

2. Most students will tell the instructor when he has made a mistake in adding up their score, even if he had given them more points than they deserved.

3. Most people will change the opinion they express as a result of an onslaught of cricitism, even though they really don't change the way they feel.

4. Most people try to apply the Golden Rule even in today's complex society.

5. A person's reaction to things differs from one situation to another.

6. I find that my first impression of a person is usually correct.

7. Our success in life is pretty much determined by forces outside our own control.

8. If you give the average person a job to do and leave him to do it, he will finish it successfully.

9. Nowadays many people won't make a move until they find out what other people think.

10. Most people do not hesitate to go out of their way to help someone in trouble.

11. Different people react to the same situation in different ways.

12. People can be described accurately by one term, such as "introverted," or "moral," or "sociable."

13. Attempts to understand ourselves are usually futile.

14. People usually tell the truth, even when they know they would be better off by lying.

15. The important thing in being successful nowadays is not how hard you work, but how well you fit in with the crowd.

16. Most people will act as "Good Samaritans" if given the opportunity.

17. Each person's personality is different from the personality of every other person.

18. It's not hard to understand what really is important to a person.

19. There's little one can do to alter his fate in life.

20. Most students do not cheat when taking an exam.

21. The typical student will cheat on a test when everybody else does, even though he has a set of ethical standards.

Make sure that you are on the right place on your answer sheet. You should be starting the top of the 2nd column now.

22. "Do unto others as you would have them do unto you" is a motto most people follow.

23. People are quite different in their basic interests.

24. I think I get a good idea of a person's basic nature after a brief conversation with him.

25. Most people have little influence over the things that happen to them.

26. Most people are basically honest.

27. It's a rare person who will go against the crowd.

28. The typical person is sincerely concerned about the problems of others.

29. People are pretty different from one another in what "makes them tick."

30. If I could ask a person three questions about himself (and assuming he would answer them honestly), I would know a great deal about him.

31. Most people have an unrealistically favorable view of their own capabilities.

32. If you act in good faith with people, almost all of them will reciprocate with fairness towards you.

33. Most people have to rely on someone else to make their important decisions for them.

34. Most people with a fallout shelter would let their neighbors stay in it during a nuclear attack.

35. Often a person's basic personality is altered by such things as a religious conversation, psychotherapy, or a charm course.

36. When I meet a person, I look for one basic characteristic through which I try to understand him.

37. Most people vote for a political candidate on the basis of unimportant characteristics such as his appearance or name, rather than because of his stand on the issues.

38. Most people lead clean, decent lives.

39. The average person will rarely express his opinion in a group when he sees the others disagree with him.

40. Most people would stop and help a person whose car is disabled.

41. People are unpredictable in how they'll act from one situation to another.

42. Give me a few facts about a person and I'll have a good idea of whether I'll like him or not.

Be sure you are at the right place on your answer sheet. You should be at the top of the third column now.

43. If a person tries hard enough, he will usually reach his goals in life.

44. People claim they have ethical standards regarding honesty and morality, but few people stick to them when the chips are down.

45. Most people have the courage of their convictions.

46. The average person is conceited.

47. People are pretty much alike in their basic interests.

48. I find that my first impressions of people are frequently wrong.

49. The average person has an accurate understanding of the reasons for his behavior.

50. If you want people to do a job right, you should explain things to them in great detail and supervise them clearly.

51. Most people can make their own decisions, uninfluenced by public opinion.

52. It's only a rare person who would risk his own life and limb to help someone else.

53. People are basically similar in their personalities.

54. Some people are too complicated for me to figure out.

55. If people try hard enough, wars can be prevented in the future.

56. If most people could get into a movie without paying and be sure they were not seen, they would do it.

57. It is achievement, rather than popularity with others, that gets you ahead nowadays.

58. It's pathetic to see an unselfish person in today's world because so many people take advantage of him.

59. If you have a good idea about how several people will react to a certain situation, you can expect most people to react the same way.

60. I think you can never really understand the feelings of other people.

61. The average person is largely the master of his own fate.

62. Most people are not really honest for a desirable reason; they're afraid of getting caught.

63. The average person will stick to his opinion if he thinks he's right, even if others disagree.

Check to see that you are on the right place on your answer sheet. You should be starting the top of the 4th column now.

