The study was conducted to identify variables, from among the theory related and demographic/biographic variables included in the study, which were able to discriminate between groups of male and groups of female freshmen who differed in their level of self-actualization.

Five hundred and forty freshmen (277 males and 263 females) were administered the Personal Orientation Inventory. Six groups (three male and three female) were drawn from the screened pools on the basis of raw scores on the I scale of the POI. The means for these groups fell at approximately the 12th, 50th and 92nd percentiles of the male and female distributions.

The selected subjects were then administered the Tennessee Self Concept Scale, the Differential Value Profile, the Mehrabian Achievement Scales for Males/Females, and the Personal Data Questionnaire (constructed by the author).
The variables included in the Personal Data Questionnaire had previously been examined in studies related to self-actualization and/or the theory related variables.

Fifty subjects were selected from each of the groups (Total N = 300) for the purpose of analysis. Multiple discriminant analysis was used to determine the ability of the variables to discriminate between the groups of males and females.

Null Hypothesis I, which stated that the males and females used in the study would not differ on their scores on the I scale of the POI, was rejected (p<.01).

Null Hypothesis II stated that the groups of males would not be discriminated by the theory related variables used in the study. Null Hypothesis III predicted the same results for the female groups. Both null Hypotheses were rejected; null Hypothesis II at the .005 level and null Hypothesis III at the .05 level.

Null Hypothesis IV stated that the groups of males would not be discriminated by the demographic/biographic variables used in the study. Null Hypothesis V predicted the same results for the female groups. Null Hypothesis IV was accepted (p>.05) while null Hypothesis V was rejected (p<.005).

Null Hypothesis VI stated that combined theory related and demographic/biographic variables would not differ in their ability to discriminate between the groups of males.
Null Hypothesis VII predicted the same relationship for the females. Both null Hypotheses were rejected (p < .001).

The following were among the conclusions made:

1. The male and female freshmen differed significantly in their levels of self-actualization as measured by the I scale of the Personal Orientation Inventory.

2. Groups of male and female freshmen who differed in their level of self-actualization differed in their perceptions of themselves.

3. The male and female freshmen were discriminated by different combinations of theory related variables indicating the existence of a sex difference on the dimensions of personality related to self-actualization. The discriminating variables were: Moral-Ethical Self, Personal Self, Self-criticism and Social Self. These variables were all contained in the Tennessee Self Concept Scale.

4. Demographic-biographic variables were the most effective in discriminating between groups of male and female freshmen when selected theory related and demographic/biographic variables were combined. The discriminating variables were: Decided/undecided, Father's political orientation, Mother's political orientation, Part-time work status, Size of high school graduation class, Student's political orientation, and Student subculture.
THE IDENTIFICATION OF VARIABLES DISCRIMINATING BETWEEN GROUPS DIFFERING IN LEVEL OF SELF-ACTUALIZATION THROUGH THE USE OF MULTIPLE DISCRIMINANT ANALYSIS

by

Byron Steiner Wills

A THESIS

submitted to

Oregon State University

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

June 1972
APPROVED:

Redacted for Privacy

Professor of Education
in charge of major

Redacted for Privacy

Dean of School of Education

Redacted for Privacy

Dean of Graduate School

Date thesis is presented \[May 3, 1972\]

Typed by Erma McClanathan for Byron Steiner Wills
ACKNOWLEDGMENTS

The writer is most grateful to Dr. Arthur L. Tollefson for his assistance throughout the development of this study. His encouragement, advice and constructive criticism were greatly appreciated. Special gratitude is extended to Dr. Donald E. Campbell for the use of his program, for his help with the interpretation of the results and for his advice.

Additional gratitude is extended to the other members of the author's graduate committee: Professors Raymond S. Sanders, Charles F. Warnath and Morris L. LeMay.

Appreciation is extended to Dr. Norbert Hartmann, for his helpful suggestions regarding the design of the study and the interpretation of the data, and to Mr. Dave Niess who handled the programming tasks.

Appreciation is expressed to the English and Psychology Instructors and to the many students who participated in the study. Without their help none of this would have been possible.

Finally, sincere appreciation is expressed to my wife, Carol, for her constant support and encouragement throughout my entire graduate program.
# TABLE OF CONTENTS

## I. INTRODUCTION

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Problem</td>
<td>4</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>4</td>
</tr>
<tr>
<td>Statement of the Hypotheses</td>
<td>5</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>6</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>7</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>13</td>
</tr>
</tbody>
</table>

## II. REVIEW OF RELATED LITERATURE

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background to the Review</td>
<td>16</td>
</tr>
<tr>
<td>Self-Actualization</td>
<td>16</td>
</tr>
<tr>
<td>Theory Related Variables</td>
<td>31</td>
</tr>
<tr>
<td>Self-Concept</td>
<td>31</td>
</tr>
<tr>
<td>Values</td>
<td>37</td>
</tr>
<tr>
<td>Achievement Motivation</td>
<td>42</td>
</tr>
<tr>
<td>Summary</td>
<td>46</td>
</tr>
<tr>
<td>Demographic/Biographic Variables</td>
<td>46</td>
</tr>
<tr>
<td>Concomitants of Self-Actualization</td>
<td>53</td>
</tr>
<tr>
<td>Summary</td>
<td>53</td>
</tr>
<tr>
<td>Reflective Variables</td>
<td>63</td>
</tr>
</tbody>
</table>

## III. METHODOLOGY AND PROCEDURE

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria for Sample Selection</td>
<td>64</td>
</tr>
<tr>
<td>Selection of Samples</td>
<td>65</td>
</tr>
<tr>
<td>Sources of Data</td>
<td>70</td>
</tr>
<tr>
<td>Collection of the Data</td>
<td>81</td>
</tr>
<tr>
<td>Processing the Data</td>
<td>82</td>
</tr>
<tr>
<td>Analysis of the Data</td>
<td>85</td>
</tr>
</tbody>
</table>

## IV. ANALYSIS OF THE DATA

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Findings Related to the Hypotheses</td>
<td>87</td>
</tr>
<tr>
<td>Under Investigation</td>
<td></td>
</tr>
<tr>
<td>Summary</td>
<td>114</td>
</tr>
</tbody>
</table>

## V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>117</td>
</tr>
<tr>
<td>Literature</td>
<td>117</td>
</tr>
<tr>
<td>Methods and Procedure</td>
<td>118</td>
</tr>
<tr>
<td>Findings</td>
<td>120</td>
</tr>
<tr>
<td>Conclusions</td>
<td>125</td>
</tr>
<tr>
<td>Recommendations</td>
<td>133</td>
</tr>
</tbody>
</table>
APPENDICES

Appendix A. Supplemental Validity Data for the Personal Orientation Inventory (POI) 159

Appendix B. Supplemental Validity Data for the Tennessee Self Concept Scale (TSCS) 161

Appendix C. The Personal Data Questionnaire (PDQ) 163

Appendix D. Letter Inviting Participation 169

Appendix E. Information on Multiple Discriminant Analysis 170

Appendix F. Formula and Extension for the Mann-Whitney Test 176

Appendix G. Formula for the t-Test 177
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Number of Students Initially Tested, the Numbers Screened Out and Size of Final Pools</td>
<td>66</td>
</tr>
<tr>
<td>II.</td>
<td>Raw Scores on the I Scale and Percentiles for a Norm Group of 2,607 Freshman Students and the Male and Female Students Used in the Present Study</td>
<td>67</td>
</tr>
<tr>
<td>III.</td>
<td>Means, Standard Deviations, and Standard Error of the Means for the Male and Female Pools</td>
<td>68</td>
</tr>
<tr>
<td>IV.</td>
<td>Number of Subjects Selected for the Male and Female Groups</td>
<td>68</td>
</tr>
<tr>
<td>V.</td>
<td>Ranges, Means, Standard Deviations and Standard Error of the Means for the Male and Female Groups</td>
<td>69</td>
</tr>
<tr>
<td>VI.</td>
<td>Percentage of Participation for the Male and Female Groups</td>
<td>82</td>
</tr>
<tr>
<td>VII.</td>
<td>Means, Univariate F Tests and Discriminant Weights of the Theory Related Variables for Males</td>
<td>92</td>
</tr>
<tr>
<td>VIII.</td>
<td>Means, Univariate F Tests and Discriminant Weights of the Theory Related Variables for Females</td>
<td>95</td>
</tr>
<tr>
<td>IX.</td>
<td>Means, Univariate F Tests and Discriminant Weights of Demographic/Biographic Variables for Males</td>
<td>100</td>
</tr>
<tr>
<td>X.</td>
<td>Means, Univariate F Tests and Discriminant Weights of Demographic/Biographic Variables for Females</td>
<td>102</td>
</tr>
<tr>
<td>XI.</td>
<td>Centroids in D Space for Male and Female Groups on the Theory Related Variables</td>
<td>106</td>
</tr>
<tr>
<td>XII.</td>
<td>Centroids in D Space for High and Low Male and Female Groups on the Theory Related Variables</td>
<td>106</td>
</tr>
</tbody>
</table>
XIII. Means, Univariate F Tests and Discriminant Weights of Selected Theory Related and Demographic/Biographic Variables for Males

XIV. Means, Univariate F Tests and Discriminant Weights of Selected Theory Related and Demographic/Biographic Variables for Females

Table

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>XIII.</td>
<td>Means, Univariate F Tests and Discriminant Weights of Selected Theory Related and Demographic/Biographic Variables for Males</td>
<td>109</td>
</tr>
<tr>
<td>XIV.</td>
<td>Means, Univariate F Tests and Discriminant Weights of Selected Theory Related and Demographic/Biographic Variables for Females</td>
<td>111</td>
</tr>
</tbody>
</table>
I. INTRODUCTION

The first statement of goals for student personnel work appeared in 1937. This early statement later appeared as The Student Personnel Point of View in a publication by Wrenn (1951). At that time, student personnel work was viewed primarily as existing to provide services to students. The purpose of student personnel work has since evolved to include the education of the student (Johnson, 1970; McDaniel, 1962; Mueller, 1961; Williamson, 1961; Wrenn, 1951).

During the nineteen sixties certain changes took place which have had a profound impact upon higher education. For example, the rights of minorities had become a major concern; several prominent leaders, including a President of the United States, were assassinated; public support of the Vietnam war became sharply divided. Students had become much more critical of higher education as well as of our society, overpopulation, and environmental pollution. Finally, the economy entered a period of spiraling inflation and high unemployment.

The net result of these changes was that higher education suddenly came under public examination and criticism. State after state found itself forced to cut
allocations to higher education in an attempt to balance its budget.

Student personnel work has been directly influenced by these changes of the past decade. The role and functions of student personnel work have been influenced by student demands for relevancy and involvement in their education as well as by the closer scrutiny and questioning which has been caused by budget cuts. The most recent conceptualization of the role and functions of student personnel work has been that of student development and the student development specialist (Crookston, 1972; Johnson, 1970; Tripp, 1968; McDaniel, 1962; Mueller, 1961; Williamson, 1961; Lloyd-Jones and Smith, 1954; Wrenn, 1951).

The student development specialist would hopefully be less passive than student personnel workers have traditionally been and would become more involved in working with students for students (Crookston, 1972; Hurst and Ivey, 1971). Student development specialists were visualized as joining hands and participating with students in their learning and development. They would be trained in educational psychology and would teach human relation skills rather than "administering." They would employ systems analysis, assist in providing a new model for the university and work for the elimination of student personnel work as it now exists (Hurst and Ivey, 1971).

Student development specialists, then, were to be
responsible for helping the student become an effective human being. What do the theorists mean by an "effective human being"? What should be developed in students? What model could be used by student development specialists?

Developmental tasks for the late adolescent years have been presented by several theorists (Erikson, 1960, 1959, 1953, 1950; Sanford, 1956; White, 1952). While these listings were informative and somewhat useful, they did not provide a model which could be used by student development specialists.

The concept of the effective individual had intrigued several authors. Allport (1961), for example, wrote of the mature personality; Rogers (1962), the fully functioning person; Shoben (1957), the normal personality; Barron (1954), the sound personality; and Heath (1964), the reasonable adventurer. These descriptions of optimally functioning individuals were also somewhat useful but were deficient in that they did not constitute a theory from which a model could be generated.

Maslow (1943a, 1943b) also studied and wrote about individuals who seemed to function at a high level. He referred to his subjects as self-actualizers. After his examination Maslow (1943a) constructed a theory of motivation based on a hierarchy of needs which incorporated his findings. Maslow's description of the self-actualizing individual, and his theory of motivation, provide the
basis for what might become a useful model for the student
development specialist.

Self-actualization was not without its faults or its
critics, however. Cofer and Appley (1966) felt that self-
actualization suffered from the vagueness of its concepts,
the looseness of its language and the inadequacy of the
evidence related to its main contentions. Olds (1955) felt
that Maslow's study of self-actualized mature adults told
us little about how these individuals were produced. He
also felt that an effort should be made to analyze the pro-
gressive stages in growth and development to see how each
was produced out of its antecedents and in turn produced
consequences.

McClelland, Rendlesbacher and deCharms (1955) also
criticized Maslow's work. They felt that Maslow's choice
of "healthy people" was based on personal values and was
basically a question of ethics. They also criticized the
lack of a clear operational definition of terms.

The criticisms of Cofer and Appley, Olds, and McClel-
land, Rendlesbacher and deCharms led directly to the state-
ment of the problem.

The Problem

Statement of the Problem

The purpose of the study was to examine the relation-
ship between group classification and a set of variables.
Stated in broader terms, the purpose was to determine whether or not groups of male and female freshmen, who had been assigned to groups on the basis of their level of self-actualization, could be discriminated by a number of theory related and demographic/biographic variables which appeared in the literature to be related to self-actualization.

The specific variables used in the study and the reasons for their selection are discussed in Chapter II.

**Statement of the Hypotheses**

The following are the null hypotheses which were selected for examination:

I. The groups of males and females used in the study would not differ on a measure of self-actualization (the I scale of the Personal Orientation Inventory).

II. Groups of males who differed in their level of self-actualization would not be discriminated by the theory related variables used in the study.

III. Groups of females who differed in their level of self-actualization would not be discriminated by the theory related variables used in the study.

IV. Groups of males who differed in their level of
self-actualization would not be discriminated by the demographic/biographic variables used in the study.

V. Groups of females who differed in their level of self-actualization would not be discriminated by the demographic-biographic variables used in the study.

VI. The theory related and demographic/biographic variables used in the study would not differ in their ability to discriminate between groups of males who differed in their level of self-actualization.

VII. The theory related and demographic/biographic variables used in the study would not differ in their ability to discriminate between groups of females who differed in their level of self-actualization.

Limitations of the Study

This study was concerned with the identification of certain variables which were able to discriminate between groups of students who differed in their level of self-actualization. Males and females were examined separately. Inferences were drawn and conclusions were made which included both groups but no statistical comparisons were made between the males and females used in the study with the
exception of null Hypothesis I.

Since the primary concern of the study was to examine groups of students who differed in their level of self-actualization, no attempt was made to select a random sample of the freshmen attending Oregon State University. The subjects used in the analysis might well have approximated a random sample of the freshmen but this fact cannot be assumed.

Finally, the study was limited by the variables which were included in the analyses, the nature of the instruments, and the statistical methods used to examine the null hypotheses.

Definition of Terms

The terms defined in this section are listed in alphabetical order and not necessarily in their order of use or importance.

Achievement Motivation

Achievement motivation is defined as:

A need to be successful in competition with some standard of excellence wherein doing as well as or better than someone else is a primary concern. Behavioral manifestations of achievement (need for achievement) occurs as an affective response in conjunction with evaluated performance. Thus, the elements of success, standards of excellence, competition, and evaluated performance are all elements related to the conception of achievement motive (McClelland et al., 1953, p. 110-111).
In this study the Mehrabian (1968, 1969) Achievement Scale for Men (MASM) and Achievement Scale for Women (MASF) were used to measure achievement motivation. The instruments are discussed in Chapter III.

Birth Order

Birth order refers to one's ordinal position in the family. In this study, subjects who were first borns (the first of two or more children) were compared to subjects who occupied other ordinal positions. Children who were only children were not considered first borns.

Combined Variables

Combined variables refer to those theory related and demographic/biographic variables which were examined to test null Hypotheses VI and VII. Variables included were those theory related and demographic/biographic variables which had been identified in previous analyses as: discriminating (making a large or a marginal contribution to a significant discriminant root), having a significant difference between groups as a single variable (reflected by a significant univariate F ratio), or as having potential as a discriminating variable (making a large contribution to a nonsignificant discriminant root).
**College Subculture**

College subculture refers to the identifiable student groupings with which college students identify. In this study the Clark-Trow classification of college students was used (Clark, 1962; Trow, 1962). Clark and Trow identified four subcultures which they believed to exist on most college and university campuses. They are: Vocational, Academic, Collegiate and Nonconformist.

**Demographic/Biographic Variables**

Demographic/biographic variables refer to those 26 variables selected to determine the relationship between level of self-actualization and (1) variables which might be concomitants of self-actualization and (2) variables of a pragmatic nature which appeared as if they might reflect differences in level of self-actualization.

The demographic/biographic variables are contained in the Personal Data Questionnaire (PDQ). The variables are discussed in Chapter II and the Personal Data Questionnaire is discussed in Chapter III.

**Large Contributing Variable**

Large contributing variable refers to those variables which had a discriminant weight of .35 or above. A discriminant weight of .35 was arbitrarily selected as the
cutoff point to differentiate between those variables which made large and marginal contributions to the discrimination between the male or the female groups.

**Level of Self-Actualization**

Level of self-actualization refers to the raw scores that the males and females obtained on the I scale of the Personal Orientation Inventory (POI) (Shostrom, 1966, 1964). Subjects were divided into six groups: high, middle and low males and high, middle and low females, on the basis of their scores on the I scale.

The reasons for the selection of the I scale as the criterion measure as well as the reliability and validity of the POI is discussed in Chapter III.

**Living Arrangement**

Living arrangement refers to the type of housing occupied by the student during the fall term of the 1971-1972 academic year. These included living at home or with relatives, in single sex residence halls, coeducational residence halls, fraternities, and cooperatives. Freshman males may live in fraternities but freshman females are not allowed to live in sororities. All freshmen are required to live in one of the above types of housing unless they are over 21 years of age, veterans, or married. Some freshmen do live off campus in apartments in spite of
University regulations. Therefore, an "Off-campus apartment" choice was also provided in the PDQ.

**Major**

Major refers to the school in which the subject was actually enrolled. The schools are: Agriculture, Business and Technology, Education, Engineering, Forestry, Home Economics, Humanities and Social Studies, Pharmacy and Science. The division of Health and Physical Education was also included. An "Undecided" choice was provided for those who had not enrolled in one of the above schools.

**Marginal Contributing Variable**

Marginal contributing variable refers to those variables which had a discriminant weight of from .25 to .34. These cutoff points were arbitrarily selected to identify those variables which, while of secondary importance, did contribute to a discriminant root. Only those variables which made large or marginal contributions to a significant discriminant root are identified and discussed.

**Occupational Goal**

Occupational goal refers to the type of occupation the student planned to enter. The categories outlined by Hind and Wirth (1969) were used. They are: Business, Engineering, Government, Education (the writer broke this category
down into Elementary, Secondary and Higher Education), and Traditional Professions. The choices "Other" and "Not Decided" were also provided.

**Self-Actualization**

Maslow's (1962) definition of self-actualization was used. He stated,

Self-actualization is defined in varying ways but a solid core of agreement is perceptible. All definitions accept or imply (a) acceptance and expression of inner core of self, i.e., actualization of those latent capacities and potentialities, 'full functioning,' availability of the human and personal essence, (b) they all imply minimal presence of ill health, neurosis, psychosis, or loss...of the basic human and personal capacities (Maslow, 1962, p. 184).

**Self-Concept**

Pietrofesa's (1969) definition was used. He stated,

Self-concept is a composite of numerous self-perceptions, it is a hypothetical construct encompassing all of the values, attitudes, and beliefs toward oneself in relation to the environment. The self-concept influences and to a great deal determines perception and behavior (Pietrofesa, 1969, p. 37).

In this study, self-concept was measured by the Tennessee Self-Concept Scale (TSCS) (Fitts, 1965). The TSCS is discussed in Chapter III.

**Theory Related Variables**

Theory related variables refer to those 17 variables
which dealt with values, self-concept, and achievement motivation.

Values

The definition of English and English was used. They defined values as,

An abstract concept often merely implicit, that defines for an individual or for a social unit what ends or means to ends are desirable. These abstract concepts are usually not the result of the individual's own valuing, they are social products that have been imposed on him and only slowly internalized (English and English, 1958, p. 576).

The Differential Value Profile (DVP) (Thomas, 1969) was used to measure values. The DUP is discussed in Chapter III.

Significance of the Study

The study would seem to be significant for the following reasons:

(1) Student development specialists are searching for a viable model. Combs (1961) felt that the importance of such a search could not be overestimated. As he observed,

For whatever we decide is a full functioning, self-actualizing human being must automatically become the goal for all of us engaged in the helping relationships. These are the kinds of people we are trying to produce (Combs, 1961, p. 562).

By identifying variables which contribute to the discrimination between students differing in level of
self-actualization this study dealt with this very problem.

(2) This study has added to the body of knowledge related to self-actualization by comparing level of self-actualization with three other major personality constructs.

(3) The study has examined variables believed to be concomitants of self-actualization and pragmatic variables believed to reflect differing levels of self-actualization among college students.

(4) The study examined sex differences both in terms of level of self-actualization and in terms of sex differences on the theory related and demographic/biographic variables.

(5) The study provided information which should be useful to those who work directly with students in a helping relationship. As Mulford (1967) stated,

Self-actualization research may be justified almost entirely on the basis of this concept's diagnostic value. For example, it would seem that college counselors should be able to make excellent use of individual predispositions when dealing with students... (Mulford, 1967, p. 103).

Finally, (6) the study further demonstrated the usefulness of a powerful but little used statistical procedure. Multiple discriminant analysis allows the identification of a combination of variables which have the highest ability to discriminate between groups. The method also enables the investigator to draw inferences about those
variables and to predict the group membership of an unclassified individual if so desired.
II. REVIEW OF RELATED LITERATURE

Background to the Review

The review of the literature was broken down into three sections: (1) studies which dealt with self-actualization, (2) studies which indicated the relationship between self-actualization and the theory related variables chosen for study, i.e., self-concept, values, and achievement motivation, and (3) studies related to the demographic/biographic variables selected for the study. Two types of demographic/biographic variables were selected for study: certain variables which might have an effect on the development of self-actualization and certain variables relating to the college experience upon which a differential distribution of students who differed in their level of self-actualization might be expected.