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

65. Most people are consistent from situation to situation in the way they react to things.

66. You can't accurately describe a person in just a few words.

67. In a local or national election, most people select a candidate rationally and logically.

68. Most people would tell a lie if they could gain by it.

69. If a student does not believe in cheating, he will avoid it even if he sees many others doing it.

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

71. A child who is popular will be popular as an adult, too.

72. You can't classify everyone as good or bad.

73. Most persons have a lot of control over what happens to them in life.

74. Most people would cheat on their income tax if they had a chance.

75. The person with novel ideas is respected in our society.

76. Most people exaggerate their troubles in order to get sympathy.

77. If I can see how a person reacts to one situation, I have a good idea of how he will react to other situations.

78. People are too complex to ever be understood fully.

79. Most people have a good idea of what their strengths and weaknesses.

80. Nowadays people commit a lot of crimes and sins that no one else ever hears about.

81. Most people will speak out for what they believe in.

82. People are usually out for their own good.

83. When you get right down to it, people are quite alike in their emotional makeup.

84. People are so complex, it is hard to know what "Makes them tick."

APPENDIX B

ROKEACH'S DOGMATISM SCALE, FORM E

ROKEACH'S DOGMATISM SCALE

FORM E

The following is a study of what the general public thinks and feels about a number of important social and personal questions. The best answer to each statement below is your personal opinion. We have tried to cover many different and opposing points of view; you may find yourself agreeing strongly with some of the statements, disagreeing just as strongly with others, and perhaps uncertain about others; whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

CODE:

+1:	I Agree A Little	-1:	I Disagree A Little
+2:	I Agree On The Whole	-2:	I Disagree On The Whole
+3:	I Agree Very Much	-3:	I Disagree Very Much

Respond to each statement in the left margin according to how much you agree or disagree with it.

EXAMPLE:

(+3) +2 +1 -1 -2 -3 (1) All youth should be educated.

In this example the respondent agreed very much with this statement.

PLEASE RESPOND TO EVERY QUESTION. CIRCLE ONLY ONE NUMBER.

+3 +2 +1 -1 -2 -3 1. The United States and Russia have just about nothing in common.

+3 +2 +1 -1 -2 -3 2. The highest form of government is a democracy and the highest form of a democracy is a government run by those who are most intelligent.

+3 +2 +1 -1 -2 -3 3. Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.

+3 +2 +1 -1 -2 -3 4. It is only natural that a person would have a much better acquaintance with ideas he believes in than with ideas he opposes.

+3 +2 +1 -1 -2 -3 5. Man on his own is a helpless and miserable creature.

+3 +2 +1 -1 -2 -3 6. Fundamentally, the world we live in is a pretty lonesome place.

+3 +2 +1 -1 -2 -3 7. Most people just don't give a "damn" for others.

+3 +2 +1 -1 -2 -3 8. I'd like it if I could find someone who would tell me how to solve my personal problems.

+3 +2 +1 -1 -2 -3 9. It is only natural for a person to be rather fearful of the future.

+3 +2 +1 -1 -2 -3 10. There is so much to be done and so little time to do it in.

+3 +2 +1 -1 -2 -3 11. Once I get wound up in a heated discussion, I just can't stop.

+3 +2 +1 -1 -2 -3 12. In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.

+3 +2 +1 -1 -2 -3 13. In a heated discussion I generally become so absorbed in what I am going to say that I forget to listen to what the others are saying.

+3 +2 +1 -1 -2 -3 14. It is better to be a dead hero than to be a live coward.

+3 +2 +1 -1 -2 -3 15. While I don't like to admit this even to myself, my secret ambition is to become a great man, like Einstein, or Beethoven, or Shakespeare.

+3 +2 +1 -1 -2 -3 16. The main thing in life is for a person to want to do something important.

+3 +2 +1 -1 -2 -3 17. If given the chance I would do something of great benefit to the world.

+3 +2 +1 -1 -2 -3 18. In the history of mankind there have probably been just a handful of really great thinkers.

+3 +2 +1 -1 -2 -3 19. There are a number of people I have come to hate because of the things they stand for.

+3 +2 +1 -1 -2 -3 20. A man who does not believe in some great cause has not really lived.

+3 +2 +1 -1 -2 -3 21. It is only when a person devotes himself to an ideal or cause that life becomes meaningful.

+3 +2 +1 -1 -2 -3 22. Of all the different philosophies which exist in this world there is probably only one which is correct.

+3 +2 +1 -1 -2 -3 23. A person who gets enthusiastic about too many causes is likely to be a pretty "wishy-washy" sort of person.

+3 +2 +1 -1 -2 -3 24. To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.

+3 +2 +1 -1 -2 -3 25. When it comes to differences of opinion in religion we must be careful not to compromise with those who believe differently from the way we do.

+3 +2 +1 -1 -2 -3 26. In times like these, a person must be pretty selfish if he considers primarily his own happiness.

+3 +2 +1 -1 -2 -3 27. The worst crime a person could commit is to attack publicly the people who believe in the same thing he does.

+3 +2 +1 -1 -2 -3 28. In times like these it is often necessary to be more on guard against ideas put out by people or groups in one's own camp than by those in the opposing camp.

+3 +2 +1 -1 -2 -3 29. A group which tolerates too much difference of opinion among its own members cannot exist for long.

+3 +2 +1 -1 -2 -3 30. There are two kinds of people in this world: those who are for the truth and those who are against the truth.

+3 +2 +1 -1 -2 -3 31. My blood boils whenever a person stubbornly refuses to admit he's wrong.

+3 +2 +1 -1 -2 -3 32. A person who thinks primarily of his own happiness is beneath contempt.

+3 +2 +1 -1 -2 -3 33. Most of the ideas which get printed nowadays aren't worth the paper they are printed on.

+3 +2 +1 -1 -2 -3 34. In this complicated world of ours the only way we can know what's going on is to rely on leaders or experts who can be trusted.

+3 +2 +1 -1 -2 -3 35. It is often desirable to reserve judgment about what's going on until one has had a chance to hear the opinions of those one respects.

+3 +2 +1 -1 -2 -3 36. In the long run the best way to live is to pick friends and associates whose tastes and beliefs are the same as one's own.

+3 +2 +1 -1 -2 -3 37. The present is all too often full of unhappiness. It is only the future that counts.

+3 +2 +1 -1 -2 -3 38. If a man is to accomplish his mission in life it is sometimes necessary to gamble "all or nothing at all."

+3 +2 +1 -1 -2 -3 39. Unfortunately, a good many people with whom I have discussed important social and moral problems don't really understand what's going on.

+3 +2 +1 -1 -2 -3 40. Most people just don't know what's good for them.

APPENDIX C

ANALYSIS OF VARIANCE TABLES FOR HYPOTHESIS I

TABLE XVI

THE ANALYSIS OF VARIANCE OF TRUSTWORTHINESS SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	33648.87	287			
Major Field	128.50	5	25.70	0.24	NS
Sex	2178.00	1	2178.00	20.13	.01
Ability	360.01	1	360.01	3.13	NS
Major Field x Sex	330.01	5	66.12	0.61	NS
Major Field x Ability	1605.94	5	321.19	2.07	NS
Sex x Ability	256.89	1	256.89	2.37	NS
Major Field x Sex x Ability	231.17	5	46.31	0.43	NS
Total Error	28557.36	264	108.17		

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

TABLE XVII

THE ANALYSIS OF VARIANCE OF STRENGTH OF WILL AND RATIONALITY SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	32988.21	287			
Major Field	658.53	5	131.71	1.18	NS
Sex	942.50	1	942.50	8.48	.01
Ability	94.53	1	94.53	0.85	NS
Major Field x Sex	324.56	5	64.91	0.58	NS
Major Field x Ability	835.28	5	167.06	1.50	NS
Sex x Ability	8.34	1	8.34	0.07	NS
Major Field x Sex x Ability	780.81	5	156.16	1.40	NS
Total Error	29343.65	264	111.15		

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

TABLE XVIII

THE ANALYSIS OF VARIANCE OF ALTRUISM SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	39197.11	287			
Major Field	278.40	5	55.68	0.46	NS
Sex	3334.59	1	3334.59	27.86	.01
Ability	8.68	1	8.68	0.07	NS
Major Field x Sex	1108.90	5	221.79	1.85	NS
Major Field x Ability	1731.81	5	346.36	2.89	.05
Sex x Ability	156.15	1	156.15	1.30	NS
Major Field x Sex x Ability	985.60	5	197.12	1.65	NS
Total Error	31592.99	264	119.67		

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.

TABLE XIX

THE ANALYSIS OF VARIANCE OF INDEPENDENCE SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	29627.59	287			
Major Field	882.79	5	176.56	1.79	NS
Sex	666.12	1	666.12	6.74	.01
Ability	36.12	1	36.12	0.37	NS
Major Field x Sex	1056.00	5	211.20	2.14	NS
Major Field x Ability	524.41	5	104.88	1.06	NS
Sex x Ability	220.50	1	220.50	2.23	NS
Major Field x Sex x Ability	154.21	5	30.84	0.32	NS
Total Error	26087.45	264	98.81		

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

TABLE XX

THE ANALYSIS OF VARIANCE OF SIMPLICITY SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	39015.74	287			
Major Field	453.10	5	90.62	0.76	NS
Sex	232.92	1	232.92	1.94	NS
Ability	3300.64	1	3300.64	27.52	.01
Major Field x Sex	1471.60	5	294.32	2.45	.05
Major Field x Ability	796.70	5	159.34	1.33	NS
Sex x Ability	169.68	1	169.68	1.41	NS
Major Field x Sex x Ability	926.68	5	185.34	1.54	NS
Total Error	31664.44	264	119.94		

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.