Self-Actualization

The review of the literature concerning self-actualization was divided into four sections: the emergence of self-actualization as a concept, the personal characteristics associated with self-actualizers, demographic and biographic characteristics of self-actualizers, and finally, the relationship between self-actualization and achievement.

While Maslow has been a major contributor to the concept of self-actualization he was not the first to use the
term or to hypothesize about the optimal functioning of
the individual.

Goldstein (1939) seems to have been the first to use
the term "self-actualization" and to consider the drive in
man for self-expression. Fromm (1941) used the phrase "the
productive orientation" in discussing this tendency in man.
Prescott Lecky (1945) referred to "the unified personality;
self consistency," Snygg and Combs (1949) used the phrase
"the preservation and enhancement of the phenomenal self."
Horney (1950) referred to "the real self and its realiza-
tion." Reisman (1951) used the phrase "the autonomous
person" while Rogers (1962) referred to "actualization,
maintenance and enhancement of the experiencing organism"
and again "the fully functioning person" (1961). May
(1953) referred to the "existential being," and Allport
(1955) used the term "creative becoming."

These authors seemed to feel that what a man could be-
come he must become. This "need to become" is what Maslow
referred to as self-actualization. The term emphasizes
man's desire for fulfillment and refers to the tendency in
man to become actualized in what he is potentially.

Some similarity seems to exist between the views of
those emphasizing self-actualization and the existential-
ists (Cofer and Appley, 1966). Kierkegaard (1941), for
example, stated, "Authentic existence is the modality in
which a man assumes the responsibility for his own
existence" (1941, p. 188). Jaspers (1955) saw the historical meaning of existential philosophy as a struggle to awaken in the individual the possibilities of an authentic and genuine life in the face of the great modern drift toward a standardized mass society.

May (1953) emphasized that the realization of one's potential could occur once being as existence was accepted and understood. Fromm (1941) stated,

We believe that realization of the self is accomplished not only by an act of thinking but also by the realization of man's total personality by the active expression of his emotional and intellectual potentialities (1941, p. 258).

Concerning the existential approach, Cofer and Appley said,

The existential approach seems to involve an acceptance of phenomena as they are and, within the framework provided by these phenomena, to urge men to find their image of life in terms of what is true and important to them and their self-realization (1964, p. 660).

Cofer and Appley summarized the views of those emphasizing self-actualization and existentialism when they said,

Much of what is said by those who emphasize self-actualization (and existentialism) can be summarized as the desirability and necessity for people to experience the world and themselves as they are, rather than as some thing, belief, or convention would make them appear. The essential meaning of the concept, self-actualization, is found in the discovery of the real self and its expression and development (1964, p. 663).
The personal characteristics of self-actualizers were first published by Maslow (1954). The traits which Maslow identified were:

1. realistic orientation
2. acceptance of self
3. spontaneity
4. problem centered
5. detachment
6. autonomy and independence
7. appreciation
8. spontaneity of experience
9. identification with mankind
10. deepness of interpersonal relationships
11. democratic values and attitudes
12. philosophical humor
13. differentiation of ends and means
14. creativeness
15. resistance to conformity

This listing was the result of Maslow's examination of the lives and autobiographical material of people whom he identified as self-actualizers. The above characteristics listed by Maslow have been replicated to various degrees by Argyris (1957), Shostrom (1964), and several of the previously mentioned theorists.

Elliott (1969) used a self-report instrument and questionnaire responses to identify high school students who were high in level of self-actualization. He found high self-actualizers to differ from low self-actualizers in terms of learning to listen, actions of anger, degree of alienation, empathy for others, honesty, sense of humor, amount of trust in themselves and in feelings of prejudice. The generalization of Elliott's findings is difficult to ascertain since he provided no information as to the
reliability and validity of his instruments. They do, however, appear consistent with Maslow's (1954) earlier findings.

Drews (1966) studied the level of self-actualization in 250 college-bound ninth graders. She used the Omnibus Personality Inventory (OPI), the Allport-Vernon-Linzey Study of Values (AVLSV), and the American Council on Education Critical Thinking Test and found that students identified as self-actualizers had a higher degree of differentiation (complexity) and integration (wholeness) than low self-actualizers. She also reported,

In spite of...diversity of characteristics, all self-actualized individuals have certain qualities in common; a fundamental stability, a sense of direction and purpose, an independence of thought and action, a capacity to carry out commitments to self and others, an openness to new experiences, a richness of imagination and motivation to learn (1966, p. 109).

Drews reported no validity or reliability data for her method of classifying level of self-actualization. She had used the method devised by Maslow (1959a). The age of the sample also limits the generalizations that can be made to the present study. Her findings did, however, seem to support earlier findings announced by Maslow (1954).

In investigating specific characteristics of self-actualizers as listed by Maslow (1954) several other researchers have produced supportive evidence. Heckmat and Theiss (1971) administered the Personal Orientation
Inventory (POI) to 60 students in an Introduction to General Psychology class at Wisconsin State University. They found that high self-actualizers (determined by percentile rankings) were more resistant to enculturation than low self-actualizers. The size of the sample limited the generalizations which could be made from the results.

Reynolds (1968) administered the POI, the F Scale, and the Maudsley Personal Orientation Test to 84 subjects who were Catholics, Protestants, Unitarians or members of a religious communal society. He reported that some correlation existed between level of self-actualization and risk taking behavior. The small sample size and questionable reliability of the Maudsley instrument raised some questions as to the generalizability of the findings.

McClain and Andrews (1969) studied the relationship between self-actualization and the frequency of "peak experiences." They administered the F Scale, Rokeach Dogmatism Scale, and the Sixteen Personality Factor Questionnaire to 130 upper class and graduate students attending the University of Tennessee. They found a significant relationship between self-actualization and frequency of peak experience which supported Maslow’s earlier findings (1968, 1964).

Braun (1969) examined the relationship between accuracy of perception and level of self-actualization. He found no significant relationship between the two. This
seemed to contradict Maslow's findings (1954). Braun's findings must be viewed with some reservations, however, due to the small sample size (N=39), the nature of the sample (undergraduates in an Introductory Psychology class), and the undemonstrated reliability and validity of the classification procedure.

In investigating the relationship or original thinking to self-actualization, Braun and Asta (1968) administered the POI and the Gordon Personal Inventory to a sample of 30 students at the University of Bridgeport. They reported finding a positive relationship between original thinking and self-actualization which they viewed as consistent with Maslow's (1962) emphasis on the creativeness of self-actualizers. Once again, however, the size of the sample limits the generalizations which could be drawn from the findings to at least some extent.

Damm (1967) examined the relationship between ego strength and creativity. He found no evidence to support the hypothesis that students high only in creativity are significantly higher in ego strength than students who are high only in intelligence. Damm administered the Remotes Associates Test, the Barron Ego Strength Scale (taken from the Minnesota Multiphasic Personality Inventory) and the California Test of Mental Maturity to 208 high school students. His findings did not invalidate Maslow's (1964) earlier findings. Rather, Damm's results seemed to point
out the complex interrelationship which exists between ego strength, creativity, intelligence and self-actualization.

Gunnison (1964) studied the relationship between self-actualization and political orientation. He administered the POI and the Political/Economic Conservatism Scale to 105 male and 60 female community college students in Syracuse, New York. He found that those scoring high on a measure of self-actualization tended to be more liberal in outlook and to prefer a more active way of life. Conversely, he also found that students identified as liberals scored higher on most of the POI subscale than did those students identified as conservatives. While no background information on the Political/Economic Conservatism Scale was given, the results were consistent with Maslow's (1954) reported characteristics of self-actualizers.

Several studies examined the relationship between self-actualization and occupational choice or one's effectiveness in a chosen occupation. McKenzie (1966) constructed his own measure of self-actualization, the Actualization Orientation Scale. He reported reliability coefficients ranging from .60 to .83 for the eight scales but supplied no data as to the Scale's validity. The Scale was mailed to 100 public school counselors, physicians and ministers. McKenzie concluded that significant differences in level of self-actualization did, in fact, exist between the occupational specialties included in
the study. The nature of McKenzie's sample limited the extent to which the results could be generalized. The results were, however, consistent with Maslow's predictions (1954).

Green (1969) studied the relationship between the level of self-actualization and level of occupational aspiration for 356 graduating seniors of six all Negro high schools in Arkansas. She used the POI and Roe's eight classification categories for rating intended occupations. Green found that students with high levels of occupational aspiration tended to have higher scores on the Time Competence, Self-actualization Values, Synergy and Capacity for Intimate Contact subscales of the POI. Caution must be taken in interpreting these results due to the degree of item overlap found among the subscales of the POI.

Massucci (1966) administered the POI and an Occupational Stereotype instrument to 51 male and 73 female freshmen at the State University College at Oswego, New York. He found that subjects who scored high on the POI ranked occupational values differently than subjects with low scores. These results seemed to be consistent with Maslow's earlier findings (1954).

Dandes (1966) administered the POI, Minnesota Teacher's Attitude Inventory, the F Scale, Rokeach's Dogmatism Scale, and an Inventory of Openness on Educational Issues to 233 teachers. He received usable responses from 128
(54.9%). Dandes found a significant relationship between level of self-actualization and the specific attitudes and values of teachers classified as successful or unsuccessful. The values which characterized successful teachers were: permissiveness, liberalism, openmindedness, and non-authoritarianism. The low response rate as well as the undemonstrated reliability and validity of the two Inventories limited the generalizability of the results.

Finally, Bonney (1969) reviewed available studies dealing with the characteristics of high self-actualizers. He concluded,

It seems certain that the most overall characteristic of healthy people (self-actualizers) is that they are doing better than most in realizing all aspects of their being. They are coming close to fulfilling their human promise. They are working with and for their innate potentials (1969, p. 143).

In terms of demographic and biographic characteristics, Gibbs (1966) administered the POI and a demographic data collecting questionnaire to 97 male and 153 female first semester juniors. He concluded that high self-actualizers tended to be:

1. female
2. from families of from one to three children
3. from families where the mother worked part-time
4. from homes where both parents had completed high school and had some additional formal education
5. from families which provided little or no religious training
6. from medium sized high school graduating classes (101 - 500)
7. from a large state university for their first two years of college experience
8. enrolled in colleges of liberal arts
9. not working part-time in college
10. involved in high school extracurricular activi-
ties 9+ hours per week.
11. exposed to work experience prior to entering
college.

He found no significant differences between high and low
self-actualizers on the following variables:

1. broken vs. intact homes
2. nuclear vs. extended homes
3. amount of time the father traveled away from home
4. religious affiliation
5. amount of time spent in college activities
6. amount of time worked in high school.

In a later study, Gibbs (1968) found the following:

1. no sex difference between high and low self-
actualizers
2. high self-actualizers had mothers who worked
full-time
3. high self-actualizers were not involved in
active religious participation
4. high self-actualizers came from families of
from one to three children
5. high self-actualizers came from homes where both
parents had completed high school and had some
additional formal education.

The instruments and sample used by Gibbs in this study were
the same as those used in his earlier study (1966).

Tennison and Snyder (1968) examined the relationship
between religious affiliation and self-actualization. The
sample they used consisted of 132 male and 167 female Ohio
State University undergraduate Psychology students. They
found high religiosity to be negatively correlated with
Achievement, Autonomy, Dominance, and Aggression (p<.01);
and positively correlated with Deference, Affiliation,
Abasement, Nuturance (p<.01), and Endurance (p<.05).
The Edwards Personality Schedule (EPPS), the Thurstone and Chave Scale for measuring attitudes towards the Church, and the Kirkpatrick Religiosity Scale were the instruments used in the study. Tennison and Snyder's findings seemed consistent with those of Maslow (1954) and Gibbs (1968).

In another study of the general characteristics of self-actualizers, Mulford (1967) employed a method for determining level of self-actualization developed by Argyris (1957). Mulford's sample consisted of 100 subjects from a small, highly selective liberal arts college. He found:

1. social-economic level was not significantly related to level of self-actualization
2. high school grades and percentile ranks in high school were not significantly related to self-actualization differences
3. college GPAs were not related to level of self-actualization
4. year in college and choice of major were highly related to higher levels of self-actualization
5. students on academic scholarships tended to have higher levels of self-actualization.

Mulford failed to find a sex difference on level of self-actualization. This is consistent with Gibbs' (1968) findings. The questionable reliability and validity of Mulford's criterion instrument and the biased nature of his sample limit the degree to which the results can be generalized.

McMillin (1965) administered the POI to 177 seniors from eight small Florida high schools in an attempt to identify students who had previously been identified as "growth facilitators." McMillin found no difference
between the previously identified group and a control group on the scales of the POI or on the other criterion measure. He did, however, find sex differences on both the POI and the Guilford-Zimmerman Temperament Scale.

LeMay and Damm (1969) administered the POI and the EPPS to 93 males and 101 females in a study of the needs that accompany self-actualizing values. The authors found sex differences for self-actualizing values and observed that sex differences should be considered in any study of self-actualization.

Olim (1968) studied the relationship of home environment to self-actualization and student activism by reviewing the available literature. He concluded that humanistic parents tend to raise their children in an environment relatively free of constraints, an environment favorable to experimentation, experiencing and spontaneity. He reported that self-actualizing individuals seem to have high value motivations and to be "above all else a doubter." He also found that student activists tended to mirror the thoughts of their parents and that they came from families where both parents were college educated, with the father tending to be a professional and a liberal.

Rogers (1968) tested Maslow's (1955) concept of deficiency need motivation in terms of the impact of family on self-actualization. The CPI, POI and a Personal Data Questionnaire were administered to 183 male upperclassmen
enrolled in the Liberal Arts College of a Midwestern university. From this pool Rogers selected 15 self-actualizers and 15 nonsel  

self-actualizers for further study. Rogers found the degree and variety of common participation among members of the family was significantly greater in the families of the self-actualizers and that the parents of self-actualizers were slightly more approving, trusting and lenient, but the difference was not significant at the .05 level. These findings seemed to be consistent with Maslow's earlier (1955) writings.

In studies of achievement, Green (1967) administered the POI and a Likert-type scale for Self-rating to an unreported number of students. Achievement and underachievement were determined from residuals derived by regressing grade point average (GPA) on Scholastic Aptitude Test (SCAT) scores. Green reported that level of self-actualization did not appear to be a significant factor in student's ability to surpass predicted level of academic achievement.

Leib and Snyder (1968) administered the POI to 500 Introductory Psychology students at Ohio University. They used the Outer-Inner Support ratio of the POI and the "predicted to attain" GPA to study the relationship between self-actualization and over/under achievement. They found no relationship between over/under achievement and positive mental health (self-actualization).
LeMay (1969) used the I scale of the POI, students' GPA and SAT scores to study the relationship between self-actualization and achievement. The sample consisted of 205 male and 206 female freshmen. LeMay found no correlation between self-actualization and achievement for the high and low ability groups but did find a significant negative correlation (p.<01) for the middle group. The relationship remained after ability had been partialed out. Lieb and Snyder (1968) had earlier reported similar findings. LeMay concluded that achievement and self-actualization did not appear to be related directly but seemed to be related through secondary relationship with other variables.

In another study dealing with achievement and self-actualization Johnson (1967) administered the POI and Adjective Check List (ACL) to 183 freshmen at the University of Toledo. He found that selected scales of the two instruments could be used to discriminate between academically successful and unsuccessful college freshmen when age, sex and aptitude were controlled.

Finally, LeMay and Damm (1968) found some support for the hypothesis that underachievement was positively related to self-actualization as measured by the POI. They found the successful group significantly higher on Inner Directedness, Existentiality, Feeling Reactivity, Self Acceptance, Acceptance of Aggression, and Capacity for Intimate Contact.
In summary, studies have been cited which discuss the development of self-actualization theory and the characteristics associated with self-actualization both in terms of personality and demographic/biographic variables. Some support for Maslow's (1964, 1955, 1954) work had begun to appear in the literature since the introduction and validation of the Personal Orientation Inventory (POI). The studies which were reviewed indicate, among other things, that individuals who differed in their level of self-actualization might well differ in their self-concept, values and achievement motivation. Several studies indicated the importance of the family on the development of self-actualization. The relationship between self-actualization, ability and achievement is complex and has not been clearly demonstrated in the literature.

Theory Related Variables

Self-Concept

Studies relating to self-concept are presented in two sections: studies which investigated personality characteristics which are related to self-concept, and studies which examined the relationship between achievement and self-concept.

Lundhold (1940), Snygg and Combs (1949), Rogers (1951) and Sarbin (1952) have all viewed the self-concept as
central to man's behavior. More recently, Combs (1961) stated, concerning self-concept,

It is in this factor of how the individual sees himself that we are likely to find the most outstanding difference between the well adjusted and poorly adjusted people (1961, p. 16).

Vacchiano, Strauss and Schiffman (1968) studied the relationship between self-concept and several other variables. They administered the Edwards Personal Preference Schedule, the Sixteen Personality Factor Test, the Tennessee Self-Concept Scale (TSCS), the Rokeach Dogmatism Scale and the experimental Mach V Scale (intended to determine the relationship of Machiavellianism and social desirability to dogmatism) to 53 males (Mean age - 22) and 29 females (Mean age - 22). Vacchiano, Strauss and Schiffman found that subjects who were high in dogmatism, lacked confidence in themselves, lacked self-acceptance and self-satisfaction, were noncommitted and defensive, dissatisfied with their behavior and their physical states, their degree of personal warmth and their adequacy. The authors concluded that Dogmatism seems to be supported by personality maladjustment and instability. The nature of the sample and the experimental nature of the Mach V Scale need to be considered when interpreting the results.

Ghiselli (1956), in a study of initiative, found that while level of initiative had an intellectual component, the extent to which the individual had confidence in
himself and the certainty with which he attacked his problems was of greater importance. The size of the sample (608) and the reported reliability of the instrument (.56 to .85) added credibility to the findings.

Searles (1963) studied the effects of home environment on self-concept. He administered the Kell-Hoeflin Incomplete Sentence Blank Test of Human Relations, the TSCS, the Otis Self Administering Test of Mental Ability, the Watson-Glaser Critical Thinking Appraisal Test and the American Council on Education Psychological Test for Freshmen to 109 community college students. He found a significant indication that a positively perceived home climate on the part of the student was important in the achievement of a sense of worth. Students from homes which had positive environments tended to regard their intelligence, personality and mental health realistically and positively, thereby achieving adequacy through awareness of their assets. The nature of the Kell-Hoeflin instrument warranted some caution in generalizing the results of the study, but the findings were similar to those reported in the study by Olim (1968).

Paschal (1968) administered the Spivack Response Form, a measure of self-concept, self-acceptance and self-rejection, to 80 male and 72 female seventh graders who had been randomly selected. He found that students with positive self-concepts were more often older or only children. He
found no difference in occupational level of the father, employment of the mother, or sex between those identified as high and low in their self-concept. The unsubstantiated reliability and validity of the instrument and age of the sample limited the generalizations which could be made to the present study.

Binder (1965) administered the Spivack Response Form to 3,459 ninth graders and 3,601 twelfth graders (male and female) from five randomly selected high schools. He reported finding no relationship between self-expectation and GPA when self-concept of ability and aptitude were held constant. She found no relationship between self-expectation and father's or mother's education level. She did find a significant correlation between self-concept of ability and socio-economic states at the ninth grade level but not at the twelfth grade level. Binder also found that the mother's educational status correlated significantly with self-concept of ability at all levels and for all groups except the ninth grade girls.

Sears (1970) administered the Self-aggression Scale, the Self-concept Inventory and the revised Femininity Scale from the Minnesota Multiphasic Personality Inventory. His sample consisted of 84 female and 75 male sixth graders. He found that students with high self-concepts, had higher reading and arithmetic achievement, came from small families, occupied early ordinal positions, came from families
characterized by high maternal and paternal warmth, and had fathers who were less dominating of their wives. He also found that for both sexes femininity was associated with poor self-concept. The questionable reliability and validity of the instruments employed and the age of the sample raised some question as to the generalizations which could be made.

Lynch (1969) reported finding a definite relationship between high level of self-esteem and the quality of openness exhibited by students. He administered a two-part anonymous questionnaire to 217 high school students. No data was supplied concerning the nature of the instrument. The results seem consistent with studies dealing with self-actualization which were cited earlier.

In studying the relationship between self-concept and achievement, Lumpkin (1959) found that the concept of self which the individual accepted influenced his behavior quantitatively. Lumpkin concluded that self-concept might determine the direction and degree of a student's expression in academic work as well as in his social relationships. He used several instruments "designed to explore self-concept, teacher's perception of the child and peer status." The sample consisted of 25 under- and 24 overachieving grade school students. The size and nature of the sample and the lack of information concerning the instruments limit the usefulness of the findings.
Levy (1956) had earlier indicated that an individual might view his town, church, school, etc. in much the same way in which he perceived himself, and that a child's concept of school (and therefore his success) might well be an extension of his own self-concept. Levy administered the Butler and Haight Actual-Ideal "Q" Sort, which consisted of 100 self and 100 home town referrent items, to a group of volunteer grade school children. The unsupported nature of the instrument and nature and small sample size (two females and 19 males) restricted the generalizations which could be drawn from the findings.

Green (1969) found that one's concept of work, authority, reality, self, and the total score on the Brown Self-report Inventory were all significantly correlated with achievement. She also reported that attitude towards work was significantly correlated with attrition. The size of the sample (518 community college freshmen) and the reported validity of the instrument lend credibility to the findings. Green's findings were quite similar to those previously announced by Levy (1956) and Lumpkin (1959).

In summary, self-concept was shown to be related to parental characteristics and home environment. Some evidence exists that ordinal position may play a role in the formation of the self-concept. Evidence was presented which implied that self-concept was significantly related to one's perception of one's environment and school
achievement. The relationship between self-concept and achievement seemed to continue after intelligence had been controlled.

Values

Numerous studies have been conducted on student values and value systems -- so many, in fact, that a thorough review of the literature would be impractical. The review was therefore limited to a few illustrative studies.