TABLE XXI

THE ANALYSIS OF VARIANCE OF SIMILARITY SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	20546.25	287			
Major Field	355.24	5	71.05	1.06	NS
Sex	964.34	1	964.34	14.39	.01
Ability	218.75	1	218.75	3.26	NS
Major Field x Sex	200.93	5	40.19	0.60	NS
Major Field x Ability	1016.77	5	203.35	3.03	NS
Sex x Ability	17.50	1	17.50	0.26	NS
Major Field x Sex x Ability	77.18	5	15.44	0.23	NS
Total Error	17695.53	264	67.03		

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

TABLE XXII

THE ANALYSIS OF VARIANCE OF FAVORABILITY SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	293319.06	287			
Major Field	3358.22	5	671.64	0.74	NS
Sex	25896.61	1	25896.61	28.63	.01
Ability	656.98	1	656.98	0.73	NS
Major Field x Sex	7986.96	5	1597.39	1.77	NS
Major Field x Ability	13066.60	5	2613.32	2.89	.05
Sex x Ability	1638.92	1	1638.92	1.81	NS
Major Field x Sex x Ability	1898.31	5	379.66	0.42	NS
Total Error	238816.66	264	904.61		

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.

APPENDIX D

ANALYSIS OF VARIANCE TABLES FOR HYPOTHESIS II

TABLE XXIII

THE ANALYSIS OF VARIANCE OF TRUSTWORTHINESS SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	34046.51	287			
Major Field	389.51	5	77.90	0.65	NS
Sex	145.92	1	145.92	1.22	NS
Achievement	16.53	1	16.53	0.14	NS
Major Field x Sex	555.27	5	111.05	0.93	NS
Major Field x Achievement	417.91	5	83.58	0.70	NS
Sex x Achievement	353.33	1	353.33	2.97	NS
Major Field x Sex x Achievement	713.43	5	142.69	1.20	NS
Total Error	31454.60	264	119.15		

TABLE XXIV

THE ANALYSIS OF VARIANCE OF STRENGTH OF WILL AND RATIONALITY SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	27046.13	287			
Major Field	370.11	5	74.02	0.78	NS
Sex	136.12	1	136.12	1.44	NS
Achievement	14.22	1	14.22	0.15	NS
Major Field x Sex	653.04	5	130.60	1.38	NS
Major Field x Achievement	435.78	5	87.16	0.92	NS
Sex x Achievement	0.68	1	0.68	0.01	NS
Major Field x Sex x Achievement	403.32	5	80.66	0.85	NS
Total Error	35032.87	264	94.82		

TABLE XXV

THE ANALYSIS OF VARIANCE OF ALTRUISM SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	41998.42	287			
Major Field	939.58	5	187.92	1.40	NS
Sex	786.69	1	786.69	5.87	.05
Achievement	24.50	1	24.50	0.18	NS
Major Field x Sex	2545.18	5	509.04	3.80	.01
Major Field x Achievement	1325.29	5	265.06	1.98	NS
Sex x Achievement	260.70	1	260.70	1.95	NS
Major Field x Sex x Achievement	748.76	5	149.75	1.12	NS
Total Error	35367.72	264	133.97		

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 3.02.

The F value for significance at the .05 level with 5 and 264 degrees of freedom is 3.84.

TABLE XXVI

THE ANALYSIS OF VARIANCE OF INDEPENDENCE SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	34503.55	287			
Major Field	120.33	5	24.07	0.20	NS
Sex	308.34	1	308.34	2.52	NS
Achievement	1.39	1	1.39	0.01	NS
Major Field x Sex	726.07	5	145.21	1.19	NS
Major Field x Achievement	671.61	5	134.32	1.10	NS
Sex x Achievement	100.35	1	100.35	0.82	NS
Major Field x Sex x Achievement	273.74	5	54.75	0.45	NS
Total Error	32301.73	264	122.36		

TABLE XXVII

THE ANALYSIS OF VARIANCE OF SIMPLICITY SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	37866.40	287			
Major Field	1484.95	5	296.99	2.38	.05
Sex	122.72	1	122.72	0.98	NS
Achievement	1065.65	1	1065.65	8.52	.01
Major Field x Sex	591.36	5	118.27	0.95	NS
Major Field x Achievement	1239.67	5	247.93	1.98	NS
Sex x Achievement	2.74	1	2.74	0.02	NS
Major Field x Sex x Achievement	353.76	5	70.75	0.56	NS
Total Error	33005.54	264	125.02		

The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

TABLE XXVIII

THE ANALYSIS OF VARIANCE OF SIMILARITY SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	23922.15	287			
Major Field	132.57	5	26.51	0.33	NS
Sex	624.21	1	624.21	7.77	.01
Achievement	0.06	1	0.06	0.00	NS
Major Field x Sex	401.95	5	80.39	1.00	NS
Major Field x Achievement	829.94	5	165.99	2.07	NS
Sex x Achievement	572.36	1	572.36	7.12	.01
Major Field x Sex x Achievement	151.73	5	30.35	0.38	NS
Total Error	21209.34	264	80.34		

The F value for significance at the .01 level with 1 and 264 degrees of freedom is 6.63.