Katz (1963) pointed out the importance of values to the individual. His observation has special relevance for this study. Katz observed, "Values mediate the organization of attributes within the individual's self-concept and musters them for decision making" (1963, p. 17).

Student values seemed to be affected by their home as well as by their cultural and subcultural identification.

Morris (1958), Wayland and Brunner (1958) and Hollinshead (1952) all point out that although a common value structure appears to be present among students in a given culture, variations exist within and among different cultural groups.

The values parents held concerning higher education seemed to be related to whether or not their children attended college. Berdie (1944) mailed a blank form, which was an adaptation of the first page of Happock's Job Satisfaction Blank, to 310 students (50% were returned). He
reported that family attitudes towards college affected the motivation of superior high school students. Those who did not attend college came from families which were of low socio-economic status and who did not value a college education. The amount of education which the parents had was also related to the motivation for college found in their children. Some caution needs to be taken when interpreting the findings due to the low return rate. Hollinshead (1952) reported similar findings in his book, *Who Should Go To College*, however, thereby lending additional credibility to Berdie's findings.

Rosenberg (1956) administered a questionnaire which he had constructed to 2,007 male and 749 female college students. He reported finding a distinct relationship between one's economic background and the place money held in the individual's value system. Father's income appeared to be significantly related to the occupational choice of the student.

Values have been shown to differentiate between students majoring in different subjects. Sternberg (1953) administered the Kuder Preference Record, the Allport-Vernon-Lindzey Study of Values (AVLSV) and the MMPI to nine groups of students (Total N = 270) who were majoring in Biochemistry, Chemistry, Economics, Engineering, History, Math, Music, Political Science and Psychology. He found college students majoring in different subjects to be
significantly different from each other in interests, values and personality as well as in patterns of attributes.

Hilton and Korn (1964) made an extensive study of 30 college students, using the AVLSV. The students were paid $25.00 each and were tested seven times during the academic year. The authors reported,

This study, like a number of other studies in the literature, demonstrated that there are patterns of personal values as measured by the Study of Values which distinguish the members of one occupation, educational or social group from another (1969, p. 622).

Holland (1963) made a comprehensive study of group differences by using the Strong Vocational Interest Blank (SVIB), the Omnibus Personality Inventory (OPI) and a questionnaire. The instruments were administered to 956 of the 1965 National Merit Program finalists at the end of their senior year of college. He found significantly different attributes for diverse occupational groups. Students choosing different occupational areas differed in scholastic aptitude, self-concept, personality traits, originality, dogmatism, preferred roles and achievement. The size of the sample and nature of the instruments used increased the confidence which was placed in these findings.

Holland and Nichols (1964) administered 17 scales from the California Personality Inventory (CPI), the Sixteen Personality Factor Questionnaire (16PF) and the National Merit Student Survey to 332 male and 181 female
National Merit finalists. They reported that students tend to move away from fields in which they are dissimilar to the typical student (in terms of values and attitudes) and to move toward fields in which they are similar to the typical student. They also reported finding the various occupational groups different in aptitudes, achievement, and personality traits.

Elton and Rose (1967) conducted a study to examine and identify differences which existed between students transferring from engineering and those who remained. The authors administered the OPI and the American College Test (ACT) to all freshmen entering the College of Engineering at the University of Kentucky during the 1963-64 and 1964-65 academic year (Total N = 130). They identified five factors which differentiated between those freshmen transferring out of the College of Engineering and those who stayed: tolerance and autonomy, suppression-repression, masculine role, scholarly orientation, and social introversion. The direction of the differences was not reported.

In a study of the relationship of values to achievement, Middleton and Guthrie (1959) conducted a factor analysis of a personality test based on Murray's need system in an attempt to identify factors which differentiated between high and low achievers. The factors associated with high achievement were drive for power, resentment,
dependence, social acceptance, and aggressiveness. The factors associated with low achievement were pleasure seeking, extroversion, denial of shortcomings, and power. The size of the sample (14 high and 14 low achievers) and the unreported reliability or validity of the instrument limited the generalization which could be drawn from the findings.

In closing this section, one study of a more general nature is cited. Newcomb (1943), in his well known study of values conducted at Bennington Community College, identified several factors which seemed to determine who would conform to the values of the college and those who would not. He found conforming behavior to depend upon the kind of adjustment the student had made to parents before coming to college, the sense of personal adequacy which the student felt in relationships with those of his own age (self-concept), and the degree of student passivity or initiative.

In summary, values have been shown to differ between various cultures and subcultures. They were shown to be important in the determination of college attendance. More important to the purpose of this study, however, was the relationship which has been shown to exist between values and choice of academic major and occupation. Studies were also cited which indicated that the family has a direct impact on the formation of a value system and the
establishment of goals. In light of the studies cited, values appeared to be related in some way to self-concept and self-actualization.

Achievement Motivation

Achievement motivation appeared to be an important area of investigation for several reasons. Rosen (1956) found a positive relationship between socio-economic level and n Achievement (need for achievement). Veroff et al. (1960) conducted a survey in several parts of the country and found some evidence that a positive relationship existed between n Achievement and level of educational and occupation achievement.

Several authors had indicated that a positive relationship exists between n Achievement and academic achievement (Lesser, Krowitz and Packard, 1963; Weiss and Groesbeck, 1959; Riccuiti and Sadacca, 1955). In several of these studies the relationship between n Achievement and academic achievement remained after intelligence had been partialled out.

Scott (1965) administered the CPI and the Minnesota Test of Creative Thinking to 88 eleventh and twelfth grade students. He found parental aspiration for the academic achievement of their children a significant factor in differentiating between observed groups of under- and over-achievers.
Christopher (1967) selected a sample composed of 198 male and 186 female tenth and eleventh grade students who were administered the Leary Interpersonal Check List, the Otis Intelligence Test (Form B) and an Academic Attitude Scale which he had constructed. Christopher reported finding a relationship between perceived parental valuing of achievement and the fact of achievement which supported Scott's (1965) earlier finding. Christopher further found a positive relationship between the perceived strength of the parent-child relationship and academic achievement for females but not for males. The proven reliability and validity of the instruments employed in the study and the size of the sample increased the usefulness of the findings.

In terms of the personality characteristics associated with high n Achievement, Rosen and D'Andradi (1959) found boys who were high in n Achievement to be more independent and self-reliant than boys with low n Achievement. The authors administered the Thematic Apperception Test (TAT) to 120 individuals from 40 family groups. The boys were from nine to 11 years old. The instrument and the age of the sample limit the generalizations which can be made to the present study. The results were similar to those of a previously cited study by Olim (1968) which dealt with self-actualization.

Tseng and Carter (1970) randomly selected a sample of 228 ninth and twelfth grade boys who were given the TAT,
the Test Anxiety Questionnaire (TAQ), an Occupational Rating Scale, and the Holler Occupational Aspiration Scale. The authors concluded that personality and interests were both important in the determination of achievement motivation. The unproven nature of the instruments again require the use of caution when interpreting the results of this study.

Several studies have been conducted to examine the cause of underachievement and the variables differentiating underachievers from overachievers. Gough (1953) found superior achievers more conventional and conforming, more apprehensive and more self-confident than underachievers. He administered a Booklet containing some 200 items designed to measure different aspects of personality to a group of 441 seniors from four high schools. The unsupported nature of the instrument warranted the use of caution in the interpretation of the results.

Shaw, Edison and Bell (1960) found that achievers had higher self-concepts than did underachievers. The Adjective Check List was administered to a group of bright underachieving high school students.

Frankel (1960) used 50 pairs of male high school seniors who were classified as achievers or underachievers, and matched on equivalent I.Q., Entrance Examination scores, and age. The subjects were administered the Differential Aptitude Test, the Kuder Vocational Preference
Record, the Mooney Problem Check List, the Hamburger Scale for rating socio-economic class, and a Student Questionnaire of 39 items. Frankel found that the fathers of the achievers tended to have more education and were engaged in higher status occupations than the fathers of under-achievers. The families of the achievers also enjoyed a higher socio-economic status.

Finally, Howard (1961) reported finding a relationship between the level of achievement attained by students and the meaning they ascribed to certain factors in their environment, their concept of themselves, the goals they set, and the techniques they employed to reach their goals. Howard also reported finding a relationship between achievement and the Economic, Social, and Religion Scales of the AVLSV. Howard's sample consisted of 61 under-achieving and 59 achieving freshmen at St. Olaf College. The instruments used were the AVLSV, the Edwards Personal Preference Schedule (EPPS), and the Guilford-Zimmerman Temperament Scale (GZTS).

In summary, studies were reviewed which demonstrated the relationship between achievement motivation, socio-economic level and educational/occupational success. A relationship between parental values, home environment and achievement motivation seemed to exist as well. Under-achievement seemed to be related to n Achievement, self-concept and values.
Summary

A summary was provided at the conclusion of each of the three preceding sections: self-concept, values, and achievement motivation. These three variables were suggested by studies cited in the review of the literature related to self-actualization. In the foregoing sections studies were cited which demonstrated the relationship of each variable to self-actualization and to the other theory related variables.

Demographic/Biographic Variables

Concomitants of Self-Actualization

The review of the literature in this section deals more comprehensively with certain variables which the preceding review had indicated might well have an impact on the development of self-actualization. The variables examined were birth order, socio-economic status, parents' education, parents' occupation, parents' political orientation, cultural identification, and geographical differences. The following sections include references to previously cited studies as well as the introduction of studies which have not been cited elsewhere.
Birth Order

The possibility that birth order might have an affect on the development of an individual was first advanced by Adler (1935, 1928). Studies have previously been cited which indicate that birth order might influence the development of self-concept (Sears, 1970; Paschal, 1968; Farley, 1967; Sampson, 1965; Schoonover, 1959); all failed to find a relationship between birth order and n Achievement. Several authors reported finding some relationship between birth order and n Achievement for females (Sampson, 1962) and for males (Rosen, 1956), although for males the relationship did not reach the level of significance.

First borns do appear to have higher achievement in high school and college (Chittenden et al., 1968; Schachter, 1963). The overrepresentation of first borns in college populations may be due to personality differences or purely socio-economic reasons, however.

In terms of personality differences, Bradley (1968), after reviewing the literature on birth order, reported that first borns tended to have an adult orientation, to be dependable, susceptible and serious. Second borns tended to be more popular and gregarious. He concluded that the combination of traits found in first borns enabled them to respond more affirmatively to school situations and to succeed more frequently in winning their
teacher's approval.

Sampson (1959) studied the relationship between conformity and birth order. He found first borns to be more conforming than later borns in nonstress situations but less conforming under stressful condition. Rine (1968) reported similar findings. Weiss (1970) used tone level, shocks and mathematical problems to study this relationship. His findings were consistent with those announced by Sampson and Weiss, even though his sample was quite small (N = 14 first borns and 15 later borns from 13 to 15 years of age).

Finally, Altus (1965) found that first born females achieved higher scores on the Scholastic Aptitude Test Mathematical and Verbal subtests than did later born females (N = 1,878 freshmen at the University of California at Santa Barbara). LeMay (1970) found no support for Walker and Tahmissian's (1967) hypothesis that first borns would have a higher rate of graduation from college than later borns. He did, however, announce results which were consistent with those previously found by Altus (1965).

Socio-Economic Status

Horrocks (1962) announced that socio-economic status was a major factor in the vocational choices of students. Mulford (1967) found no relationship between socio-economic status and level of self-actualization. Paschal (1968)
found no relationship between socio-economic status and self-concept, while Binder (1965) reported finding a significant relationship between the two at the ninth grade but not at the twelfth grade level. Berdie (1944) reported finding a significant relationship between socio-economic level and plans to attend college.

Rosen (1956) reported finding a positive relationship between socio-economic status and level of achievement. Scott (1965) found a significant relationship between parental aspiration for the academic achievement of their children to be a significant factor in differentiating between observed groups of under- and overachievers (parental aspirations would seem to be related to socio-economic status).

Wellman (1971) administered the Who Am I (WAI) instrument to 1,212 black and 938 white ninth graders. He found an association between social status and academic achievement. Sebok (1971) found students from upper socio-economic status homes predicted significantly higher GPAs than did students from lower level socio-economic homes. He concluded that the educational level of the father was a major determinant of socio-economic status and had a direct effect upon student predictions.

Parents' Education

Parents' education was directly related to
socio-economic status and was examined as a separate variable. Gibbs (1968, 1966) found that high self-actualizers came from homes where the parents had completed high school and had at least some additional formal education. Rosenberg (1956) suggested that the income of the father was related to the occupational choice of their children. Berdie (1944) reported that the amount of education which the parents had received was related to the motivation for college found in their children. Frankel (1960) found the fathers of achievers to have more education and to be employed in higher status occupations than the fathers of underachievers.

Parents' Occupation

A family's socio-economic level seemed to be determined both by education and occupation, since occupation was in large part determined by education. Studies by Binder (1965) and Frankel (1960) indicated that the occupation of the father was important in determining the achievement, occupational goals and self-concept of their offspring.

The occupation and work status of the mother had also been investigated. Gibbs (1966) reported finding that high self-actualizers came from homes where the mother worked part-time. In a later study, however, Gibbs (1968) reported that the mothers of self-actualizers tended to work
full-time. In a study dealing with self-concept, Paschal (1968) reported finding no relationship between the employment of the mother and self-concept. Banducci (1967), in a study of 38,001 high school seniors who had completed the 1965 Iowa Card Pac Questionnaire, reported finding no negative relationship between the employment of the mother and educational aspiration, expectation or achievement of the offspring.

Parents' Political Orientation

Olim (1968) reported that high self-actualizers tended to come from families where the parents or at least the father were liberals. Flacks (1967) conducted a study of student activists. The characteristics he reported as being typical of activists were quite similar to characteristics which had been identified as typical of self-actualizers. Flacks found that the activists tended to come from a "very special" kind of middle class and upper-middle class home. In most cases both parents were highly educated and liberal minded. Unfortunately, Flacks failed to provide any data as to the size and nature of the sample or the nature of the data collecting instrument(s).

Cultural Identification

Morris (1958), Wayland and Brunner (1958) and Hollinshead (1952) have all indicated that cultural and
subcultural identification has an impact on the values of the offspring.

Mead (1943) hypothesized that immigrants went through a progressive evolution in the process of being absorbed into the American culture. She discussed these evolutionary stages in terms of generations. Her description of the three generational stages was expanded by Tollefson (1968) to include five generations. Tollefson hypothesized that while the third generation was patriotic, unquestioning and hardworking, the fourth generation tended to be apathetic and noninvolved. The fifth generation was more active, critical and involved.

In this study the impact of cultural differences was determined by comparing ethnic group identification, the number of close relatives (parents, grandparents and great-grandparents) and providing a weighted factor for the three immigrant categories.

Geographic Differences

Several of the geographical variables used by Gibbs (1968, 1966) were selected for use in this study. Those included were size of home town, size of high school, size of graduating class.

In addition, the urban/rural setting of the home was determined. Horrocks (1962) indicated that significant differences were found between children raised in an
urban as opposed to a rural setting. He found rural children to have many more opportunities for self-exploration and independent activity than did urban children. Conversely, he also found urban children more skilled in play and group activities than rural children.

Summary

The variables which were included in this section were but a small sample of the nonintellective variables which could have been included. The variables were selected on the basis of the literature which had been reviewed. Socio-economic status was shown to be related to self-actualization, self-concept, values, achievement motivation and college attendance. The components of socio-economic status, parent's education and occupation, were also shown to be separately related to self-actualization and the theory-related variables.

Parent's political orientation was shown to be related to the level of self-actualization and occupational choice of their children.

Cultural differences were shown to have a potential effect on level of self-actualization as were certain geographical variables.

Reflective Variables

The variables in the following section were chosen
both because the review of the literature indicated that they might be related to self-actualization and because they seemed to be of pragmatic importance to student personnel workers.

Living Arrangement

The distribution of students among the different types of college living arrangements had been of interest to behavioral scientists for quite some time. Sherif and Sherif (1948) hypothesized that a student's selection of housing was a function of both internal and external factors operating at the time of selection. Segal (1967) suggested that each setting had assets to facilitate the developmental process as well as limitations to slow it down.

Alfert (1968) administered the Social Maturity and Impulse Expression Scales to 78 male and 75 female freshmen in a study of the types of living arrangements preferred by students who differed as to their stage of development. The freshmen had free choice as to type of living arrangement. She found that students distributed themselves among the living arrangements according to their stage of development. Students who were low in their degree of development tended to live at home or in boarding houses, while those who had high degrees of development chose to live in off-campus private apartments. Students who ranged between the two extremes chose other types of housing: residence
halls, cooperatives, or fraternities/sororities.

The differences found between independents and Greek affiliates have been well reported in the literature by Johnson (1970), Hountras and Pederson (1970), Kuder (1970), Scott (1965), Jackson and Winkler (1964) and Mahler (1962).

Commuting students have been reported to differ from both independents and Greek affiliated by Graff and Cooley (1970), Thompson (1966), Stark (1965) and Drawgow (1958). George (1971), however, reported that the only difference between commuters and noncommuters seemed to be socio-economic status.

Lindahl (1967) reported that type of living arrangement did have an effect on student perceptions of the university. The only study which dealt directly with living arrangement and self-actualization was conducted by Ridge (1968). He administered the POI to 200 sophomores living in different living arrangements. He found no significant difference in the level of self-actualization of students residing in the different types of living arrangements. His study is open to criticism in several areas, however. He did not include off-campus students who were living with their parents, he supplied no information on the number of students who had dropped out as freshmen, he used only students who had lived in residence halls as freshmen, and no information was given about the college or the nature of the student body. Judging from the group mean
scores, the student body must have been relatively homogeneous.

**Student Subculture**

Clark (1962) and Trow (1962) simultaneously announced the presence of four subcultures among the college student population: collegiate, academic, vocational, and nonconformist. Several studies have been conducted which have made use of the Clark-Trow typology. Grande, Simons and Pallone (1967) found (1) academics higher, collegiates lower, and vocationals in between in terms of direction of aspirations, and (2) academics were high while collegiates and vocationals were low in terms of peer group influence. In addition, academics were more persistent than collegiates, academics reported more self-control and deliberateness than collegiates, and academics reported more positive influence of the home as it impinged upon academic motivation than collegiates. Grande, Simons and Pallone administered the College Student Questionnaire (CSQ) and the POI to a sample of 267 freshmen.

Apostal (1970) reported finding a significant difference between the four Clark-Trow subcultures in the way they perceived the college environment.

Apostal (1968) found a significant relationship between college subculture and student values as measured by the ALVSV.
In a study of student leaders, Brainard and Dollar (1971) found student leaders who identified with the collegiate subculture to score significantly higher on Close-ness, Friendliness, Affiliation and Play when compared to their peers in the academic and vocational subcultures. Student leaders choosing the vocational subculture indicated more interest in leisure time activities. No differences were found between the subcultures on Self-assertion, Audacity-Timidity, or Expression-Diffidence. Brainard and Dollar used the Stern Activities Index and the questions from the CSQ used to classify students into one of the Clark-Trow subcultures. The findings seemed to support earlier studies of student leaders conducted by Winborn and Jansen (1967) and Williamson and Hoyt (1952).

**Student's Political Orientation**

Studies have already been cited which have demonstrated a relationship between parents' political orientation and the level of self-actualization found in their children (Olim, 1968; Flacks, 1967). In addition, Gunnison (1964) found high self-actualizers to be more liberal in outlook and to prefer a more active way of life. Maslow (1954) had earlier found that self-actualizers tended to be more liberal in their outlook than nonself-actualizers.

In another study using a different type population, Dandes (1966) reported finding a direct relationship
between level of self-actualization and the values of teachers who were classified as successful. The values were permissiveness, liberalism, openmindedness, and non-authoritarianism. These findings seem to be consistent with Maslow's (1954) earlier findings and would seem to indicate that a relationship between self-actualization and political orientation does exist.

Degree Plans

Baird (1968) studied differences associated with differing degree plans. His sample consisted of 10,073 male and 8,305 (Total N = 18,378) high school seniors who had completed the American College Testing Program Test (ACT). The Student Profile section of the ACT as well as the English, Mathematics, Social Studies and Natural Science scores were used. Baird concluded that significant differences do exist between students planning to complete less than a Bachelor's, Bachelor's, Master's, PhD, MD, DDS and LLB degree. The characteristics of students planning to achieve each degree level suggested that students generally choose degrees which are consistent with their personality traits.

This variable was included among the demographic/biographic variables because of the relationship which has already been shown to exist between values, self-concept and occupational choice.
Choice of Major

Three studies have already been cited which indicated that students who chose different majors tend to differ in terms of values, goals and personality characteristics (Gibbs, 1966; Holland and Nichols, 1964; Sternberg, 1953). Several studies also suggested that significant differences exist between students who were decided or undecided on a college major. Baird (1968) summarized the results of three studies he had conducted on decided/undecided students by suggesting that undecided students may have chosen the goal of developing their minds rather than preparing for a specific occupation. He found no evidence to support the hypothesis that undecided students were maladjusted or abnormal. These findings were consistent with those reported by Flanders (1965). Flanders found decided and undecided students to be relatively homogeneous in terms of ability and personality characteristics. He also found that undecided students more often came from homes where the parents were college graduates than did decided students (which raises the question of differences in level of self-actualization between decided and undecided students).

On the other hand, Resnick, Fauble and Osipow (1970), Holland and Nichols (1964) and Weitz and Jones (1955) all reported findings which indicated that decided students
were better adjusted than undecided students.

**Occupational Choice**

Studies have previously been cited which dealt with the relationship between occupational goals and self-actualization (Green, 1969; McKenzie, 1966; Masucci, 1966; Maslow, 1954), values (Hilton and Korn, 1964; Holland, 1963), and achievement motivation (Veroff et al., 1960).

In other studies, Musgrove (1969) found that self-concept influenced one's choice of occupation. The Kuder Preference Record and the TSCS were given to 114 male and 102 female college students (the samples were stratified by class). Resnick, Fauble and Osipow (1970) found a positive relationship between vocational crystallization and self-esteem as measured by the TSCS. Ziegler (1970) found a similar relationship. He administered the Adjective Check List to a sample of 428 college students. Ziegler concluded that Super's (1953) view of vocational preference as an expression of self-concept seemed to be valid. The size of the sample and the proven reliability and validity of the instrument added credibility to Ziegler's findings.