TABLE XXIX

THE ANALSYSIS OF VARIANCE OF FAVORABILITY SCORES FOR ENTERING FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	280362.88	287			
Major Field	2962.17	5	592.43	0.61	NS
Sex	3273.62	1	3273.62	3.35	NS
Achievement	65.16	1	65.16	0.07	NS
Major Field x Sex	8210.56	5	1642.11	1.68	NS
Major Field x Achievement	5321.95	5	1064.39	1.09	NS
Sex x Achievement	413.35	1	413.35	0.42	NS
Major Field x Sex x Achievement	23629.42	5	473.88	0.48	NS
Total Error	257746.94	264	976.31		

APPENDIX E

ANALYSIS OF COVARIANCE TABLES FOR HYPOTHESIS V

TABLE XXX

THE ANALYSIS OF COVARIANCE OF TRUSTWORTHINESS SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	20445.89	287			
Major Field	476.27	5	95.25	1.08	NS
Sex	396.02	1	396.02	4.49	.05
Ability	36.91	1	36.91	0.42	NS
Major Field x Sex	453.48	5	90.70	1.03	NS
Major Field x Ability	542.43	5	108.49	1.23	NS
Sex x Ability	12.74	1	12.74	0.14	NS
Major Field x Sex x Ability	87.02	5	17.40	0.20	NS
Total Error	23256.05	263	88.09		

The F value for significance at the .05 level with 1 and 263 degrees of freedom is 3.84.

TABLE XXXI

THE ANALYSIS OF COVARIANCE OF STRENGTH OF WILL AND RATIONALITY SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	18437.18	287			
Major Field	217.05	5	43.41	0.66	NS
Sex	277.91	1	277.91	4.24	.05
Ability	0.04	1	0.04	0.00	NS
Major Field x Sex	191.13	5	38.23	0.58	NS
Major Field x Ability	200.86	5	40.17	0.61	NS
Sex x Ability	4.21	1	4.21	0.06	NS
Major Field x Sex x Ability	232.50	5	46.50	0.71	NS
Total Error	17313.48	263	65.59		

The F value for significance at the .05 level with 1 and 263 degrees of freedom is 3.84.

TABLE XXXII

THE ANALYSIS OF COVARIANCE OF ALTRUISM SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	30626.15	287			
Major Field	1054.32	5	210.86	1.97	NS
Sex	82.39	1	82.39	0.77	NS
Ability	95.38	1	95.38	0.89	NS
Major Field x Sex	376.29	5	75.26	0.70	NS
Major Field x Ability	385.28	5	77.06	0.72	NS
Sex x Ability	7.80	1	7.80	0.07	NS
Major Field x Sex x Ability	359.01	5	71.80	0.67	NS
Total Error	28265.69	263	107.07		

TABLE XXXIII

THE ANALYSIS OF COVARIANCE OF INDEPENDENCE SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	25992.90	287			
Major Field	768.55	5	153.71	1.75	NS
Sex	245.22	1	245.22	2.79	NS
Ability	28.25	1	25.28	0.32	NS
Major Field x Sex	749.36	5	149.87	1.70	NS
Major Field x Ability	625.70	5	125.14	1.42	NS
Sex x Ability	134.54	1	134.54	1.53	NS
Major Field x Sex x Ability	207.35	5	41.47	0.47	NS
Total Error	23233.92	263	88.01		

TABLE XXXIV

THE ANALYSIS OF COVARIANCE OF SIMPLICITY SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	24078.30	287			
Major Field	658.84	5	131.77	1.61	NS
Sex	491.04	1	491.04	6.00	.05
Ability	71.58	1	71.58	0.87	NS
Major Field x Sex	541.40	5	108.28	1.32	NS
Major Field x Ability	413.96	5	82.79	1.01	NS
Sex x Ability	36.07	1	36.07	0.44	NS
Major Field x Sex x Ability	269.03	5	53.81	0.66	NS
Total Error	21596.38	263	81.80		

The F value for significance at the .05 level with 1 and 263 degrees of freedom is 3.84.

TABLE XXXV

THE ANALYSIS OF COVARIANCE OF SIMILARITY SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	14905.05	287			
Major Field	132.08	5	26.42	0.50	NS
Sex	126.76	1	126.76	2.40	NS
Ability	142.95	1	142.95	2.70	NS
Major Field x Sex	189.58	5	37.91	0.72	NS
Major Field x Ability	95.00	5	19.00	0.36	NS
Sex x Ability	75.35	1	75.35	1.42	NS
Major Field x Sex x Ability	179.02	5	35.80	0.68	NS
Total Error	13964.31	263	52.89		

TABLE XXXVI

THE ANALYSIS OF COVARIANCE OF FAVORABILITY SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	203070.48	287			
Major Field	7121.07	5	1424.21	2.04	NS
Sex	1934.00	1	1934.00	2.77	NS
Ability	323.75	1	323.75	0.46	NS
Major Field x Sex	3961.19	5	792.34	1.13	NS
Major Field x Ability	4181.24	5	836.25	1.20	NS
Sex x Ability	240.93	1	240.93	0.34	NS
Major Field x Sex x Ability	1166.75	5	233.35	0.33	NS
Total Error	184141.55	263	697.51		

APPENDIX F

ANALYSIS OF COVARIANCE TABLES FOR HYPOTHESIS VI

TABLE XXXVII

THE ANALYSIS OF COVARIANCE OF TRUSTWORTHINESS SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	25898.03	287			
Major Field	836.74	5	167.35	1.78	NS
Sex	31.52	1	31.52	0.34	NS
Achievement	8.97	1	8.97	0.09	NS
Major Field x Sex	149.52	5	29.90	0.32	NS
Major Field x Achievement	53.30	5	10.66	0.11	NS
Sex x Achievement	37.77	1	37.77	0.44	NS
Major Field x Sex x Achievement	39.36	5	7.87	0.08	NS
Total Error	24740.83	263	93.71		

TABLE XXXVIII

THE ANALYSIS OF COVARIANCE OF STRENGTH OF WILL AND RATIONALITY SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	18121.36	287			
Major Field	245.55	5	68.46	0.71	NS
Sex	89.09	1	49.11	1.30	NS
Achievement	90.19	1	89.09	1.31	NS
Major Field x Sex	980.93	5	90.19	2.86	.05
Major Field x Achievement	241.94	5	196.19	0.70	NS
Sex x Achievement	12.07	1	48.39	0.17	NS
Major Field x Sex x Achievement	694.97	5	12.07	2.02	NS
Total Error	20476.10	263	138.99		

The F value for significance at the .05 level with 5 and 263 degrees of freedom is 2.21.

TABLE XXXIX

THE ANALYSIS OF COVARIANCE OF ALTRUISM SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	30084.87	287			
Major Field	1036.75	5	207.35	2.00	NS
Sex	36.22	1	36.22	0.35	NS
Achievement	16.40	1	16.40	0.16	NS
Major Field x Sex	1090.41	5	218.08	2.11	NS
Major Field x Achievement	446.92	5	89.38	0.86	NS
Sex x Achievement	23.92	1	23.92	0.23	NS
Major Field x Sex x Achievement	127.28	5	25.46	0.25	NS
Total Error	27306.97	263	103.43		

TABLE XL

THE ANALYSIS OF COVARIANCE OF INDEPENDENCE SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	23533.97	287			
Major Field	1172.39	5	234.48	2.87	.05
Sex	6.95	1	6.95	0.08	NS
Achievement	135.11	1	135.11	1.65	NS
Major Field x Sex	417.88	5	83.57	1.02	NS
Major Field x Achievement	96.63	5	19.33	0.24	NS
Sex x Achievement	89.79	1	89.79	1.10	NS
Major Field x Sex x Achievement	47.74	5	9.55	0.12	NS
Total Error	21567.47	263	81.69		

The F value for significance at the .05 level with 5 and 263 degrees of freedom is 2.21.

TABLE XLI

THE ANALYSIS OF COVARIANCE OF SIMPLICITY SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	27437.49	287			
Major Field	601.14	5	120.23	1.24	NS
Sex	464.23	1	464.23	4.79	.05
Achievement	108.21	1	108.21	1.12	NS
Major Field x Sex	379.70	5	75.94	0.78	NS
Major Field x Achievement	83.09	5	16.62	0.17	NS
Sex x Achievement	13.54	1	13.54	0.14	NS
Major Field x Sex x Achievement	220.57	5	44.11	0.45	NS
Total Error	25564.01	263	96.83		

The F value for significance at the .05 level with 1 and 263 degrees of freedom is 3.84.

TABLE XLII

THE ANALYSIS OF COVARIANCE OF SIMILARITY SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	17418.03	287			
Major Field	233.73	5	46.74	0.77	NS
Sex	223.87	1	223.87	3.67	NS
Achievement	102.36	1	102.36	1.68	NS
Major Field x Sex	230.46	5	46.09	0.75	NS
Major Field x Achievement	190.00	5	38.00	0.62	NS
Sex x Achievement	23.02	1	23.02	0.38	NS
Major Field x Sex x Achievement	307.58	5	61.52	1.01	NS
Total Error	16107.04	263	61.01		

TABLE XLIII

THE ANALYSIS OF COVARIANCE OF FAVORABILITY SCORES FOR FRESHMEN AFTER ONE SEMESTER OF COLLEGE WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	234131.78	287			
Major Field	10597.85	5	2119.57	2.59	.05
Sex	327.31	1	327.31	0.40	NS
Achievement	806.89	1	806.89	0.99	NS
Major Field x Sex	3590.21	5	718.04	0.88	NS
Major Field x Achievement	1373.01	5	274.60	0.33	NS
Sex x Achievement	175.55	1	175.55	0.21	NS
Major Field x Sex x Achievement	1344.21	5	268.84	0.33	NS
Total Error	215916.75	263	817.87		

The F value for significance at the .05 level with 5 and 263 degrees of freedom is 2.21.