Finally, Goldschmid (1967) administered five instruments, the CPI, MMPI, Meyers-Briggs Type Indicator, OPI and SVIB, to a group of undecided freshmen to examine differences between students scoring high in science interest
and those scoring high in the humanities. Significant group differences were found to exist in five major areas: orientation to life, mode of adjustment and psychological functioning, interest pattern, behavior in social contexts, and mode of cognitive functioning. The description of the Humanities group seemed to fit descriptions used in reference to self-actualizers, i.e., valued personal independence, had a wide range of interests and imagination, sought social contact and satisfaction from others.

Additional Variables

Two additional variables were selected for study. They were: part-time work and scholarship status.

Gibbs (1966), in a study already cited, had used part-time work as one of the variables in his study of self-actualizers. Henry (1967) studied 112 students on a Student Labor Program and 92 Work Study students. He found that those who were working approximately 15 hours per week did as well or better than those not working or those who were working more than 15 hours per week. Kane (1971) and Hay, Evans and Lindsay (1970) reported similar findings. The implication seemed to be that working part-time (approximately 15 hours per week), rather than harming achievement, actually improved it.

In studies which dealt with scholarship status, Bergen, Upham and Bergen (1970) studied 200 of the neediest
students from a pool of 800 scholarship recipients who had the highest academic scores on a qualifying exam. The 200 subjects were matched with a nonscholarship control group on American College Test scores, sex, college enrollment, and high school GPA. The subjects were selected from three academic years as follows: 42 matched pairs from the 1963-1964 class, 48 pairs from 1964-1965, and 45 from 1965-1966. Scholarship recipients improved over nonscholarship recipients each year. The difference was significant at the .05 level only for the 1965-1966 class, however.

Holmes (1964), Williamson and Feder (1953) and Heidman (1949) had previously reported finding a tendency for scholarship holders to do better academically than non-scholarship holders, although the relationship did not reach significance at the .05 level. Clark, Wright and Paeker (1957) did report finding a significant relationship (p.<.001) between scholarship status and achievement.

The possibility that scholarship status might have a motivating influence on recipients was explored by Parker and Clark (1956). They reported finding little evidence that scholarship status was a motivating factor. Holmes (1964) and Williamson and Feder (1953) showed that a higher percentage of scholarship holders persisted toward graduation than did nonscholarship students.
Summary

The variables included in this section were chosen because (1) the review of the literature had indicated that they might be useful in discriminating between groups of students who differed in their level of self-actualization, and (2) they could supply useful information to those presently engaged in student personnel work.

The variables which were selected were: living arrangement, student subculture, student's political orientation, degree plans, choice of major, occupation choice, part-time work, and scholarship status.

Studies which had been previously cited in earlier sections of the review of the literature were referenced and new studies were introduced.
III. METHODOLOGY AND PROCEDURE

The purpose of this study was to determine whether or not students who differed in level of self-actualization (as measured by the Personal Orientation Inventory) could be identified by selected theory related and demographic/biographic variables when those variables were analyzed by multiple discriminant analysis.

Criteria for Sample Selection

The Personal Orientation Inventory (POI) was used as the criterion instrument for sample selection. The samples were drawn on the basis of the subject's score on the I scale of the POI. Damm (1969), Rosenthal (1967), and Knapp (1965) had demonstrated that the I scale was the best single measure of self-actualization contained in the POI.

The decision was made to select only single, first term freshman students between 18 and 19 years of age who were citizens of the United States. This was done to control as many of the variables which might have differential effects on level of self-actualization as possible. Students who were citizens of the United States and members of racial or social minorities were included since they comprised a small percentage of the freshman class. Students who were citizens of foreign countries were not included in the final pools.
Selection of Samples

The study was primarily concerned with examining variables which might discriminate between groups of freshmen who differed in their level of self-actualization. The systematic representation of all freshmen attending Oregon State University was not a major concern. The decision was therefore made to generate the initial male and female pools by administering the POI to classes which were taken by large numbers of freshmen. Instructors who taught sections of English Composition 121, English Composition 111 (for pre-medical, pre-nursing, pre-dental and pre-veterinary students), and Personal Development-Psychology 111 were contacted. Permission to administer the POI during class time was obtained from 11 instructors. Table I indicates the number of students initially tested, the number screened out, and the number of students which comprised the male and female pools.
TABLE I. NUMBER OF STUDENTS INITIALLY TESTED, THE NUMBER SCREENED OUT AND SIZE OF FINAL POOLS

<table>
<thead>
<tr>
<th>Class</th>
<th>No. of Sections</th>
<th>Total Tested</th>
<th>Number Screened</th>
<th>Final Pools</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 121</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td>195</td>
<td>23</td>
<td>172</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td>121</td>
<td>11</td>
<td>110</td>
</tr>
<tr>
<td>English 111</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td>23</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td>57</td>
<td>4</td>
<td>53</td>
</tr>
<tr>
<td>Psychology 111</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td>59</td>
<td>7</td>
<td>52</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td>85</td>
<td>10</td>
<td>75</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td>277</td>
<td>35</td>
<td>242</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td>263</td>
<td>25</td>
<td>238</td>
</tr>
</tbody>
</table>

Table II indicates the raw scores on the I scale of the POI and the percentiles for the male and female pools. The raw scores and percentiles for a norm group of 2,607 freshmen is included for comparative purposes (Shostrom, 1966).
TABLE II. RAW SCORES ON THE I SCALE AND PERCENTILES FOR A NORM GROUP OF 2,607 FRESHMEN STUDENTS AND THE MALE AND FEMALE STUDENTS USED IN THE PRESENT STUDY

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>52-53</td>
<td>01</td>
<td>52-53</td>
<td>03</td>
<td>52-53</td>
<td>01</td>
</tr>
<tr>
<td>54-55</td>
<td>02</td>
<td>54-55</td>
<td>04</td>
<td>54-55</td>
<td>01</td>
</tr>
<tr>
<td>56-57</td>
<td>03</td>
<td>56-57</td>
<td>04</td>
<td>56-57</td>
<td>02</td>
</tr>
<tr>
<td>58-59</td>
<td>05</td>
<td>58-59</td>
<td>06</td>
<td>58-59</td>
<td>02</td>
</tr>
<tr>
<td>60-61</td>
<td>08</td>
<td>60-61</td>
<td>07</td>
<td>60-61</td>
<td>03</td>
</tr>
<tr>
<td>62-63</td>
<td>11</td>
<td>62-63</td>
<td>09</td>
<td>62-63</td>
<td>04</td>
</tr>
<tr>
<td>64-65</td>
<td>15</td>
<td>64-65</td>
<td>12</td>
<td>64-65</td>
<td>05</td>
</tr>
<tr>
<td>66-67</td>
<td>21</td>
<td>66-67</td>
<td>15</td>
<td>66-67</td>
<td>07</td>
</tr>
<tr>
<td>68-69</td>
<td>27</td>
<td>68-69</td>
<td>17</td>
<td>68-69</td>
<td>12</td>
</tr>
<tr>
<td>70-71</td>
<td>34</td>
<td>70-71</td>
<td>21</td>
<td>70-71</td>
<td>16</td>
</tr>
<tr>
<td>72-73</td>
<td>43</td>
<td>72-73</td>
<td>28</td>
<td>72-73</td>
<td>21</td>
</tr>
<tr>
<td>74-75</td>
<td>51</td>
<td>74-75</td>
<td>33</td>
<td>74-75</td>
<td>29</td>
</tr>
<tr>
<td>76-77</td>
<td>61</td>
<td>76-77</td>
<td>40</td>
<td>76-77</td>
<td>33</td>
</tr>
<tr>
<td>78-79</td>
<td>68</td>
<td>78-79</td>
<td>49</td>
<td>78-79</td>
<td>40</td>
</tr>
<tr>
<td>80-81</td>
<td>75</td>
<td>80-81</td>
<td>55</td>
<td>80-81</td>
<td>49</td>
</tr>
<tr>
<td>82-83</td>
<td>82</td>
<td>82-83</td>
<td>62</td>
<td>82-83</td>
<td>53</td>
</tr>
<tr>
<td>84-85</td>
<td>88</td>
<td>84-85</td>
<td>70</td>
<td>84-85</td>
<td>58</td>
</tr>
<tr>
<td>86-87</td>
<td>92</td>
<td>86-87</td>
<td>79</td>
<td>86-87</td>
<td>67</td>
</tr>
<tr>
<td>88-89</td>
<td>95</td>
<td>88-89</td>
<td>84</td>
<td>88-89</td>
<td>74</td>
</tr>
<tr>
<td>90-91</td>
<td>97</td>
<td>90-91</td>
<td>88</td>
<td>90-91</td>
<td>82</td>
</tr>
<tr>
<td>92-93</td>
<td>98</td>
<td>92-93</td>
<td>92</td>
<td>92-93</td>
<td>87</td>
</tr>
<tr>
<td>94-95</td>
<td>99</td>
<td>94-95</td>
<td>95</td>
<td>94-95</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td></td>
<td>96-97</td>
<td>96</td>
<td>96-97</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td></td>
<td>98-99</td>
<td>98</td>
<td>98-99</td>
<td>96</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100-101</td>
<td>99</td>
<td>100-101</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td></td>
<td>102-105</td>
<td>99</td>
<td>102-105</td>
<td>99</td>
</tr>
</tbody>
</table>

*From the EITS Manual for the Personal Orientation Inventory (POI). Copyright 1966 by Educational & Industrial Testing Service. All rights reserved. Reproduced by permission.

Table III contains information on the means, standard deviations and standard error of the means for the male and female pools.
TABLE III. MEANS, STANDARD DEVIATIONS, AND STANDARD ERROR OF THE MEANS FOR THE MALE AND THE FEMALE POOLS

<table>
<thead>
<tr>
<th>Pool</th>
<th>No. of Subjects</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>242</td>
<td>79.46</td>
<td>9.63</td>
<td>.63</td>
</tr>
<tr>
<td>Females</td>
<td>238</td>
<td>82.19</td>
<td>10.61</td>
<td>.67</td>
</tr>
</tbody>
</table>

After the male and female pools had been established, subjects were selected to fill six groups on the basis of their raw score on the I scale of the POI. The six groups were: low, middle and high male; and low, middle and high female.

The number of subjects selected for each group was based upon the following criteria: (1) the desire to have at least 50 subjects in each group for the purpose of analysis (an N of 50 was selected for practical reasons and also to increase the chance of detecting intergroup differences where the magnitude of the difference was small), and (2) the desire to have a rate of participation of approximately 90% for each group. Table IV indicates the number of subjects selected for each of the six groups.

TABLE IV. NUMBER OF SUBJECTS SELECTED FOR THE MALE AND FEMALE GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>Number Selected</th>
<th>Group</th>
<th>Number Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Low</td>
<td>59</td>
<td>Female Low</td>
<td>59</td>
</tr>
<tr>
<td>Male Middle</td>
<td>56</td>
<td>Female Middle</td>
<td>56</td>
</tr>
<tr>
<td>Male High</td>
<td>56</td>
<td>Female High</td>
<td>56</td>
</tr>
<tr>
<td>Total</td>
<td>171</td>
<td>Total</td>
<td>171</td>
</tr>
</tbody>
</table>
A larger number of subjects was selected for the Low groups as a result of a study by Schultz (1967). Schultz reported that students with low levels of self-actualization were less likely to volunteer for projects (or participate in testing) than students who had higher levels of self-actualization.

Subjects for the six groups were drawn by taking the lowest 59, the highest 56 and the 56 who were in the middle of the male and female pools. Table V provides information on the range of I scale scores, the means, standard deviations, and standard error of the means for the male and female groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Range on I Scale</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Low</td>
<td>49-72</td>
<td>64.16</td>
<td>6.76</td>
<td>.96</td>
</tr>
<tr>
<td>Male Middle</td>
<td>77-83</td>
<td>79.92</td>
<td>1.97</td>
<td>.28</td>
</tr>
<tr>
<td>Male High</td>
<td>87-106</td>
<td>92.36</td>
<td>4.57</td>
<td>.65</td>
</tr>
<tr>
<td>Female Low</td>
<td>51-74</td>
<td>68.32</td>
<td>5.29</td>
<td>.75</td>
</tr>
<tr>
<td>Female Middle</td>
<td>79-86</td>
<td>82.56</td>
<td>2.09</td>
<td>.29</td>
</tr>
<tr>
<td>Female High</td>
<td>90-109</td>
<td>95.92</td>
<td>4.12</td>
<td>.58</td>
</tr>
</tbody>
</table>

Table V indicates that the reported ranges and means for the male and female groups are very similar. The means for the male and female groups fell at approximately the 12th, 50th and the 92nd percentile for the three groups.
Sources of Data

Personal Orientation Inventory

The Personal Orientation Inventory was developed by Shostrom (1966, 1964) as a measure of self-actualization. The instrument was developed on the basis of writings by Ellis (1962, 1961), Maslow (1962, 1954) and Rogers (1961, 1951). Items were originally taken from the writings of these theorists as well as from descriptions of self-actualizers submitted to Shostrom by psychologists from the Los Angeles, California area (Shostrom, 1964).

The final instrument consisted of 150 two-choice comparative value and judgment statements which were divided into two major scales, Time Competence (Tc) and Inner-directed support (I), and ten subscales. The "I" Scale had previously been shown to be the best single measure of self-actualization (Damm, 1969; Rosenthal, 1967; Knapp, 1965). This was not unexpected since the "I" Scale contains 127 of the 150 pairs of statements. Considerable item overlap existed among the other scales of the POI, and at least some evidence had been presented which indicated that the use of the subscales might not be warranted (LeMay and Damm, 1970; Klavetter and Mogar, 1967).

Reliability. Shostrom (1964) reported reliability coefficients of .91 and .93 using the test-retest method for the two major scales of the POI, Tc and I. The time
interval of the test-retest was not given. Shostrom (1966) later reported somewhat lower coefficients for the two scales, .71 and .84 respectively. Again, no time interval was given.

Klavetter and Mogar (1967) used a one week interval and reported coefficients which were identical to those reported by Shostrom, .71 and .84 for the Tc and I scales. Ilardi and May (1968) reported a test-retest reliability coefficient of .55 and .71 for the Tc and I scales using an interval of 50 weeks. These coefficients were compared with reliability data for the Minnesota Multiphasic Personality Inventory and the Edward's Personal Preference Schedule. Ilardi and May concluded that the coefficients reported for the POI were well within the range for these two "somewhat comparable instruments."

Validity. The POI had successfully discriminated between groups of self-actualizing, normal, and nonself-actualizing individuals (Shostrom, 1964), between high and low neurotic groups (Knapp, 1965), between beginning and advanced clients of psychotherapy (Shostrom and Knapp, 1966), hospitalized psychiatric patients and a normal sample (Fox, Knapp and Michael, 1968), psychopathic felons and a group of normals (Fisher and Silverstein, 1969; Fisher, 1968), and between graduate students in counseling who were successful in providing the therapeutic conditions of facilitative genuineness and those who were not
(Foulds, 1969). Additional information on the validity of the POI is contained in Appendix A.

Fakability. In spite of appearing to be highly susceptible to faking, the POI has been shown to be very resistant to attempts to "make a good impression." Braun and Asta (1969) found that scores obtained under standard versus "good impression" instructions were inconsistent across the 12 scales. The I and TC scales were not affected. Six of the subscale scores changed in the direction of higher self-actualization while four changed toward lower self-actualization.

Braun and LaFaro (1969) found that students scored higher if they were given specific information about the POI and self-actualization before taking the POI under instructions to make a good impression. The control group received no special instructions and did not achieve a higher score when attempting to make a good impression. The authors concluded that the POI showed an unexpected resistance to faking.

Fisher and Silverstein (1969) reported similar findings. They found that felons achieved lower and more variable scores when instructed to make a good impression than did a group of felons under standard instructions.

Tennessee Self-Concept Scale

The TSCS consists of 100 self-descriptive statements
which the subject uses to portray his own picture of himself. The scale is self-administering for either individuals or groups and can be used with subjects 12 years of age or older. The reading level of the instrument is placed at the sixth grade level. The instrument is applicable to the whole range of psychological adjustment from healthy, well adjusted people to psychiatric patients (Fitts, 1965).

The scores which are included in the TSCS are: Self-Criticism (SC), which is composed of ten items taken from the L scale of the MMPI, the eight positive scores and the Total Positive score (which Fitts considers to be the most important single score on the instrument), the Variability score, Distribution score, and Time score. Of the above scores, the last three, i.e., Variability, Distribution, and Time, are the only ones which were not used in this study.

The eight Positive scores are arranged in a 3x5 matrix. The three rows are: Identity, Self-Satisfaction, and Behavior. The columns are: Physical Self, Moral-Ethical Self, Personal Self, Family Self, and Social Self. The rows represent an internal frame of reference and the columns an external frame of reference (Fitts, 1965).

The items selected for this instrument were judged by seven psychologists who placed the items in the 3x5 scheme and indicated whether each item was positive or negative.
in content. The final 90 items are those on which there was perfect agreement by the judges.

Reliability. Pitts (1965) reported reliability coefficients in the range of .80 to .90 for the various scores. Congdon (1958) reported a reliability of .88 for the Total Positive score. No information was given as to the nature of the test used.

Validity. Pitts (1965) found highly significant differences between psychiatric patients and nonpatients (p < .001) on almost every dimension of the instrument. Congdon (1958) found significant differences between "normal" adults and schizophrenic patients. He also reported that Chlorpromazin, while it improved behavior, communications, interpersonal relations and care of self, had no impact on the self-concept of the schizophrenics. Piety (1958) reported that the Total Positive score differentiated between psychiatric patients and nonpatients at the .005 level. Additional information on the validity of the TSCS is contained in Appendix B.

Differential Value Profile

In the construction of this instrument, Thomas (1969) initially generated a pool of 263 items. He selected items which were intended to measure values along six dimensions: Aesthetic, Humanitarian, Intellectual, Material, Power, and Religion. A seventh scale, self-centeredness, was dropped
due to low inter-judge agreement.

The 263 items were rated by ten judges against criteria on value and factor differentiation. From the original item pool, 134 items were selected that approached and/or reached 100% agreement among the judges. These items were arranged into the six value scales.

Reliability. Thomas (1969) reported a significant correlation for an item analysis of each scale. He reported r's ranging from .75 to .89 for the internal consistency of each scale. Thomas (1969) also found correlation coefficients for a test-retest ranging from .75 to .76 for the six scales. The retest period was ten days.

Validity. Thomas (1969) found the DVP to successfully differentiate between 1,480 college students in four criterion groups: church related male, church related female, public institution male, and public institution female, on four of the six scales at the .05 level. The null hypothesis that the four criterion groups of college freshmen would respond similarly on all six scales of the DVP was rejected at the .01 level for 11 of the 12 tests for differences.

Although a relatively new and as yet little used instrument, the DVP did appear to have acceptable reliability and validity. It was selected over the better known and much used Study of Values for several reasons: (1) the ipsative nature of the Study of Values made
interpretation difficult; (2) the scoring tended to be time consuming; (3) the test booklets were not reusable (Thomas, 1969). More important, an analysis of the scales had indicated that a number of them were two-headed, particularly the Economic, Social and Political scales. A score on the Economic scale might reflect either of two kinds of economic value orientation: the thrift tendency, and the materialistic drive for money and things (Thomas, 1969; Thurstone, 1954; Lurie, 1937).

The DVP was designed to overcome the above weaknesses as well as those peculiar to the Poe Inventory of Values. The Poe instrument used a five-point Likert-type scale which employs an "undecided" response category (Poe, 1954). The selection of this choice might well be a way of avoiding a commitment on an item. The inclusion of this choice therefore limited the usefulness of the scale (Thomas, 1969). The DVP uses a "modified forced choice" arrangement. Four response categories are provided for each item: Strongly Agree, Agree, Disagree, and Strongly Disagree. Items are scored as either a two or a one, depending on the direction of the item. Responses which are left blank or for which two responses are given are scored as zero.

**Mehrabian Achievement Motivation Scales for Males and Females**

The two scales were originally composed of 34 items
each. These items were selected from a larger pool of items after an examination of their internal reliability. For the male scale, only one item had a significant (p. 05) correlation with the Crown and Marlowe Social Desirability Scale. The same held true for the female scale (Mehrabian, 1968).

Factor analysis and a principle component solution were achieved for each scale. On the Male scale, 11 factors with eigen values greater than unity were identified. The first factor accounted for no more than 15% of the total variance. Variamx rotation of the 11 factors was carried out. The following primary factors were identified: independence, choice of achievement related activities, low and high risk situations, and preference for activities involving skill and competition versus cooperation and chance. Choice of, or persistance at, demanding tasks was also identified as a primary factor (Mehrabian, 1968).

A similar analysis was carried out on the Female scale. Thirteen primary factors were identified. Variamx rotation yielded factors which could be placed under rubrics similar to those used for the Male scale (Mehrabian, 1968).

Reliability. A ten-week test-retest yielded a product-moment correlation of .78 for the Male scale and .72 for the Female scale. The subjects used were advanced
undergraduates who were enrolled in a Personality course. Mehrabian felt that since the subjects were exposed to several personality measures as well as some achievement motivation literature between the two testings, that the reported reliability figures might have been somewhat conservative (Mehrabian, 1968).

Validity. Law (1968) reported a product-moment correlation between achievement motivation scores for males and the number of problems attempted on a match stick problem to be .38 (df 55, p .01). The correlation between achievement score and the number of problems solved was .37 (df 55, p .01). For the females, the correlation between number of problems attempted and score on the Female Achievement Scale was .23 (df 48, p .01) and the correlation between achievement scores and the number of problems solved was .32 (df 48, p .05).

Weiner (1966) compared the Achievement Scale for Males/Females with the Thematic Apperception Test (TAT) and the Test Anxiety Questionnaire (TAQ). He found that the difference between the proportion of high versus low achieving subjects who recalled a greater percentage of incompleted questions approached significance when the TAT and TAQ were used, and reached significance (p .05) when the Achievement Scales were used.

Mehrabian (1968) reported that the Achievement Scales were correlated with the TAT, TAQ, Rotter's
Internal-External Control scale, and negatively correlated with the Crown-Marlowe Social Desirability scale.