APPENDIX G

ANALYSIS OF VARIANCE TABLES FOR HYPOTHESIS IX

TABLE XLIV

THE ANALYSIS OF VARIANCE OF TRUSTWORTHINESS CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	26756.12	287			
Major Field	357.07	5	71.41	0.74	NS
Sex	1.68	1	1.68	0.02	NS
Ability	3.12	1	3.12	0.03	NS
Major Field x Sex	285.65	5	57.13	0.59	NS
Major Field x Ability	544.71	5	108.94	1.13	NS
Sex x Ability	3.12	1	3.12	0.03	NS
Major Field x Sex x Ability	66.79	5	13.36	0.14	NS
Total Error	25493.98	264	96.57		

TABLE XLV

THE ANALYSIS OF VARIANCE OF STRENGTH OF WILL AND RATIONALITY CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	24295.57	287			
Major Field	473.04	5	94.61	1.09	NS
Sex	156.05	1	156.05	1.80	NS
Ability	2.72	1	2.72	0.03	NS
Major Field x Sex	375.99	5	75.20	0.87	NS
Major Field x Ability	115.49	5	23.10	0.27	NS
Sex x Ability	10.89	1	10.89	0.13	NS
Major Field x Sex x Ability	283.15	5	56.63	0.65	NS
Total Error	22878.24	264	86.66		

TABLE XLVI

THE ANALYSIS OF VARIANCE OF ALTRUISM CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	34795.50	287			
Major Field	1209.61	5	241.92	2.00	NS
Sex	30.03	1	30.03	0.25	NS
Ability	71.00	1	71.00	0.59	NS
Major Field x Sex	527.36	5	105.47	0.87	NS
Major Field x Ability	190.73	5	38.14	0.31	NS
Sex x Ability	0.59	1	0.59	0.00	NS
Major Field x Sex x Ability	881.72	5	176.34	1.46	NS
Total Error	31884.46	264	120.77		

TABLE XLVII

THE ANALYSIS OF VARIANCE OF INDEPENDENCE CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	30445.04	287			
Major Field	1188.49	5	237.70	2.32	.05
Sex	80.22	1	80.22	0.78	NS
Ability	84.50	1	84.50	0.82	NS
Major Field x Sex	1115.19	5	223.04	2.18	NS
Major Field x Ability	539.67	5	107.93	1.05	NS
Sex x Ability	68.06	1	68.06	0.66	NS
Major Field x Sex x Ability	323.36	5	64.67	0.63	NS
Total Error	27045.55	264	102.44		

The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.

TABLE XLVIII

THE ANALYSIS OF VARIANCE OF SIMPLICITY CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	28705.49	287			
Major Field	646.07	5	129.21	1.34	NS
Sex	394.34	1	394.34	4.09	.05
Ability	1.53	1	1.53	0.01	NS
Major Field x Sex	434.43	5	86.89	0.90	NS
Major Field x Ability	411.91	5	82.38	0.85	NS
Sex x Ability	362.25	1	362.25	3.76	NS
Major Field x Sex x Ability	1010.60	5	202.12	2.10	NS
Total Error	25444.34	264	96.38		

The F value for significance at the .05 level with 1 and 264 degrees of freedom is 3.84.

TABLE XLIX

THE ANALYSIS OF VARIANCE OF SIMILARITY CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	16626.48	287			
Major Field	120.58	5	24.12	0.41	NS
Sex	8.00	1	8.00	0.13	NS
Ability	39.01	1	39.01	0.66	NS
Major Field x Sex	275.29	5	55.06	0.93	NS
Major Field x Ability	365.94	5	73.19	1.24	NS
Sex x Ability	84.50	1	84.50	1.43	NS
Major Field x Sex x Ability	172.54	5	34.51	0.59	NS
Total Error	15560.62	264	58.94		

TABLE L

THE ANALYSIS OF VARIANCE OF FAVORABILITY CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ABILITY

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	42967.94	287			
Major Field	814.19	5	167.84	1.00	NS
Sex	470.21	1	470.21	2.89	NS
Ability	0.50	1	0.50	0.00	NS
Major Field x Sex	1920.41	5	384.08	2.36	.05
Major Field x Ability	359.79	5	71.96	0.44	NS
Sex x Ability	396.69	1	396.69	2.44	NS
Major Field x Sex x Ability	406.35	5	81.27	0.50	NS
Total Error	47336.07	264	162.76		

The F value for significance at the .05 level with 5 and 264 degrees of freedom is 2.21.