In a later work, Mehrabian (1969) reported on a revised version of the two Achievement Scales. The revised scales consisted of 26 items each. The revised scales were administered to subjects along with measures of affiliation, achievement, dogmatism, social desirability, test anxiety, and neuroticism. The revised scales correlated significantly with the existing achievement and shy-venturesomeness scales and were orthogonal to an affiliation scale. Both of the revised scales had low correlations with social desirability.

The reliability and validity data reported for the Mehrabian Achievement Scales is not overwhelming. The writer selected the scales realizing that they might not detect differences which did in fact exist between the groups which were being examined. The Achievement Scales were selected because they were easy to administer and could be completed in a short period of time.

**Personal Data Questionnaire**

The Personal Data Questionnaire was constructed to collect the following demographic/biographic information:
The variables included in the Personal Data Questionnaire were selected as a result of studies previously cited in the review of the literature. The variables were shown to be related in some way to self-actualization, the theory related variables, or to other demographic/biographic variables.

A copy of the Personal Data Questionnaire is included as Appendix C.
Collection of the Data

The male and female subjects used in this study were administered the POI during the first five weeks of fall term. The specific process by which the initial freshmen were selected, tested, and the resulting pools purified was described in an earlier section of this chapter. Information on raw scores, percentiles, range of scores, means, standard deviations, and standard error of the means was presented in an earlier section as well.

The subjects selected for participation in the second phase of the study (see Tables IV and V) were sent a letter inviting them to take a battery of four instruments (the TSCS, DVP, MASF/MASM, and PDQ). A copy of the letter which was sent to the subjects is included as Appendix D. (The writer had previously returned to 14 of the 21 sections initially tested to give a short presentation on the purpose of the study. This was done in an attempt to increase the rate of participation.)

The testing for the second phase of the study was initially conducted in two cafeterias of the Oregon State University Residence Hall System. Approximately 25% of the subjects participated in the two testing sessions.

The subjects who had not participated in the second testing were contacted individually and asked to participate. Table VI indicates the number of subjects
initially contacted, the number of subjects who participated, and the percentage of participation.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number Selected</th>
<th>Number Participating</th>
<th>Percentage of Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Low</td>
<td>59</td>
<td>52</td>
<td>88.1</td>
</tr>
<tr>
<td>Male Middle</td>
<td>56</td>
<td>50</td>
<td>89.3</td>
</tr>
<tr>
<td>Male High</td>
<td>56</td>
<td>53</td>
<td>94.6</td>
</tr>
<tr>
<td>Total</td>
<td>171</td>
<td>155</td>
<td>90.7</td>
</tr>
<tr>
<td>Female Low</td>
<td>59</td>
<td>53</td>
<td>89.9</td>
</tr>
<tr>
<td>Female Middle</td>
<td>56</td>
<td>52</td>
<td>92.9</td>
</tr>
<tr>
<td>Female High</td>
<td>56</td>
<td>54</td>
<td>96.4</td>
</tr>
<tr>
<td>Total</td>
<td>171</td>
<td>159</td>
<td>93.0</td>
</tr>
</tbody>
</table>

Each student spent from 1-1/4 to 1-3/4 hours to complete the instruments used in the second phase of the study.

For the actual analysis of the data, 50 subjects were selected from each group. Subjects were chosen whose raw I scale scores maximized the distance between the groups.

**Processing the Data**

The instruments used in this study were all hand scored. All items were scored twice to insure accuracy. After scoring, the data were transferred onto IBM computer cards and verified by the Oregon State University Computer Center.

**Analysis of the Data**

Hypothesis I was tested by using both the t-Test for
a difference between two independent means (Bruning and Kintz, 1968; Snedecor and Cochran, 1967) and the Mann-Whitney U-Test for differences between independent samples. The Mann-Whitney Test is a nonparametric test and was selected because the male and female distributions (see Table II) indicated that a skewed distribution might be present. Both the t-Test and the Mann-Whitney Test were employed so that a comparison between the two distributions might be made.

Hypotheses II through VII were investigated by using multiple discriminate analysis (Campbell, 1969; Cooley and Lohnes, 1952; Rao, 1952). Campbell's (1969) multiple discriminate analysis program was used to examine Hypotheses II through VII. The program computed univariate F tests and discriminant weights for the major discriminating variables. The discriminating power of the variables used was determined through computation of Wilks' lambda (\(\Lambda\)) which is a function of the roots of \(W-1A\), where \(W\) is the pooled within-groups matrix of deviation cross products (Cooley and Lohnes, 1962). Roa's technique of chi-square approximation was also computed for each of the discriminant functions to determine the significance of discrimination along each dimension (Rao, 1952).

The data were initially analyzed in six segments. The first two analyses involved the identification of those theory related variables (self-concept, values and
achievement motivation) which successfully discriminated between the male and female groups. The third and fourth analyses involved the identification of those demographic/biographic variables which successfully discriminated between the male and female groups.

The fifth and sixth segments involved examining those variables which had previously been identified as: discriminating (making a large or marginal contribution to a significant discriminant weight); as having significance between groups as a single variable (reflected by the univariate F ratio; and as having potential as discriminating variables (making a large contribution to a nonsignificant discriminant root). These variables were combined and analyzed separately for the males and females. This was done to determine the relative discriminating ability of the theory related and demographic/biographic variables.

A separate analysis of the theory related and demographic/biographic variables for Hypotheses II through V was conducted for two reasons: (1) to test the discriminating ability of each group of variables without interference from the other, and (2) the multiple discriminate analysis program as adapted to the CDC 3300 computer was limited to examining 30 variables at one time. The present study used 43 variables: 17 theory related and 26 demographic/biographic variables.

Multiple discriminant analysis is a relatively
unknown or at least little used procedure in the field of higher education and particularly student personnel work. Therefore, the method is discussed at some length in Appendix E. Suffice it to say at this point that multiple discriminant analysis is a multigroup analysis that finds the minimum number of dimensions or discriminant functions required for the description of group differences (Cooley and Lohnes, 1962).

The .05 level was selected as the minimum acceptable level for all tests of significance.

**Summary**

Information was presented on the selection and testing of the initial subjects and the creation of the final male and female pools. The nature of the pools and the male and female groups drawn from the pools was also described.

Reliability, validity and background data were presented on four of the instruments used in the study: the Personal Orientation Inventory (POI), the Tennessee Self-Concept Scale (TSCS), the Differential Value Profile (DVP), and the Achievement Scales for Males/Females (ASM/F). Information was also presented on the Personal Data Questionnaire (PDQ).

The procedure by which the data was collected was described and the percentages of participation (90.7% for males, 93.0% for females) were given for each of the six groups.
Finally, the process by which the data were prepared for analysis and the statistical methods used to test the hypotheses were discussed.
In this chapter, data which relate to the null Hypotheses selected for examination are presented and discussed. The data will lead to the rejection or nonrejection of the seven null Hypotheses. For those Hypotheses which were analyzed using multiple discriminant analysis (Hypotheses II through VII), the variables which made large contributions (discriminant weights of .35 or greater) to the significant discrimination between groups are identified and discussed. Variables which made marginal contributions to the significant discrimination between groups (discriminant weights of from .25 to .34) are also identified and discussed.

As indicated in Chapter I, the cutoff points for the "large" and "marginal" categories were arbitrarily selected to differentiate between those variables which made large and marginal contributions to the discrimination between the male and the female groups.

Findings Related to the Hypotheses Under Investigation

Hypotheses I

The t-Test for independent means (Bruning and Kintz, 1968; Snedecor and Cochran, 1967) and the Mann-Whitney Test for differences between independent samples (Bruning and Kintz, 1968; Snedecor and Cochran, 1967) were used to test
Hypothesis I, which stated that males and females would not differ on a measure of self-actualization (the I scale of the Personal Orientation Inventory (POI)). Tables II and III indicated that the male and female distributions of raw I scale scores might be somewhat skewed. A test of means (the t-Test) and a nonparametric test based on rank-ordering (the Mann-Whitney Test) were both used because of the possibility that the two distributions might be differentially skewed. If the two distributions were differentially skewed, they could be significantly different and yet have means which were very similar. Both tests were therefore used to determine (1) whether or not the two distributions were significantly different, and (2) whether or not the two distributions were differentially skewed.

An extension of the Mann-Whitney Test was also used in the testing of Hypothesis I. Bruning and Kintz (1968) and Snedecor and Cochran (1967) indicated that when the size of either of the two groups being compared was larger than the limits of the table (group₁ = 15, group₂ = 28) an extension of the Mann-Whitney formula should also be used. In this study, group₁ = 238 and group₂ = 242. Therefore, the extension of the Mann-Whitney Test was used. The formula for the t-Test is contained in Appendix F. The formulas for the Mann-Whitney Test and the extension are contained in Appendix G.
The result of the Mann-Whitney Test with the recommended extension (Z = 2.72) was significant beyond the .01 level. The result of the t-Test (t = 2.77) was also significant beyond the .01 level. Both the Mann-Whitney Test and the t-Test indicated that the males and females did differ significantly in their scores on the I scale of the POI. The fact that the results of the two tests both surpassed the .01 level of significance seemed to indicate that the distribution of scores for the males and females were not differentially skewed.

On the basis of the results obtained by both the Mann-Whitney Test and the t-Test, null Hypothesis I was rejected. Males and females did have significantly different scores on the I scale of the POI (the females had the higher scores).

Hypothesis II

Before actually considering Hypothesis II, two clarifications need to be made concerning the interpretation of the results of the multiple discriminant analysis for Hypotheses II through VII. First, it should be noted that the contribution a variable makes to the discrimination between groups is determined by its contribution to a discriminant root (determined by the size of its discriminant weight), not by the univariate F ratio. The univariate F ratio indicates the significance a variable has between
groups when analyzed as a single variable. A variable's univariate $F$ ratio may or may not be related to the contribution that variable makes to a discriminant root. The actual contribution depends upon such factors as order of introduction into the analysis, size of variance, and interaction with other variables. These relationships are discussed further in Chapter V.

The second point that needs to be made is that variables are considered to belong to the discriminant root to which they make the largest contribution (the signs of the discriminant weights are ignored when comparing contributions). In the analyses which follow, a variable which made its largest contribution to a nonsignificant discriminant root was not normally identified or discussed. Variables which made their largest contributions to nonsignificant discriminant roots and made a large contribution to a significant root as well were identified and discussed.

Hypothesis II stated that groups of males who differed in their level of self-actualization would not differ on the theory related variables used in the study. The results from the analysis of the theory related variables for the male groups are contained in Table VII.

The theory related variables were found to effectively discriminate between the three male groups ($\lambda = .620$, $F = 2.03$, df = 262, 34, $p < .005$). Rao's (1952) technique of chi-square was used for each of the discriminant
functions (roots) to determine the significance of discrimination along each dimension. The first discriminant root was significant (p < .001). The second discriminant root did not reach the level of significance (p > .05). The theory related variables account for 54.96% of the trace (variance) for the male groups. The first discriminant root accounted for 70.95% of the trace while the second root accounted for 29.05% of the trace. Therefore, null Hypothesis II was rejected.

Table VII reveals that two variables made large contributions to the first discriminant root. They were Personal Self and Self-criticism (discriminant weights of .67 and .53 respectively). Moral-Ethical Self made its largest contribution to the nonsignificant second discriminant root but was also the third largest contributor on the first discriminant root (discriminant root of .39). Therefore, Moral-Ethical Self was considered along with Personal Self and Self-criticism.

Personal Self "reflects the individual's sense of personal worth, his feeling of adequacy as a person and his evaluation of his personality apart from his body or his relations to others" (Fitts, 1965, p. 3). Table VII indicates that the low self-actualizing group (group 1) had the lowest mean score on this variable, the high group (group 3) had the highest score, and the middle group (group 2) had a score that fell in between the scores of the low and
high groups. This would seem to indicate that males identified as high self-actualizers had a more positive feeling of adequacy as individuals. The low self-actualizing males had the lowest feeling of adequacy, and the middle group fell between the high and low self-actualizing groups.

TABLE VII. MEANS, UNIVARIATE F TESTS AND DISCRIMINANT WEIGHTS OF THE THEORY RELATED VARIABLES FOR MALES

<table>
<thead>
<tr>
<th>Variables</th>
<th>Gp.1</th>
<th>Gp.2</th>
<th>Gp.3</th>
<th>F_a</th>
<th>Discriminant Weights&lt;sub&gt;b&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I</td>
</tr>
<tr>
<td>Identity</td>
<td>123.10</td>
<td>122.64</td>
<td>122.02</td>
<td>.15</td>
<td>.05</td>
</tr>
<tr>
<td>Self-satisfaction</td>
<td>107.14</td>
<td>103.94</td>
<td>109.92</td>
<td>1.95</td>
<td>.05</td>
</tr>
<tr>
<td>Behavior</td>
<td>124.20</td>
<td>109.26</td>
<td>111.88</td>
<td>1.22</td>
<td>.02</td>
</tr>
<tr>
<td>Self-criticism</td>
<td>34.06</td>
<td>36.20</td>
<td>37.70</td>
<td>5.33&lt;sup&gt;e&lt;/sup&gt;</td>
<td>-.53&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Physical Self</td>
<td>70.26</td>
<td>69.32</td>
<td>69.12</td>
<td>.21</td>
<td>.22</td>
</tr>
<tr>
<td>Moral-Ethical Self</td>
<td>70.00</td>
<td>65.56</td>
<td>66.86</td>
<td>3.29&lt;sup&gt;d&lt;/sup&gt;</td>
<td>.39&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Personal Self</td>
<td>65.22</td>
<td>65.78</td>
<td>66.44</td>
<td>.26</td>
<td>-.67&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Family Self</td>
<td>69.06</td>
<td>68.22</td>
<td>66.02</td>
<td>1.37</td>
<td>.11</td>
</tr>
<tr>
<td>Social Self</td>
<td>66.12</td>
<td>65.54</td>
<td>75.44</td>
<td>.08</td>
<td>-.03</td>
</tr>
<tr>
<td>Total Positive Sc.</td>
<td>334.36</td>
<td>339.04</td>
<td>352.60</td>
<td>1.69</td>
<td>-.05</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>20.84</td>
<td>24.10</td>
<td>25.80</td>
<td>3.42&lt;sup&gt;d&lt;/sup&gt;</td>
<td>-.06</td>
</tr>
<tr>
<td>Humanitarian</td>
<td>28.20</td>
<td>27.10</td>
<td>29.50</td>
<td>.80</td>
<td>-.02</td>
</tr>
<tr>
<td>Intellectual</td>
<td>25.52</td>
<td>26.70</td>
<td>30.68</td>
<td>3.70&lt;sup&gt;d&lt;/sup&gt;</td>
<td>-.01</td>
</tr>
<tr>
<td>Material</td>
<td>16.12</td>
<td>16.80</td>
<td>17.76</td>
<td>.39</td>
<td>.10</td>
</tr>
<tr>
<td>Power</td>
<td>15.62</td>
<td>16.02</td>
<td>17.66</td>
<td>.73</td>
<td>-.09</td>
</tr>
<tr>
<td>Religion</td>
<td>25.20</td>
<td>17.86</td>
<td>14.60</td>
<td>8.25&lt;sup&gt;f&lt;/sup&gt;</td>
<td>.17</td>
</tr>
<tr>
<td>Achievement Motive</td>
<td>52.72</td>
<td>53.08</td>
<td>60.28</td>
<td>2.30</td>
<td>.05</td>
</tr>
</tbody>
</table>

a Degrees of freedom are 2 and 147
b Total trace = 54.96% \( \lambda = .620 \) \( F = 2.08 \) with 262 and 34 df \( p < .005 \)
Root 1 = 70.95% of Trace \( X_2^2 = 46.10 \) with 18 df \( p < .001 \)
Root 2 = 29.04% of Trace \( X_2^2 = 20.74 \) with 16 df \( p > .05 \)
c Large contributor
d Significant at .05 level
e Significant at .01 level
f Significant at .001 level
Self-criticism indicates the individual's ability to accept self-criticism. On this variable, "high scores generally indicate a normal, healthy openness and capacity for self-criticism" (Fitts, 1965, p. 2). Table VII indicates that the low group had the lowest score, the middle group the middle score and the high group the highest score. This seemed to indicate that low self-actualizing males were less able to accept self-criticism than the middle group males, while the high self-actualizing males were more open than the other two groups in their openness to, and acceptance of, self-criticism.

Moral-Ethical Self "describes the self from a moral-ethical frame of reference -- moral worth, relationship to God, feelings of being a 'good' or 'bad' person, and satisfaction with one's religion or lack of it" (Fitts, 1965, p. 3). The results on this variable were somewhat confusing. The low group had the highest mean score, the middle group the lowest score, and the high group the middle score. The middle and high groups had means which were closer together than the scores of the low group and the high group. It seems from the data that the low self-actualizing males had more positive concepts of themselves from a moral-ethical frame of reference than did the high and middle self-actualizers. The results of the analysis also indicated that the middle group males were less positive in their concept of themselves on this variable than
were the high self-actualizers.

Of the three variables making large contributions to the discrimination between the male groups, Self-criticism and Moral-Ethical Self were the only ones which also had a significant difference between the groups when analyzed as single variables (as reflected by the univariate F ratios). Personal Self, while not significant when analyzed as a single variable, was still the largest contributor to the one significant discriminant root.

Table VII also reveals that three other variables, Religion, Intellectual, and Aesthetic, had significant differences between the three male groups as single variables, but did not contribute to a significant discriminant root when combined with the other theory related variables. One variable, Religion, had a univariate F ratio which was significant at beyond the .001 level, yet it did not contribute to the discrimination between the groups of males.

None of the theory related variables made a marginal contribution to the significant discriminant root.

**Hypothesis III**

The results of the analysis of the theory related variables for the female groups are contained in Table VIII. The effectiveness of discrimination was significant for the theory related variables ($\lambda = .682$, $F = 1.62$, $df = 262$, 34, $p = .05$).
### TABLE VIII. MEANS, UNIVARIATE F TESTS, AND DISCRIMINANT WEIGHTS OF THE THEORY RELATED VARIABLES FOR FEMALES

<table>
<thead>
<tr>
<th>Variables</th>
<th>Gp.1</th>
<th>Gp.2</th>
<th>Gp.3</th>
<th>F_a</th>
<th>Discriminant Weights</th>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity</td>
<td>121.56</td>
<td>124.72</td>
<td>126.56</td>
<td>2.06</td>
<td></td>
<td>-.23</td>
<td>.15</td>
</tr>
<tr>
<td>Self-satisfaction</td>
<td>112.66</td>
<td>106.12</td>
<td>110.62</td>
<td>.20</td>
<td></td>
<td>-.04</td>
<td>.02</td>
</tr>
<tr>
<td>Behavior</td>
<td>107.66</td>
<td>111.34</td>
<td>114.82</td>
<td>4.37e</td>
<td></td>
<td>.14</td>
<td>.29</td>
</tr>
<tr>
<td>Self-criticism</td>
<td>35.30</td>
<td>36.40</td>
<td>37.74</td>
<td>1.93</td>
<td></td>
<td>.46c</td>
<td>.23</td>
</tr>
<tr>
<td>Physical Self</td>
<td>65.52</td>
<td>68.62</td>
<td>69.80</td>
<td>4.25e</td>
<td></td>
<td>.30d</td>
<td>-.12</td>
</tr>
<tr>
<td>Moral-Ethical Self</td>
<td>68.54</td>
<td>69.36</td>
<td>70.54</td>
<td>.80</td>
<td></td>
<td>-.29d</td>
<td>.03</td>
</tr>
<tr>
<td>Personal Self</td>
<td>61.40</td>
<td>65.50</td>
<td>67.54</td>
<td>6.02f</td>
<td></td>
<td>.40c</td>
<td>-.02</td>
</tr>
<tr>
<td>Family Self</td>
<td>68.60</td>
<td>70.76</td>
<td>71.76</td>
<td>1.50</td>
<td></td>
<td>-.03</td>
<td>-.09</td>
</tr>
<tr>
<td>Social Self</td>
<td>65.00</td>
<td>70.54</td>
<td>71.42</td>
<td>9.35g</td>
<td></td>
<td>.56c</td>
<td>-.37</td>
</tr>
<tr>
<td>Total Positive Sc.</td>
<td>329.58</td>
<td>344.88</td>
<td>348.54</td>
<td>3.67e</td>
<td></td>
<td>-.06</td>
<td>-.06</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>25.22</td>
<td>25.92</td>
<td>26.84</td>
<td>.45</td>
<td></td>
<td>.01</td>
<td>.04</td>
</tr>
<tr>
<td>Humanitarian</td>
<td>30.44</td>
<td>35.12</td>
<td>32.82</td>
<td>2.73</td>
<td></td>
<td>.10</td>
<td>-.30</td>
</tr>
<tr>
<td>Intellectual</td>
<td>23.64</td>
<td>23.80</td>
<td>25.16</td>
<td>.59</td>
<td></td>
<td>-.02</td>
<td>.02</td>
</tr>
<tr>
<td>Material</td>
<td>12.50</td>
<td>13.00</td>
<td>11.28</td>
<td>.77</td>
<td></td>
<td>-.07</td>
<td>-.59</td>
</tr>
<tr>
<td>Power</td>
<td>12.16</td>
<td>11.86</td>
<td>12.20</td>
<td>.06</td>
<td></td>
<td>.14</td>
<td>.46</td>
</tr>
<tr>
<td>Religion</td>
<td>24.86</td>
<td>25.98</td>
<td>20.76</td>
<td>1.91</td>
<td></td>
<td>-.09</td>
<td>-.17</td>
</tr>
<tr>
<td>Achievement Motive</td>
<td>47.98</td>
<td>29.84</td>
<td>57.88</td>
<td>4.16e</td>
<td></td>
<td>.15</td>
<td>.08</td>
</tr>
</tbody>
</table>

---

a Degrees of freedom are 2 and 147  
b Total trace = 43.37% λ = .682  F = 1.62 with 262  
and 34 df (p = .05)  
Root 1 = 77.88% of Trace X² = 40.74 with 18 df (p < .005)  
Root 2 = 22.12% of Trace X² = 12.82 with 16 df (p > .05)  
c Large contributor  
d Marginal contributor  
e Significant at .05 level  
f Significant at .01 level  
g Significant at .001 level

Rao's (1952) technique of chi-square indicated that the first discriminant root was significant (p < .005) but that the second discriminant root was not (p > .05). The theory related variables accounted for 43.37% of the trace for the female groups. The first root accounted for 77.88% of the trace while the second root accounted for 22.12% of the trace. Null Hypothesis III, which stated that groups of
females who differed in level of self-actualization would not differ on the theory related variables used in the study, was rejected.

The large contributing variables for the females were Social Self, Self-criticism, and Personal Self (discriminant weights of .56, .46 and .40). Social Self "reflects the person's sense of adequacy and worth in his social interactions with other people in general" (Fitts, 1965, p. 3). On this variable the low self-actualizing group had the lowest score, the middle group the middle score, and the high self-actualizing group the highest score. This would seem to indicate that low self-actualizing females had a lower sense of adequacy in their interactions with others than did high self-actualizing females. The middle group fell between the high and low groups in their sense of adequacy.

Self-criticism, as noted earlier, measures the "openness and capacity for self-criticism" (Fitts, 1965, p. 2). Table VIII indicates that the low self-actualizing females had the lowest score, the middle group the middle score and the high self-actualizing group the highest score. The implication seems to be that low self-actualizing females had a lower ability to accept self-criticism than did the high self-actualizing females. The middle group again fell between the high and low groups.

Personal Self, as noted earlier, measures "a person's
sense of adequacy as a person and his evaluation of his personality apart from his body or his relationship to others" (Fitts, 1965, p. 3). On this variable the low self-actualizing females had the lowest score, the middle group the middle score and the high self-actualizing group the highest score. This would seem to indicate that low self-actualizing females had a lower sense of adequacy than did high self-actualizing females. The middle group were between the high and low groups in their sense of personal adequacy.

Two variables, Physical Self and Moral-Ethical Self, were marginal contributors to the discrimination between the female groups (discriminant weights of .30 and .29). On Physical Self "the individual is presenting his view of his body, his state of health, his physical appearance, skills and sexuality" (Fitts, 1965, p. 3). On this variable the low group had the lowest score, the middle group the middle score and the high group the highest score. This implies that low self-actualizing females had a less positive view of their bodies and of themselves physically than did high self-actualizing females. The middle group fell between the high and low groups in the way they viewed their bodies and their physical selves.

Moral-Ethical Self, as noted earlier, "describes the self from a moral-ethical frame of reference -- moral worth, relationship to God, feelings of being a "good" or
"bad" person, and satisfaction with one's religion or lack of it" (Fitts, 1965, p. 3). The low group of females again had the lowest score, the middle group the middle score and the high group the highest score. This seems to indicate that low self-actualizing females viewed themselves more positively and were more satisfied with their moral-ethical frame of reference than were the high self-actualizers. The middle group fell between the high and low groups on the above descriptions.

Three of the five variables which made large or marginal contributions to the discrimination between the groups of females, Social Self, Personal Self, and Physical Self, also had significant differences between the groups as single variables. The other two variables, Self-criticism and Moral-Ethical Self, did not have significance as single variables but did contribute to the discrimination between the groups of females.

Table VIII also indicates that three variables, Behavior, Achievement Motivation, and Total Positive Score, had significant differences between the three groups of females as single variables. When combined with the other 14 theory related variables, however, they did not make a large or marginal contribution to the discrimination between the female groups.
Hypothesis IV

The results of the analysis of the demographic/biographic variables for the male groups are contained in Table IX. The demographic/biographic variables did not significantly discriminate between the male groups ($\lambda = .698$, $F = .96$, df = 244, 52, $p > .05$).

Rao's (1952) technique of chi-square indicated that neither of the two discriminant roots was significant at the .05 level. Therefore, null Hypothesis IV, which stated that groups of males who differ in their level of self-actualization do not differ on the demographic/biographic variables used in the study, was accepted.

While the 26 demographic/biographic variables did not effectively discriminate between the male groups, Table IX indicates that five variables, Student's political orientation, Dissatisfaction, Preferred living arrangement, Student subculture, and Part-time work status, did have significant differences between the male groups as single variables.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Gp.1</th>
<th>Gp.2</th>
<th>Gp.3</th>
<th>F_a</th>
<th>Discriminant Weights &lt;br&gt;</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual living arrange.</td>
<td>3.26</td>
<td>2.68</td>
<td>3.26</td>
<td>1.50</td>
<td>-.01</td>
<td>-.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preferred living arrange.</td>
<td>4.00</td>
<td>4.50</td>
<td>4.80</td>
<td>3.20c</td>
<td>-.06</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>.74</td>
<td>.94</td>
<td>1.54</td>
<td>3.40c</td>
<td>-.11</td>
<td>-.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth order</td>
<td>.34</td>
<td>.36</td>
<td>.36</td>
<td>.01</td>
<td>- .01</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father's education</td>
<td>4.06</td>
<td>4.22</td>
<td>3.94</td>
<td>.39</td>
<td>1 .0</td>
<td>.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother's education</td>
<td>3.74</td>
<td>3.80</td>
<td>3.62</td>
<td>.32</td>
<td>.05</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father's occupation</td>
<td>3.16</td>
<td>2.98</td>
<td>2.92</td>
<td>.36</td>
<td>.18</td>
<td>-.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother's occupation</td>
<td>2.04</td>
<td>1.72</td>
<td>1.82</td>
<td>.37</td>
<td>.02</td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father's pol. orien.</td>
<td>1.46</td>
<td>1.56</td>
<td>1.64</td>
<td>1.19</td>
<td>.04</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother's pol. orien.</td>
<td>1.50</td>
<td>1.68</td>
<td>1.66</td>
<td>1.69</td>
<td>-.15</td>
<td>-.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student's pol. orien.</td>
<td>1.92</td>
<td>2.02</td>
<td>2.28</td>
<td>4.81d</td>
<td>-.39</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban/Rural setting</td>
<td>1.24</td>
<td>1.28</td>
<td>1.32</td>
<td>.34</td>
<td>-.06</td>
<td>-.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnic group ident.</td>
<td>.14</td>
<td>.22</td>
<td>.26</td>
<td>.51</td>
<td>-.27</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural impact</td>
<td>.44</td>
<td>.38</td>
<td>.36</td>
<td>.36</td>
<td>-.33</td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted cultural impact</td>
<td>.86</td>
<td>.78</td>
<td>.54</td>
<td>1.28</td>
<td>-.06</td>
<td>-.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of high school</td>
<td>4.68</td>
<td>4.76</td>
<td>4.40</td>
<td>.93</td>
<td>.05</td>
<td>.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of graduation class</td>
<td>3.02</td>
<td>3.14</td>
<td>2.86</td>
<td>1.47</td>
<td>.01</td>
<td>-.37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student subculture</td>
<td>2.38</td>
<td>2.28</td>
<td>2.74</td>
<td>3.08c</td>
<td>-.15</td>
<td>.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSU financial aid</td>
<td>.16</td>
<td>.26</td>
<td>.26</td>
<td>.72</td>
<td>-.06</td>
<td>-.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-OSU financial aid</td>
<td>.22</td>
<td>.18</td>
<td>.24</td>
<td>.27</td>
<td>.02</td>
<td>.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part-time work status</td>
<td>.42</td>
<td>.88</td>
<td>.86</td>
<td>3.08c</td>
<td>-.23</td>
<td>-.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choice of school</td>
<td>5.06</td>
<td>5.42</td>
<td>4.76</td>
<td>.93</td>
<td>-.02</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree plans</td>
<td>3.08</td>
<td>3.08</td>
<td>2.96</td>
<td>.11</td>
<td>.11</td>
<td>-.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decided/undecided</td>
<td>.24</td>
<td>.30</td>
<td>.28</td>
<td>.23</td>
<td>.12</td>
<td>-.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational choice</td>
<td>2.50</td>
<td>2.44</td>
<td>2.58</td>
<td>.04</td>
<td>-.01</td>
<td>-.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Degrees of freedom are 2 and 147
b Total trace = 41.55% \( \lambda = .689 \) \( F = .96 \) with 244 and 52 df (\( p > .05 \))
Root 1 = 69.81% of Trace \( X_2 = 34.51 \) with 27 df (\( p > .05 \))
Root 2 = 30.19% of Trace \( X_2 = 16.01 \) with 25 df (\( p > .05 \))
c Significant at .05 level
d Significant at .01 level
Hypothesis V

The results of the analysis of the demographic/biographic variables for the female groups are contained in Table X. The effectiveness of discrimination was significant for the demographic/biographic variables (λ = .534, F = 1.72, df = 244, 52, p<.005). Rao's (1952) technique of chi-square revealed that the first discriminant root was significant (p<.005) but that the second discriminant root was not significant (p>.05). The demographic/biographic variables accounted for 75.24% of the trace for the female groups. The first root accounted for 61.85% of the trace while the second root accounted for 38.15% of the trace. Null Hypothesis V, which stated that groups of females who differ in level of self-actualization do not differ on the demographic/biographic variables used in the study, was therefore rejected. The demographic/biographic variables employed in this study did successfully discriminate between the three groups of females who differed in their level of self-actualization.

Table X reveals that four variables, Father's political orientation, Cultural impact, Mother's political orientation, and Student's political orientation, made large contributions to the first discriminant root (discriminant weights of .47, .44, .38 and .37).

On Father's political orientation, the high
TABLE X. MEANS, UNIVARIATE F TESTS AND DISCRIMINANT WEIGHTS OF DEMOGRAPHIC/BIOGRAPHIC VARIABLES FOR FEMALES

<table>
<thead>
<tr>
<th>Variables</th>
<th>Gp.1</th>
<th>Gp.2</th>
<th>Gp.3</th>
<th>$F_a$</th>
<th>$W_{ab}$</th>
<th>$W_{bc}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual living arrange.</td>
<td>2.38</td>
<td>2.42</td>
<td>4.60</td>
<td>1.30</td>
<td>-.05</td>
<td>.13</td>
</tr>
<tr>
<td>Preferred living arrange.</td>
<td>4.60</td>
<td>4.12</td>
<td>4.44</td>
<td>.96</td>
<td>.18</td>
<td>.00</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>2.30</td>
<td>1.80</td>
<td>1.80</td>
<td>1.31</td>
<td>-.26d</td>
<td>.06</td>
</tr>
<tr>
<td>Birth order</td>
<td>.30</td>
<td>.10</td>
<td>.24</td>
<td>3.21e</td>
<td>-.11</td>
<td>.69</td>
</tr>
<tr>
<td>Father's education</td>
<td>4.12</td>
<td>3.98</td>
<td>4.46</td>
<td>1.25</td>
<td>.01</td>
<td>.18</td>
</tr>
<tr>
<td>Mother's education</td>
<td>4.00</td>
<td>3.92</td>
<td>3.92</td>
<td>.06</td>
<td>-.05</td>
<td>-.08</td>
</tr>
<tr>
<td>Father's occupation</td>
<td>3.62</td>
<td>3.20</td>
<td>3.18</td>
<td>1.31</td>
<td>.02</td>
<td>.13</td>
</tr>
<tr>
<td>Mother's occupation</td>
<td>1.76</td>
<td>1.94</td>
<td>1.56</td>
<td>.43</td>
<td>-.04</td>
<td>.01</td>
</tr>
<tr>
<td>Father's pol. orien.</td>
<td>1.40</td>
<td>1.58</td>
<td>1.74</td>
<td>4.45e</td>
<td>.47c</td>
<td>-.17</td>
</tr>
<tr>
<td>Mother's pol. orien.</td>
<td>1.54</td>
<td>1.64</td>
<td>1.72</td>
<td>1.25</td>
<td>-.38c</td>
<td>.07</td>
</tr>
<tr>
<td>Student's pol. orien.</td>
<td>1.80</td>
<td>2.06</td>
<td>2.25</td>
<td>7.20g</td>
<td>.37c</td>
<td>.07</td>
</tr>
<tr>
<td>Size of &quot;home town&quot;</td>
<td>3.34</td>
<td>3.90</td>
<td>4.30</td>
<td>3.06e</td>
<td>.10</td>
<td>-.06</td>
</tr>
<tr>
<td>Urban/rural setting</td>
<td>1.40</td>
<td>1.26</td>
<td>1.14</td>
<td>3.31e</td>
<td>-.19</td>
<td>-.06</td>
</tr>
<tr>
<td>Ethnic group ident.</td>
<td>.18</td>
<td>.12</td>
<td>.18</td>
<td>.44</td>
<td>-.11</td>
<td>-.11</td>
</tr>
<tr>
<td>Cultural impact</td>
<td>.34</td>
<td>.22</td>
<td>.42</td>
<td>2.33</td>
<td>.44c</td>
<td>.00</td>
</tr>
<tr>
<td>Weighted cultural impact</td>
<td>.76</td>
<td>.38</td>
<td>.72</td>
<td>2.37</td>
<td>-.17</td>
<td>.21</td>
</tr>
<tr>
<td>Size of high school</td>
<td>4.36</td>
<td>4.70</td>
<td>4.84</td>
<td>1.32</td>
<td>-.07</td>
<td>.16</td>
</tr>
<tr>
<td>Size of graduation class</td>
<td>2.88</td>
<td>3.14</td>
<td>3.18</td>
<td>1.59</td>
<td>.10</td>
<td>-.14</td>
</tr>
<tr>
<td>Student subculture</td>
<td>2.44</td>
<td>2.76</td>
<td>2.96</td>
<td>5.42f</td>
<td>.20</td>
<td>-.07</td>
</tr>
<tr>
<td>OSU financial aid</td>
<td>.24</td>
<td>.20</td>
<td>.16</td>
<td>.49</td>
<td>.02</td>
<td>.14</td>
</tr>
<tr>
<td>Non-OSU financial aid</td>
<td>.14</td>
<td>.20</td>
<td>.12</td>
<td>.66</td>
<td>-.14</td>
<td>-.46</td>
</tr>
<tr>
<td>Part-time work status</td>
<td>.60</td>
<td>.86</td>
<td>.50</td>
<td>1.92</td>
<td>-.01</td>
<td>-.18</td>
</tr>
<tr>
<td>Choice of school</td>
<td>6.52</td>
<td>6.66</td>
<td>7.64</td>
<td>6.56f</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Degree plans</td>
<td>2.58</td>
<td>2.62</td>
<td>2.46</td>
<td>.23</td>
<td>-.02</td>
<td>-.02</td>
</tr>
<tr>
<td>Decided/undecided</td>
<td>.28</td>
<td>.14</td>
<td>.38</td>
<td>3.83e</td>
<td>.11</td>
<td>.11</td>
</tr>
<tr>
<td>Occupational choice</td>
<td>2.82</td>
<td>4.12</td>
<td>2.70</td>
<td>5.56f</td>
<td>.02</td>
<td>-.09</td>
</tr>
</tbody>
</table>

a Degrees of freedom are 2 and 147
b Total trace = 74.24% $\lambda = .534$ F = 1.73 with 244 and
52 df ($p<.005$)
Root 1 = 61.85% of Trace $X_2 = 51.20$ with 27 df ($p<.005$)
Root 2 = 38.15% of Trace $X_2 = 33.70$ with 25 df ($p>.05$)
c Large contributor
d Marginal contributor
e Significant at .05 level
f Significant at .01 level
g Significant at .001 level

self-actualizing females tended to have fathers whom they saw as being more moderate than did the middle or low self-actualizing females. Low self-actualizing females tended
to see their fathers as more conservative than did the middle or high self-actualizing groups. This seems to indicate that females who were high self-actualizers tended to come from homes where the father was more moderate than the fathers of low self-actualizing females. The fathers of the middle group fell between the fathers of the high and low self-actualizing groups in terms of their political orientation.

On Cultural impact the results were somewhat confusing. The high self-actualizing group had the highest mean on this variable, meaning that a higher percentage of females who were high self-actualizers had close relatives who were immigrants. The lowest percentage was found for the middle group and not for the low group, as might be expected. However, this variable did make a large contribution to significant discrimination between the female groups.

On Mother's political orientation the high self-actualizing females tended to have mothers whom they saw as being more moderate than did the middle or low groups of females. Low self-actualizing females tended to see their mothers as being more conservative than did the females in the middle or high self-actualizing groups. This would seem to indicate that females who were high in self-actualization tended to come from homes where the mother was more of a moderate than from homes where the mother was
more of a conservative.

On Student's political orientation, the high self-actualizing females tended to see themselves as slightly more liberal than the middle or low groups. The low group tended to see themselves as slightly more conservative than the middle or high self-actualizing females.

One variable, Dissatisfaction, made a marginal contribution to the first discriminant root and therefore to the discrimination between the three female groups (discriminant weight of .26). Dissatisfaction dealt with a student's dissatisfaction with his living arrangement. This variable was obtained by taking the difference between Preferred living arrangement and Actual living arrangement scores. Table X indicates that the low self-actualizing group had the highest score and thus the most dissatisfaction with their living arrangement. The middle and high self-actualizers did not differ in their scores.

Only two of the contributing variables, Student's political orientation, and Father's political orientation, also had a significant difference between the three female groups as single variables. The other three variables, Cultural impact, Mother's political orientation, and Dissatisfaction, did not have significant differences as single variables but did contribute to the discrimination between the female groups.
Six variables, Choice of school, Occupational choice, Student subculture, Decided/undecided, Urban/rural setting, and Birth order, had significant differences between the female groups as single variables but did not make large or marginal contributions to the discrimination between the three groups of females.

Additional information can be gathered concerning the relationship between groups by examining the centroids of the groups within discriminant space. A group centroid is simply an axis within discriminant space which encompasses multivariate means for a specific group. The number of dimensions of the discriminant space are determined by subtracting one from the number of groups being considered. In this study, therefore, discriminant space had two dimensions.

The decision was made to examine only the group centroids for the theory related variables, since the demographic/biographic variables had not been effective at discriminating between the male groups. Table XI indicates that on the theory related variables the groups of males and females were separated from each other in two-dimensional space.

No direct comparison between the male and female groups can be made from the data contained in Table XI because the two groups had been analyzed separately. The reader should note that roots I and II for the male and
TABLE XI. CENTROIDS IN D SPACE FOR MALE AND FEMALE GROUPS ON THE THEORY RELATED VARIABLES

<table>
<thead>
<tr>
<th>Group</th>
<th>Males Discriminant Functions</th>
<th>Females Discriminant Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>1</td>
<td>-14.04</td>
<td>17.36</td>
</tr>
<tr>
<td>2</td>
<td>-19.79</td>
<td>13.01</td>
</tr>
<tr>
<td>3</td>
<td>-22.30</td>
<td>18.63</td>
</tr>
</tbody>
</table>

female groups are not the same. The different items which loaded these roots are shown in Tables VII and VIII.

The high and low male and female groups were analyzed on the theory related variables to compare their centroids. The resulting discriminant space for this analysis was three-dimensional.

Table XII contains the results of the analysis. The low female group (group 1), high female group (group 2), low male group (group 3) and the high male group (group 4) were separated from each other in three-dimensional discriminant space. The four groups were all located in the same quadrant, however, and not in different quadrants as might be concluded from Table XI.

TABLE XII. CENTROIDS IN D SPACE FOR HIGH AND LOW MALE AND FEMALE GROUPS ON THE THEORY RELATED VARIABLES

<table>
<thead>
<tr>
<th>Group</th>
<th>Males Discriminant Functions</th>
<th>Females Discriminant Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>1</td>
<td>7.20</td>
<td>27.57</td>
</tr>
<tr>
<td>2</td>
<td>11.90</td>
<td>33.03</td>
</tr>
</tbody>
</table>

*R Roots I and II were significant at the .001 level, Root III was not significant (p > .05).
Hypothesis VI

Combined theory related and demographic variables were analyzed to test both Hypothesis VI and Hypothesis VII. Combined variables had previously been defined as those variables which had been found to be discriminating (making a large or marginal contribution to a significant discriminant root), to have a significant difference between groups as single variables (univariate F ratio) but not make a large or marginal contribution to a significant discriminant root, or other variables which appeared to have potential as discriminating variables (large contributors to nonsignificant discriminant roots). The results of the analysis are contained in Table XIII. The demographic/biographic variables had not previously discriminated between the male groups. However, those demographic variables which had significant univariate F ratios or made large or marginal contributions to the first discriminant root and made a large contribution to the second root were included.

Sixteen theory related and demographic/biographic variables were identified and analyzed for the male groups. The effectiveness of discrimination was significant for the 16 combined variables ($\lambda = .582, F = 2.76, df = 266, 34 p< .001$). Rao's (1952) technique of chi-square indicated that only the first discriminant was significant ($p< .001$).
The 16 combined variables accounted for 63.73% of the trace for the male groups. The first discriminant root accounted for 72.47% of the trace while the second root accounted for 27.53% of the trace.

Two variables, Student's political orientation, and Part-time work status, made large contributions to the first discriminant root (discriminant weights of .59 and .55). An examination of Table XIII reveals that the high self-actualizing males had the highest mean score on Student's political orientation while the low group had the low score. The score for the middle group fell between the scores of the high and low groups. The mean scores for the three groups indicate that the high self-actualizing males tended to be more liberal, the low scoring males more conservative, and the middle groups more moderate in their political orientations.

On Part-time work status the results were somewhat confusing. The low group had the lowest score but the middle and high groups had very similar scores, with the middle group having a slightly higher group mean. Due to the way this variable was scored, it was not possible to tell how the males differed in terms of number of hours worked per week.