APPENDIX H

ANALYSIS OF VARIANCE TABLES FOR HYPOTHESIS X

TABLE LI

THE ANALYSIS OF VARIANCE OF TRUSTWORTHINESS CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	29261.34	287			
Major Field	582.18	5	116.44	1.10	NS
Sex	0.78	1	0.78	0.01	NS
Achievement	49.17	1	49.17	0.46	NS
Major Field x Sex	126.91	5	25.38	0.24	NS
Major Field x Achievement	223.77	5	44.75	0.42	NS
Sex x Achievement	143.08	1	143.08	1.35	NS
Major Field x Sex x Achievement	172.85	5	34.57	0.33	NS
Total Error	27962.62	264	105.92		

TABLE LII

THE ANALYSIS OF VARIANCE OF STRENGTH OF WILL AND RATIONALITY CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	24039.47	287			
Major Field	198.86	5	39.77	0.48	NS
Sex	45.12	1	45.12	0.55	NS
Achievement	120.12	1	120.12	1.46	NS
Major Field x Sex	885.21	5	177.04	2.15	NS
Major Field x Achievement	244.71	5	48.94	0.59	NS
Sex x Achievement	10.89	1	10.89	0.13	NS
Major Field x Sex x Achievement	797.19	5	159.44	1.94	NS
Total Error	21737.38	264	82.34		

TABLE LIII

THE ANALYSIS OF VARIANCE OF ALTRUISM CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	36580.38	287			
Major Field	608.97	5	121.79	1.28	NS
Sex	65.17	1	65.17	0.68	NS
Achievement	0.03	1	0.03	0.00	NS
Major Field x Sex	1997.06	5	399.41	4.19	.01
Major Field x Achievement	348.36	5	69.67	0.73	NS
Sex x Achievement	15.59	1	15.59	0.16	NS
Major Field x Sex x Achievement	356.98	5	71.39	0.75	NS
Total Error	25181.25	264	95.38		

The F value for significance at the .01 level with 5 and 264 degrees of freedom is 3.02.

TABLE LIV

THE ANALYSIS OF VARIANCE OF INDEPENDENCE CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	30433.51	287			
Major Field	1144.73	5	228.95	2.16	NS
Sex	100.34	1	100.34	0.95	NS
Achievement	95.68	1	96.68	0.90	NS
Major Field x Sex	726.74	5	145.35	1.37	NS
Major Field x Achievement	254.99	5	50.99	0.48	NS
Sex x Achievement	11.68	1	11.68	0.11	NS
Major Field x Sex x Achievement	22.49	5	4.50	0.04	NS
Total Error	27966.89	264	105.93		

TABLE LV

THE ANALYSIS OF VARIANCE OF SIMPLICITY CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	31860.73	287			
Major Field	1080.74	5	216.15	1.95	NS
Sex	362.25	1	362.25	3.27	NS
Achievement	30.03	1	30.03	0.27	NS
Major Field x Sex	781.10	5	156.22	1.41	NS
Major Field x Achievement	247.57	5	49.51	0.45	NS
Sex x Achievement	0.42	1	0.42	0.00	NS
Major Field x Sex x Achievement	133.77	5	26.75	0.24	NS
Total Error	29224.86	264	110.70		

TABLE LVI

THE ANALYSIS OF VARIANCE OF SIMILARITY CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	21100.30	287			
Major Field	237.22	5	47.45	0.64	NS
Sex	5.85	1	5.84	0.08	NS
Achievement	90.00	1	90.00	1.21	NS
Major Field x Sex	150.23	5	30.04	0.40	NS
Major Field x Achievement	226.56	5	45.31	0.61	NS
Sex x Achievement	327.25	1	327.25	4.39	.05
Major Field x Sex x Achievement	374.06	5	74.81	1.00	NS
Total Error	19689.16	264	74.58		

The F value for significance at the .05 level with 1 and 264 degrees of freedom is 3.84.

TABLE LVII

THE ANALYSIS OF VARIANCE OF FAVORABILITY CHANGE SCORES FOR FRESHMEN WHEN GROUPED ACCORDING TO MAJOR FIELD OF STUDY, SEX, AND ACHIEVEMENT

Source of Variation	Sum of Squares	df	Mean Squares	F	Significance Level
Total	56008.00	287			
Major Field	1018.83	5	203.77	1.04	NS
Sex	435.12	1	435.12	2.22	NS
Achievement	11.68	1	11.68	0.02	NS
Major Field x Sex	1082.29	5	216.46	1.11	NS
Major Field x Achievement	705.90	5	141.18	0.72	NS
Sex x Achievement	373.56	1	373.56	1.90	NS
Major Field x Sex x Achievement	630.44	5	126.09	0.64	NS
Total Error	41750.17	264	196.23		

VITA

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