Two variables, Size of graduation class, and Preferred living arrangement, made marginal contributions to the first discriminant root although they both had slightly
TABLE XIII. MEANS, UNIVARIATE F TESTS AND DISCRIMINANT WEIGHTS OF SELECTED THEORY RELATED AND DEMOGRAPHIC/BIOGRAPHIC VARIABLES FOR MALES

<table>
<thead>
<tr>
<th>Variables</th>
<th>Gp.1</th>
<th>Gp.2</th>
<th>Gp.3</th>
<th>Fa</th>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-satisfaction</td>
<td>107.14</td>
<td>103.94</td>
<td>109.90</td>
<td>1.95</td>
<td>- .01</td>
<td>- .06</td>
</tr>
<tr>
<td>Self-criticism</td>
<td>34.06</td>
<td>36.20</td>
<td>37.70</td>
<td>5.33f</td>
<td>.11</td>
<td>- .03</td>
</tr>
<tr>
<td>Moral-Ethical Self</td>
<td>70.00</td>
<td>65.56</td>
<td>66.86</td>
<td>3.28e</td>
<td>- .12</td>
<td>- .09</td>
</tr>
<tr>
<td>Personal Self</td>
<td>65.22</td>
<td>65.78</td>
<td>66.44</td>
<td>.26</td>
<td>.16</td>
<td>.08</td>
</tr>
<tr>
<td>Family Self</td>
<td>69.06</td>
<td>68.22</td>
<td>66.02</td>
<td>1.37</td>
<td>- .01</td>
<td>.06</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>66.12</td>
<td>65.54</td>
<td>65.44</td>
<td>.08</td>
<td>- .02</td>
<td>.03</td>
</tr>
<tr>
<td>Intellectual</td>
<td>25.52</td>
<td>26.70</td>
<td>30.68</td>
<td>3.70e</td>
<td>.04</td>
<td>- .03</td>
</tr>
<tr>
<td>Religion</td>
<td>25.20</td>
<td>17.86</td>
<td>14.60</td>
<td>8.25g</td>
<td>- .04</td>
<td>- .03</td>
</tr>
<tr>
<td>Preferred living arr.</td>
<td>4.00</td>
<td>4.50</td>
<td>4.80</td>
<td>3.21e</td>
<td>.28d</td>
<td>.31</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>.74</td>
<td>.94</td>
<td>1.54</td>
<td>3.40e</td>
<td>.08</td>
<td>- .36</td>
</tr>
<tr>
<td>Ethnic group ident.</td>
<td>.14</td>
<td>.22</td>
<td>.26</td>
<td>.51</td>
<td>- .21</td>
<td>.03</td>
</tr>
<tr>
<td>Cultural impact</td>
<td>.44</td>
<td>.38</td>
<td>.36</td>
<td>.36</td>
<td>- .23</td>
<td>.06</td>
</tr>
<tr>
<td>Size of grad. class</td>
<td>3.02</td>
<td>3.14</td>
<td>3.86</td>
<td>1.47</td>
<td>.31d</td>
<td>.35</td>
</tr>
<tr>
<td>Student's pol. orien.</td>
<td>1.92</td>
<td>2.02</td>
<td>2.28</td>
<td>4.81f</td>
<td>.59c</td>
<td>- .40</td>
</tr>
<tr>
<td>Student subculture</td>
<td>2.39</td>
<td>2.28</td>
<td>2.74</td>
<td>3.08e</td>
<td>- .04</td>
<td>- .58</td>
</tr>
<tr>
<td>Part-time work status</td>
<td>.42</td>
<td>.88</td>
<td>.86</td>
<td>3.08e</td>
<td>.55c</td>
<td>.35</td>
</tr>
</tbody>
</table>

a  Degrees of freedom are 2 and 147
b  Total trace = 63.73%  $\lambda = 582$  $F = 2.76$ with 266 and 30 df ($p < .001$)
   Root 1 = 72.47% of Trace  $X_2 = 53.54$ with 16 df ($p < .001$)
   Root 2 = 27.53% of Trace  $X_2 = 22.79$ with 14 df ($p > .05$)
c  Large contributor
d  Marginal contributor
e  Significant at .05 level
f  Significant at .01 level
  Significant at .001 level

ger  higher discriminant weights on the nonsignificant second discriminant root. On both of the variables a progression on the group means was found from the low group to the high group. The high self-actualizing males seemed to prefer a different type of living arrangement and to come from larger graduation classes than did the low self-actualizing males. The middle group was between the high and low
groups on both of these variables.

Nine of the 16 combined variables had significant differences between the groups as individual variables but only five variables actually made contributions to the discrimination between the three male groups. It is interesting to note that the two theory related variables, Personal Self and Self-criticism, which had been large contributors to the discrimination of the male groups in the prior analysis of the theory related variables, did not contribute to the discrimination between the male groups when combined with selected demographic/biographic variables. None of the theory related variables were large or marginal contributors to either the significant or the nonsignificant discriminant roots. This fact, and the fact that the combined variables (the demographic/biographic variables in reality) significantly discriminated between the male groups, led to the rejection of null Hypothesis VI as untenable. Hypothesis VI stated that the theory related and demographic/biographic variables used in the study would not differ in their ability to discriminate between groups of males who differed in their level of self-actualization.

**Hypothesis VII**

Twenty-three theory related and demographic/biographic variables were analyzed for the female groups. The results of the analysis are contained in Table XIV.
TABLE XIV. MEANS, UNIVARIATE F TESTS AND DISCRIMINANT
WEIGHTS OF SELECTED THEORY RELATED AND DEMO-
GRAPHIC/BIOGRAPHIC VARIABLES FOR FEMALES

<table>
<thead>
<tr>
<th>Variables</th>
<th>Gp.1</th>
<th>Gp.2</th>
<th>Gp.3</th>
<th>Fa</th>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior</td>
<td>107.30</td>
<td>111.34</td>
<td>114.82</td>
<td>4.37e</td>
<td>.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>Self-criticism</td>
<td>35.30</td>
<td>36.40</td>
<td>37.74</td>
<td>1.93</td>
<td>.04</td>
<td>-0.01</td>
</tr>
<tr>
<td>Physical Self</td>
<td>65.52</td>
<td>69.62</td>
<td>69.80</td>
<td>4.25e</td>
<td>.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>Moral-Ethical Self</td>
<td>68.54</td>
<td>69.36</td>
<td>70.54</td>
<td>.80</td>
<td>.03</td>
<td>-0.01</td>
</tr>
<tr>
<td>Personal Self</td>
<td>61.40</td>
<td>65.50</td>
<td>67.54</td>
<td>6.02f</td>
<td>.05</td>
<td>.01</td>
</tr>
<tr>
<td>Social Self</td>
<td>65.00</td>
<td>70.54</td>
<td>71.42</td>
<td>9.35g</td>
<td>.01</td>
<td>.04</td>
</tr>
<tr>
<td>Total Positive Sc.</td>
<td>329.58</td>
<td>344.88</td>
<td>348.54</td>
<td>3.67e</td>
<td>-0.01</td>
<td>.01</td>
</tr>
<tr>
<td>Material</td>
<td>12.50</td>
<td>13.00</td>
<td>11.28</td>
<td>.77</td>
<td>.02</td>
<td>.03</td>
</tr>
<tr>
<td>Power</td>
<td>12.16</td>
<td>11.86</td>
<td>12.20</td>
<td>.06</td>
<td>.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>Achievement motive</td>
<td>47.98</td>
<td>49.84</td>
<td>51.88</td>
<td>4.16e</td>
<td>.02</td>
<td>-0.01</td>
</tr>
<tr>
<td>Dissatisfaction</td>
<td>2.30</td>
<td>1.80</td>
<td>1.80</td>
<td>1.31</td>
<td>-0.21</td>
<td>.08</td>
</tr>
<tr>
<td>Birth order</td>
<td>.30</td>
<td>.10</td>
<td>.24</td>
<td>3.21e</td>
<td>-0.13</td>
<td>-0.71c</td>
</tr>
<tr>
<td>Father's pol. orien.</td>
<td>1.40</td>
<td>1.58</td>
<td>1.78</td>
<td>4.45e</td>
<td>.52c</td>
<td>-0.01</td>
</tr>
<tr>
<td>Mother's pol. orien.</td>
<td>1.54</td>
<td>1.64</td>
<td>1.72</td>
<td>1.25</td>
<td>-0.34d</td>
<td>.17</td>
</tr>
<tr>
<td>Student's pol. orien.</td>
<td>1.80</td>
<td>2.06</td>
<td>2.24</td>
<td>7.20g</td>
<td>.47c</td>
<td>.01</td>
</tr>
<tr>
<td>Size of &quot;home town&quot;</td>
<td>3.34</td>
<td>3.90</td>
<td>4.30</td>
<td>3.60e</td>
<td>.09</td>
<td>.06</td>
</tr>
<tr>
<td>Urban/rural setting</td>
<td>1.40</td>
<td>1.26</td>
<td>1.14</td>
<td>3.31e</td>
<td>-0.21</td>
<td>.02</td>
</tr>
<tr>
<td>Cultural impact</td>
<td>.34</td>
<td>.22</td>
<td>.42</td>
<td>2.33</td>
<td>.26</td>
<td>-0.46c</td>
</tr>
<tr>
<td>Student subculture</td>
<td>2.44</td>
<td>2.76</td>
<td>3.96</td>
<td>5.42f</td>
<td>.31d</td>
<td>.03</td>
</tr>
<tr>
<td>Non-OSU financial aid</td>
<td>.14</td>
<td>.20</td>
<td>.12</td>
<td>.66</td>
<td>-.10</td>
<td>.47c</td>
</tr>
<tr>
<td>Choice of school</td>
<td>6.52</td>
<td>6.66</td>
<td>7.64</td>
<td>6.56f</td>
<td>.13</td>
<td>.10</td>
</tr>
<tr>
<td>Decided/undecided</td>
<td>.28</td>
<td>.14</td>
<td>.38</td>
<td>3.83e</td>
<td>.34d</td>
<td>.07</td>
</tr>
<tr>
<td>Occupational choice</td>
<td>2.82</td>
<td>4.12</td>
<td>2.70</td>
<td>5.56f</td>
<td>.04</td>
<td>.11</td>
</tr>
</tbody>
</table>

a Degrees of freedom are 2 and 147
b Total trace = 100% \( \lambda = .433 \) \( F = 3.15 \) with 254 and 42 df \( p < .001 \)

Root 1 = 72.88% of Trace \( X^2 = 80.15 \) with 22 df \( p < .001 \)
Root 2 = 27.12% of Trace \( X^2 = 35.46 \) with 20 df \( p < .05 \)
c Large contributor
d Marginal contributor
e Significant at .05 level
f Significant at .01 level
g Significant at .001 level

The 23 combined variables were effective in discriminating between the three female groups \( \lambda = .433, F = 3.15, \)
df = 254, 42, \( p < .001 \). Rao's (1952) technique of chi-
square indicated that both of the discriminant roots were
significant ($p<.001$ for the first root and $p<.025$ for the second root). The 23 combined variables accounted for 100% of the trace for the female groups. The first root accounted for 72.88% of the trace while the second root accounted for 27.12% of the trace. Since both of the discriminant roots were significant, variables making large or marginal contributions to either of the roots were considered.

Table XIV indicates that on the first discriminant root two variables, Father's political orientation and Student's political orientation, made large contributions (discriminant weights of .52 and .47). Since these two variables had earlier contributed to the discrimination between the female groups no further comment on them seemed necessary.

Three variables, Mother's political orientation, Decided/undecided, and Student subculture, made marginal contributions to the first discriminant root. It is interesting to note that Mother's political orientation had been a large contributor in a previous analysis.

The three variables which made large contributions to the second discriminant root were Birth order, Non-OSU financial aid, and Cultural impact (discriminant weights of .71, .47 and .46). Cultural impact was the only variable of the three which had made a contribution to the discrimination between the female groups in an earlier analysis.
The confusing results on Cultural impact was discussed in an earlier section. The results on the other two variables, Birth order and Non-OSU financial aid, were equally confusing. On Birth order the lowest score was achieved by the middle group, while on Non-OSU financial aid the highest score was achieved by the middle group. These two variables did, nonetheless, make large contributions to the significant second discriminant root.

Table XIV reveals that five of the eight variables contributing to the two discriminant roots also had significant differences between the female groups as single variables. The other three contributing variables did not have significant differences between the groups as single variables but still contributed to the discrimination between the female groups. Ten other variables had significant differences between the groups as single variables but did not contribute to the discrimination between the female groups.

Table XIV also reveals that none of the theory related variables which had previously contributed to the discrimination between the female groups contributed in the analysis of the combined variables. This fact, and the fact that the 23 combined variables (the demographic-biographic variables in reality) discriminated between the female groups at well beyond the .001 level and accounted for 100% of the trace, led to the rejection of null Hypothesis VII.
Hypothesis VII stated that the theory related and demographic/biographic variables used in the study do not differ in their ability to discriminate between groups of females who differ in their level of self-actualization.

Summary

Data were presented which led to the rejection of six of the seven null Hypotheses examined in the study. Null Hypotheses I, II, III, V, VI and VII were rejected as untenable. In examining the first null Hypothesis the data revealed that the males and females used in the study did differ in their scores on the I scale of the POI (p<.01), with the females earning the high scores.

In examining null Hypotheses II and III it was discovered that the theory related variables did discriminate between groups of males (p<.005) and groups of females (p = .05) who differed in their level of self-actualization. The theory related variables which made large or marginal contributions to the discrimination of the males were Personal Self and Self-criticism. For the females, Social Self, Self-criticism, Personal Self, Physical Self and Moral-Ethical Self were the variables which made large or marginal contributions to the discrimination between the groups.

Null Hypothesis IV, which stated that the demographic/biographic variables employed in the study would not discriminate between the male groups, was accepted (p>.05).
In other words, the 26 demographic/biographic variables did not effectively discriminate between the three groups of males. The demographic/biographic variables did successfully discriminate between the groups of females ($p < .005$), however, leading to the rejection of null Hypothesis V. Father's political orientation, Cultural impact, Mother's political orientation, Student's political orientation, and Dissatisfaction were the variables which contributed to the discrimination between the female groups.

In examining null Hypotheses VI and VII, selected theory related and demographic/biographic variables were combined and analyzed to determine the relative discriminating ability of the two types of variables. The demographic/biographic variables were the largest contributors to the discrimination between the groups of males and females. Since males and females were significantly discriminated by the combined variables ($p < .001$ with 63.73% of trace for the males, $p < .001$ with 100% of trace for the females) null Hypotheses VI and VII were rejected as untenable. Student's political orientation, Part-time work status, Size of graduation class, and Preferred living arrangement were the variables which contributed to the discrimination of the male groups. The variables which contributed to the discrimination of the female groups were Father's political orientation, Student's political
orientation, Mother's political orientation, Decided/un-decided, Student subculture, Birth order, Non-OSU financial aid, and Cultural impact.
V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Chapter five consists of three sections: Summary (including Literature, Methods and Procedure, and Findings), Conclusions, and Recommendations. Limitations connected with the study are combined with the conclusions, since many of the limitations relate directly to specific conclusions.

Summary

Literature

The literature concerning self-actualization was first reviewed. Three personality dimensions or constructs were identified which seemed to be related to self-actualization. They were: self-concept, values, and achievement motivation. These three areas were then reviewed.

The review of the literature also identified a number of demographic/biographic variables which appeared to be related in some way to self-actualization. These variables fell into two categories: those which appeared to be concomitants of self-actualization, and those of a pragmatic nature which appeared as if they might reflect a differential response according to level of self-actualization.

The concomitant variables included: birth order, socio-economic status (including parent's education and occupation), parents' political orientation, cultural
identification and certain geographic differences (urban/rural status, size of "home town," size of high school, and size of graduation class). The reflective variables included: living arrangement, student subculture, student's political orientation, degree plans, choice of school, occupational choice, part-time work status, and financial aid status.

The demographic/biographic variables reviewed were shown to be related in some way to self-actualization and/or to one or more of the theory related areas.

Methods and Procedure

The study involved a separate examination of three groups each of male and female freshmen enrolled at Oregon State University. Five hundred and forty freshmen (277 males, 263 females) were administered the Personal Orientation Inventory (POI) during the first five weeks of the fall term. The resulting pools were screened to insure that the subjects were single, first term freshmen, between 18 and 19 years of age, and citizens of the United States. Members of racial and social minorities were included due to their small representation among the freshmen attending Oregon State University. Final pools of 242 male and 238 female freshmen were available after the screening had been completed.

Six groups (three each for the males and females)
were then drawn on the basis of the students' raw scores on the I scale of the POI. The means for these groups fell at or close to the 12th, 50th and 90th percentiles of the total distributions of I scale scores for both males and females. The number of students selected for each group was as follows: 56 subjects for the high self-actualizing groups, 56 for the middle groups, and 59 for the low self-actualizing groups. For the analysis of the data, 50 subjects were used from each group (150 males and 150 females) for a total N of 300.

The six groups were then administered a battery of four instruments: the Tennessee Self-Concept Scale (TSCS), the Differential Value Profile (DVP), Mehrabian's Achievement Scale for Males/Females (MASM/MASF), and a Personal Data Questionnaire (PDQ) which the writer had constructed. The number of males and females who participated in the second phase of the study was considered acceptable (90.7% for males, 93.0% for females).

The two distributions of I scale scores for the males and females were examined, using a test of means (the t-Test) and a nonparametric test based on rank-ordering (the Mann-Whitney Test). Null Hypotheses II, III, IV, V, VI and VII dealt with the ability of the theory related and/or demographic/biographic variables to discriminate between the male and female groups. They were then investigated by using multiple discriminant analysis.
Findings

Null Hypothesis I stated that the males and females would not differ on their scores on the criterion measure (the I scale of the POI). The t-Test and the Mann-Whitney Test were used to test the first Hypothesis. The results of both tests ($t = 2.77$, $Z = 2.72$) were significant beyond the .01 level of significance. The results seemed to indicate that the males and females had different scores on the I scale (with the females obtaining the higher scores), and that the distributions of their scores were not differentially skewed. Null Hypothesis I was therefore rejected.

Null Hypothesis II stated that the male groups would not differ on the theory related variables used in the study. Hypothesis II was rejected at beyond the .005 level of significance. Of the 17 theory related variables, Personal Self, Self-criticism and Moral-Ethical Self were the variables making the largest contributions to the significant discriminant root. In other words, when combined with the other 14 theory related variables, Personal Self, Self-criticism and Moral-Ethical Self were the largest contributors to the discrimination between the three male groups.

Null Hypothesis III stated that the female groups would not differ on the theory related variables. Hypothesis III was rejected at the .05 level of significance.
Of the 17 theory related variables, Social Self, Personal Self and Self-criticism were large contributors to the discrimination between the female groups. Physical Self and Moral-Ethical Self made marginal contributions to the discrimination between the female groups.

Null Hypothesis IV stated that the males would not differ on the demographic/biographic variables. The 26 demographic/biographic variables were not effective in discriminating between the male groups at the .05 level, therefore Hypothesis IV was accepted. Five of the demographic-biographic variables had significant differences between the male groups as single variables even though they did not effectively discriminate between the male groups.

Null Hypothesis V stated that the groups of females would not differ on the demographic/biographic variables. Certain of the demographic/biographic variables did successfully discriminate between the female groups at the .005 level of significance, leading to the rejection of Hypothesis V. Four of the 26 demographic/biographic variables, Father's political orientation, Cultural impact, Mother's political orientation, and Student's political orientation, made large contributions to the discrimination of the female groups. One variable, Dissatisfaction, made a marginal contribution to the significant first discriminant root.
Null Hypotheses VI and VII stated that theory related and demographic/biographic variables would not differ in their ability to discriminate between the male and female groups. Variables which had previously been identified as discriminating (making a large or marginal contribution to a significant discriminant root), as having significance between groups as a single variable (reflected by the univariate F ratio), or as otherwise having potential as a discriminating variable (making a large contribution to a nonsignificant discriminant root), were combined for the male and female groups. The resulting variables (16 for the males, 23 for the females) were then analyzed separately for the males and the females.

For the males, two variables, Student's political orientation and Part-time work status, made large contributions to the discrimination between the three groups. Two variables, Size of graduation class and Preferred living arrangement, made marginal contributions to the discrimination between the groups.

For the females, five variables, Father's political orientation, Student's political orientation, Birth order, Non-OSU financial aid and Cultural impact, made large contributions to the two significant discriminant roots. Three variables, Mother's political orientation, Decided/undecided and Student subculture, made marginal contributions to the first discriminant. None of the variables
made marginal contributions to the second discriminant root.

The combined variables were effective in discriminating between the groups of males and females at beyond the .001 level of significance. The combined variables accounted for 63.73% of the trace for the males and 100% of the trace for the females. The variables which made large and marginal contributions to the significant discriminant roots were all demographic/biographic variables. This indicated that in the analysis of the combined variables the demographic/biographic variables were more effective in discriminating between groups of males and females who differed in their level of self-actualization than were the theory related variables. Null Hypotheses VI and VII were therefore rejected as untenable.

Before proceeding to the Conclusions, the writer feels it necessary to make some additional comment on the effects of variance and variable interaction on the level of contribution which a variable made. In the presentation of the results for null Hypotheses II through VII, several variables were identified which had a significant univariate F ratio but did not make a large or a marginal contribution to a discriminant root, or which did make a large or marginal contribution to a discriminant root but did not have a significant univariate F ratio.

There are at least two factors which determined the
contribution a variable made to the discrimination between groups: (1) the degree and direction in which a particular variable was correlated with the other variables used in the analysis, and (2) the size of the variance for the variable. Cooley and Lohnes (1962) gave an example of how two variables (A and B), which were negatively correlated, could interact to produce unexpected results. In their example, variable A (which had a significant difference between groups) was partialed out by variable B (which did not have a significant difference between groups), making B the better discriminator even though it had no significance as a single variable. Concerning the effects of size of variance, Hope (1968) and Morrison (1967) pointed out that the variables which had the greatest variance between groups (reflected by group means), and which also had the least within group variance, would be contributors to the discrimination between groups.

In the results of the examination of Hypotheses VI and VII it was noted that several theory related variables, which had been contributors to the discrimination between groups in Hypotheses II and III, did not contribute to the discrimination of the groups when combined with other variables. It was also noted that several demographic/biographic variables which had not contributed to the discrimination between groups in Hypotheses IV and V made contributions when included in the combined variables. These
seemingly contradictory results again had to do with the nature of the variables included in the analyses (their interactions and their variances).

**Conclusions**

The following conclusions were drawn as the result of data presented in this study.

1. The males and females used in the study were significantly different in their scores on the I scale of the POI. The finding of a sex difference was unexpected since previous studies by Shostrom (1966) and Jenkins (1966) indicated that no sex differences had been found to exist on the I scale of the POI. The sex difference which was found to exist at Oregon State University could have been due to the nature of the institution and/or to the fact that more of the females were enrolled in Humanities and Social Studies and Education.

2. Both the males and females used in the study had higher I scale scores than Shostrom's (1966) norm group of 2,607 freshmen. They also had higher scores than a group of freshmen tested by Jenkins (1966). The higher scores earned by the Oregon State University freshmen might again have been due to the nature of the institution or might simply have been a reflection of a general increase in level of self-actualization among students as a result of more permissive homes, more critical and questioning
orientations, and more emphasis on personal meaning and individual growth.

It is important to note that the freshmen used in this study were not a random sample of the total freshman population at Oregon State University. Therefore, generalizations to the total freshman population at Oregon State University and to other freshman populations need to be made with some degree of caution.

3. Males who had different levels of self-actualization seemed to have differences in their concepts of themselves. High self-actualizing males tended to have more positive feelings of adequacy as persons and to be more open to self-criticism than males in the middle or low self-actualizing groups. The low group males were low on both of these characteristics. The groups also differed in the way they viewed themselves from a moral-ethical perspective. The results on this variable are somewhat confusing, however, because the middle group, not the high or low group, had the lowest score. It appeared that low self-actualizers had a more positive image of themselves in terms of their religious lives and moral-ethical frameworks than did the middle and high self-actualizing males.

Of the three theory related variables making large contributions to the discrimination between the male groups, Personal Self was the largest contributor, followed by Self-criticism and Moral-Ethical Self (discriminant
weights of .67, .53, and .39 respectively).

4. Females who were high self-actulizers emerged as having more positive feelings of adequacy in their social interactions with others, having more positive feelings of adequacy as persons, and being more open to self-criticism. The high self-actualizing females also tended to have more positive concepts of their bodies and of themselves as physical and sexual beings, and to view themselves more positively from a moral-ethical frame of reference than did the middle or low self-actualizers. The low self-actualizing females were low on the above listed characteristics while the middle group fell between the high and low groups.

Of the five theory related variables which contributed to the discrimination between the three female groups, Social Self seemed to be the most important contributor, followed by Self-criticism, Personal Self, Physical Self, and Moral-Ethical Self (discriminant weights of .56, .46, .40, .30, and .29 respectively).

5. The males and females differed considerably on the theory related variables. Personal Self made the greatest contribution to the discrimination of the male groups while Social Self made the largest contribution for the females. The males and females differed on many of the other theory related variables in terms of the significant differences the variables had between the groups.
(univariate F ratio), and in size and direction of the discriminant weights.

6. The males were more effectively discriminated by the theory related variables ($p<.005$) than were the females ($p = .05$). The amount of trace accounted for by the theory related variables was low for both the males (54.96%) and the females (43.37%).

7. In the analyses of the theory related variables, the variables which contributed to the discrimination between the groups of males and females were variables measuring dimensions of self-concept. This would seem to indicate that self-concept and self-actualization are related in an important way.

8. The fact that none of the variables relating to values or to achievement motive contributed to the discrimination of the males and females might be due to the fact that the groups did not actually differ on these variables. It is also possible, however, that (1) the instruments used to measure values and achievement motive lacked the precision necessary to detect existing differences, or (2) that the discriminating nature of the self-concept variables were such that in their interaction with the other variables they partialed out whatever potential contribution the other variables might have otherwise made. For the males, for example, Religion might have been partialed out by Moral-Ethical Self, while Intellectual and
Aesthetic might have been partialed out by Personal Self. For the females, Achievement motive might have been partialed out by Social Self and Physical Self.

9. The findings related to the theory related variables for the males and females do agree with Maslow's (1954) findings, although he made no mention of a sex difference such as those found in this study. LeMay and Damm (1969) had indicated that a sex difference existed among freshman males and females in terms of personality differences related to Self-actualization.

10. The groups of males were not discriminated effectively by the demographic/biographic variables used in this study. This might have been due in part to the fact that the variable which dealt with occupational choice was poorly handled. Occupational training and choice are of primary importance to many college age males, and one would therefore expect this variable to make a large contribution to the discrimination between the groups of males. This was not the case. Five variables did have significant differences between the groups as individual variables but they were not effective in discriminating between the male groups.

11. The females were effectively discriminated by the demographic/biographic variables. The high self-actualizing females tended to come from homes where the parents were more moderate than the parents of the middle or low
self-actualizing females. The high self-actualizing females tended to see themselves as more liberal than the other females. Females in the low group seemed to be more conservative than females in the middle and high groups. A larger percentage of the high group females indicated that they had close relatives who were immigrants than the other two groups, but this finding is difficult to explain since the middle group, not the low group, had the lowest score. Finally, a lower percentage of the high and middle females were dissatisfied with their living arrangements than the low self-actualizing females.

12. For the females, demographic/biographic variables which had been thought to be possible concomitants to self-actualization were found to make the largest contributions to the discrimination between the three groups.

13. The females were more effectively discriminated by the demographic/biographic variables (p < .005) than were the males (p > .05). The demographic/biographic variables accounted for a fairly high percentage of the trace for the females (74.24%), but a relatively low percentage of trace (41.55%) for the males.

14. The fact that none of the demographic/biographic variables discriminated between the groups of males, and that only five of the variables made large or marginal contributions to the discrimination between the females, does not agree with earlier studies by Gibbs (1968, 1966) and
Mulford (1967). The different findings could have been due to the design of the study, the nature of the data collecting instrument (PDQ), or the method of analysis used. Of the three possibilities, the difference was more likely due to the design of the study and the method of analysis used. Three groups of males and three groups of females were analyzed, using a method of analysis which selected the smallest number of variables needed to identify group differences. The studies by Gibbs (1968, 1966) and Mulford (1967) used correlational analysis which examined the intercorrelation of the variables but did not make use of pooled data and did not take into account the interaction of the variables as did the present study.

15. When selected theory related and demographic/biographic variables were combined and analyzed for the groups of males and females the demographic/biographic variables were found to be more effective at discriminating between the groups than the theory related variables. This may have been caused by differences in the size of the variance for the theory related and demographic/biographic variables or by the nature of the variables included in the analysis. On the other hand, the results might have accurately reflected the relative discriminating power of the two types of variables.

16. In the combined analysis, the variables which made the largest contributions to the discrimination
between the male groups were the reflective demographic/biographic variables. It was therefore concluded that of the variables used in this study, the reflective demographic/biographic variables were the most effective at discriminating between the groups of males.

17. For the females, the reflective and concomitant demographic/biographic variables both contributed to the discrimination between the three groups. It was concluded that of the variables used in this study, the demographic/biographic variables were the most effective at discriminating between the female groups.

18. The combined variables effectively discriminated between the males and females at beyond the .001 level. They accounted for 63.73% of the trace for the males and 100% of the trace for the females. In other words, all of the variance for the female groups was accounted for by the demographic/biographic variables included in the combined variables.

19. The fact that nearly one-third of the variance for the males was not accounted for by the combined variables is an indication that other, more discriminating, variables remain to be found for the freshman males used in this study.

20. Finally, the theory related and demographic/biographic variables used in this study were but a small sample of the variables which might have been included.
The possibility that other, more discriminating variables or combinations of variables may exist cannot be overlooked.

Before closing this section it is necessary to identify two additional limitations which need to be considered when interpreting the above conclusions.

1. The high and low groups for both the males and females had rather large standard deviations on the I scale scores. This means that quite a range existed within these groups in terms of level of self-actualization. The possibility exists that some variables might have produced different results had the high and low groups been more homogeneous in terms of level of self-actualization.

2. The size of the variances, the interaction and the order of introduction of the variables, all had some effect on a variable's level of contribution. If these factors had been manipulated or changed, the results could have been different.

Recommendations

1. The normative data for freshman scores on the POI need to be re-examined to see if modifications are necessary. Freshman scores may have increased since 1966.

2. The sex difference found to exist on the I scale at Oregon State University needs to be investigated at other types of institutions to see if similar differences are generally found among freshmen or are peculiar to a
specific type of institution.

3. A similar study which uses larger initial groups of freshmen in order to obtain homogeneous groupings for the high and low categories, and which examines variables which are similar or identical to the ones examined in this study, needs to be conducted to expand upon and verify the findings of the present study.

4. The implications of the Social Self variable for females need to be studied in greater depth. A study could be conducted using a pre-post-testing design in which experimental and control groups are selected from among low self-actualizing females. The experimental group could then be introduced to a program designed to increase their social skills and level of interpersonal competency. The post-test would compare the level of self-actualization for the two groups to determine if the level of self-actualization for the experimental group had increased.

5. A similar study needs to be conducted for low self-actualizing males which investigates Personal Self.

6. Studies need to be conducted which investigate variables similar to those used in the present study, but which use different groupings of variables and different data collecting instruments in an attempt to determine the effects of size of variance and variable interaction. Studies of this nature would also help establish the generalizability of the present findings.
7. Studies need to be conducted which make use of a longitudinal design to study changes in self-actualization which take place during the college years. Non-college control groups should be employed.

8. Studies need to be conducted which investigate other dimensions of personality that might be related to self-actualization. For example: dogmatism, neuroticism, peer independence, autonomy and independence, spontaneity, resistance to conformity, and realistic orientation might be examined.

9. Several of the demographic/biographic variables need to be reinvestigated using different formats. The occupational choice variable could be re-examined by using Strong's classification of vocations taken from the Strong Vocational Interest Blank. Holland's vocational typology could also be used.

10. Studies need to be conducted to determine in what way(s), if any, low self-actualizing students differ from high self-actualizers in terms of their future occupations, their accomplishments, satisfaction with themselves, and the degree to which they make "full use of their potentials."

11. Studies need to be conducted to determine how students who attend different types of institutions (community colleges, small public and private colleges, and
large land grant universities and state universities) differ in their level of self-actualization.

12. Studies need to be conducted to determine if students who attend different types of institutions and who have different levels of self-actualization are discriminated by different variables.
BIBLIOGRAPHY


Green, Mary F. 1969. Attitudes, as measured by the Brown Self Report Inventory, of selected junior college freshmen toward the phonominal world and their correlation with achievement, attrition and changes which occur after one year. Doctoral dissertation. Tallahassee, Florida State University. 116 numb. leaves. (Abstracted in Dissertation Abstracts 30:4243. 1970)


APPENDICES
McClain (1970) found a high correlation (11 out of 14 possible scales) between instructor rating of the self-actualization level of counselor trainees and their scores on the POI. Graff et al. (1970) found the POI successful in identifying characteristics which helped to determine dormitory assistant effectiveness. They suggested that the POI might have predictive value in the selection of dormitory assistants.

In correlating the POI with other instruments, Knapp (1965) found the POI to correlate with low levels of neuroticism (p .05) as measured by Sysneck's Personality Inventory. Grossack, Armstrong and Lussiev (1966) found a positive correlation between self-actualization and Autonomy and Heterosexuality (from the Edwards Personal Preference Schedule) and Bright-Intelligent, Experiencing-Critical (from the Cattell Sixteen Personality Factor Test). They found negative correlations between self-actualization and Abasement, Order (EPPS) and Tense-Excitable, Aloof-Cold (Cattell 16PF). They concluded that while the findings were not surprising, they gave some assurance that the POI was a useful instrument for its intended use.

LeMay and Damm (1969) correlated scales of the POI with the EPPS. They found that three POI scales (SAV, Nc and Sy) were not related to any of the EPPS scales.
They also found that none of the POI scales were related to Need of Achievement, Intraception, Succorance, Nurturance, Endeavor, Heterosexuality or Exhibition scales of the EPPS. For men, I, Fr, S, SA and C related to Autonomy and Abasement while I, Ex, Fr, S, Sr, A and C were negatively correlated to abasement. For women, Tc, I, Ex, and C correlated with Change; I, Ex, S and A were negatively correlated with Order. The POI Acceptance of Aggression and EPPS Aggression scales were significantly correlated.

Studies by LeMay and Damm (1970) and Silverstein and Fisher (1968) examined the factors present in the POI. The general consensus seemed to be that there was a built-in factor system and that the POI scales might be measuring a "unitary" trait (LeMay and Damm, 1970).
APPENDIX B

SUPPLEMENTAL VALIDITY DATA FOR THE TENNESSEE SELF CONCEPT SCALE (TSCS)
SUPPLEMENTAL VALIDITY DATA FOR THE
TENNESSEE SELF CONCEPT SCALE (TSCS)

Wells and Bueno (1957) found that a group of alcoholics had significantly lower P scores, high V scores and more extreme D scores. Gividen (1959) found that a number of TSCS scores differentiated between soldiers who could weather paratrooper training and those who could not. Boston and Kew (1964) found significant differences between unwed mothers and a sample of normal women on virtually every scale of the instrument.

Atchinson (1958) and Lefeber (1965) found significant differences between delinquents and nondelinquents on all scales except SC and D. Gottshall (1969) found that imprisonment had a significant impact on self-concept. Changes were found on the Self acceptance, Moral-Ethical Self, and Total Variability at the .01 level.

Fitts (1965) found the TSCS to differentiate between a group characterized as high in personality integration and the norm groups. The group which was high in personality integration scored higher on virtually every scale.

In comparing the TSCS with the Minnesota Multiphasic Personality Inventory and the Edwards Personal Preference Schedule, Fitts (1965) reported finding "significant and appropriate correlations." Wayne (1963) reported a correlation of .68 between Total P and Izard's self rating Positive Affect Scale.
A similar correlation was reported earlier by Izard (1962). Quinn (1957) found a -.534 correlation between the TSCS and the Minnesota Teacher's Attitude Inventory. She concluded that since a high score on the MTAI reflected unhealthy attitudes toward children, teachers with positive self-concepts tended to have more desirable attitudes for teaching.

Finally, in a factor analysis of the TSCS, Vachianno and Strauss (1968) reported that although the TSCS was a complex instrument, the scales did provide the five proposed measures of the self: Physical, Moral-Ethical, Personal, Family, and Social when the factors were considered together.
APPENDIX C

THE PERSONAL DATA QUESTIONNAIRE (PDQ)
PERSONAL DATA QUESTIONNAIRE

The information requested below will be used for a statistical analysis of group differences. All information will be held in the strictest confidence. Your name will be used for identification purposes only.

1. Name

   Last          First            Middle

2. College residence (Please indicate your present type of residence as well as the type you would choose if you had no restrictions)

   Actual Preferred Living at home with family or relatives
   ____________________________________________________________
   _______ _______ Single sex residence hall
   _______ _______ Coeducational hall
   _______ _______ Fraternity/Sorority
   _______ _______ Cooperative
   _______ _______ Private off-campus apartment
   _______ _______ Other

3. Position in family Only Child __________ Oldest __________
   Youngest __________ Position________
   (i.e., 2 of 4)

4. Education level of parents. If you have lived with a stepparent, indicate their level with an "S".

   Father        Mother
   __________________ ______________
   Eighth grade or less
   _______ _______ Less than high school
   _______ _______ High school graduate
   _______ _______ Some trade school or Jr. College
   _______ _______ Trade school or Jr. College graduate or two years of College
   _______ _______ College graduate - Bachelors
   _______ _______ Some graduate work - no degree
   _______ _______ Professional degree (Medicine, Law, Theology, etc.)
   _______ _______ Doctor of Education or Philosophy
   _______ _______ Post-doctoral work
5. What is your father's principal occupation? If he is retired or deceased, what was his occupation during the last years he worked?
   (a) Name of occupation _______________________
   (b) Brief description of what he does/did

6. What is your mother's principal occupation? If she is retired or deceased, what was her occupation during the last years she worked?
   (a) Name of occupation _______________________
   (b) Brief description of what she does/did

7. Political orientation
   Father  Mother  Yourself
   ___  ___  ___  Conservative  9.____
   ___  ___  ___  Moderate  10.____
   ___  ___  ___  Liberal  11.____

8. What is the size of your "home town"?
   ___  0 - 2,499  ___  10,000 - 49,999
   ___  2,500 - 4,999  ___  50,000 - 99,999
   ___  5,000 - 9,999  ___  100,000 - 499,999
   ___  500,000 -

9. Did you live: ( ) in town; or ( ) in the country? 13.____

10. Do you identify closely with any particular ethnic group? (Scandinavian, Japanese, German, Irish, etc.)
    ( ) Yes  ( ) No 14.____
    If "Yes" which group? ______________________

11. Are any of your close relatives immigrants?
    ( ) Yes  ( ) No 15.____
11. (Cont'd)

If "Yes" please identify the relative

<table>
<thead>
<tr>
<th></th>
<th>Mother</th>
<th>(number)</th>
<th>Grandparents</th>
<th>(number)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. What was the approximate size of your high school and graduation class?

<table>
<thead>
<tr>
<th>Size of High School</th>
<th>Size of Graduation Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 149</td>
<td>1 - 49</td>
</tr>
<tr>
<td>150 - 299</td>
<td>50 - 99</td>
</tr>
<tr>
<td>300 - 599</td>
<td>100 - 499</td>
</tr>
<tr>
<td>600 - 999</td>
<td>500 -</td>
</tr>
<tr>
<td>1,000 - 1,499</td>
<td></td>
</tr>
<tr>
<td>1,500 -</td>
<td></td>
</tr>
</tbody>
</table>

13. On every college or university campus students hold a variety of attitudes about their own purposes and goals while at college. Such an attitude might be thought of as a personal philosophy of higher education. The following paragraphs are descriptive statements of four such "personal philosophies" which there is reason to believe are quite prevalent on American college campuses. As you read the four statements, attempt to determine how close each comes to your own philosophy of higher education.

Philosophy A: This philosophy emphasizes education essentially as preparation for an occupational future. Social or purely intellectual phases of campus life are relatively less important, although certainly not ignored. Concern with extracurricular activities and college traditions is relatively small. Persons holding this philosophy are usually quite committed to particular fields of study and are in college primarily to obtain training for careers in their chosen fields.

Philosophy B: This philosophy, while it does not ignore career preparation, assigns greatest importance to scholarly pursuit of knowledge and understanding wherever the pursuit may lead. This philosophy entails serious involvement in course work or independent study beyond the minimum level. Extracurricular activities are relatively unimportant. Thus, while other aspects of college are not to be forsaken, this philosophy attaches greatest importance to interest in ideas, pursuit of knowledge, and cultivation of the intellect.
Philosophy C: This philosophy holds that besides occupational training and/or scholarly endeavor an important part of college life exists outside the classroom, laboratory, and library. Extracurricular activities, living-group functions, athletics, social life, rewarding friendships, and loyalty to college traditions are important elements in one's college experience and necessary to the cultivation of the well-rounded person. Thus, while not excluding academic activities, this philosophy emphasizes the importance of the extracurricular side of college life.

Philosophy D: This is a philosophy held by the student who either consciously rejects commonly held value orientations in favor of his own, or who has not really decided what is to be valued and is in a sense searching for meaning in life. There is often deep involvement with ideas and art forms both in the classroom and in sources (often highly original and individualistic) in the wider society. There is little interest in business or professional careers; in fact, there may be a definite rejection of this kind of aspiration. Many facets of the college-organized extracurricular activities, athletics, traditions, the college administration are ignored or viewed with disdain. In short, this philosophy may emphasize individualistic interests and styles, concern for personal identity, and often contempt for many aspects of organized society.

The following question asks you to rank these four statements according to the accuracy with which each portrays your own point of view. Be sure to assign a different rank to each "philosophy" (indicate A, B, C or D).

___ Most accurate (i.e., of the four statements, this one is the best description of my point of view)
___ Second most accurate
___ Third most accurate
___ Least accurate

From College Student Questionnaire - Part 2. Copyright 1965 by Educational Testing Service. All rights reserved. Reproduced by permission.

14. Are you receiving financial aid from O.S.U.?
   ( ) Yes   ( ) No
If "Yes" please indicate the type ________
   (scholarship, grant, work-study)
15. Do you have a scholarship or grant from a source other than O.S.U.?
   ( ) Yes ( ) No

16. How many hours per week are you planning to work at a part-time job this year?

<table>
<thead>
<tr>
<th>Hours per Week</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>11 - 15</td>
</tr>
<tr>
<td>1 - 5</td>
<td>16 - 20</td>
</tr>
<tr>
<td>6 - 10</td>
<td>21 - 25</td>
</tr>
<tr>
<td></td>
<td>26 -</td>
</tr>
</tbody>
</table>

17. In which school are you presently enrolled?

<table>
<thead>
<tr>
<th>School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
</tr>
<tr>
<td>Pharmacy</td>
</tr>
<tr>
<td>Agriculture</td>
</tr>
<tr>
<td>Forestry</td>
</tr>
<tr>
<td>Home Economics</td>
</tr>
<tr>
<td>Science</td>
</tr>
<tr>
<td>B &amp; T</td>
</tr>
<tr>
<td>H &amp; SS</td>
</tr>
<tr>
<td>H &amp; PE</td>
</tr>
<tr>
<td>Education</td>
</tr>
<tr>
<td>None (undecided)</td>
</tr>
</tbody>
</table>

18. What are your degree plans?

<table>
<thead>
<tr>
<th>Degree Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than a Bachelor's degree</td>
</tr>
<tr>
<td>Bachelor's degree</td>
</tr>
<tr>
<td>Some graduate work - no degree</td>
</tr>
<tr>
<td>Master's degree</td>
</tr>
<tr>
<td>Professional degree (Medicine, Law, etc.)</td>
</tr>
<tr>
<td>Doctor of Education or Philosophy</td>
</tr>
<tr>
<td>Post-doctoral work</td>
</tr>
</tbody>
</table>

19. What is your occupational goal?

<table>
<thead>
<tr>
<th>Occupational Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business - any of the occupations usually carried out in business organizations. Including Agri-business. Please specify ______________________________</td>
</tr>
<tr>
<td>Engineering - any of the fields of engineering. Please specify area ___________________________</td>
</tr>
<tr>
<td>Government - military or civil service at the local, national or international level including Forest Management. Please specify _______________________________</td>
</tr>
</tbody>
</table>
19. (Cont'd)

Elementary & Secondary Education -
teaching, administration or special services (counseling, remedial reading, etc.).
Please indicate level and area

Traditional profession - Medicine, Law, Architecture, Dentistry, Clergy, Pharmacy, Nursing.
Please specify ____________________________

Higher Education - careers which are rooted in or immediately related to recognized academic disciplines and which include research or teaching in higher education; any case aspiring to the PhD is included.
Please specify area ____________________________

Other ____________________________

Not decided.
Dear New Student:

We would like to thank you for recently taking the Personal Orientation Inventory. This questionnaire was given to over 500 new students as the first phase of a study we are conducting.

The study involves the identification of differences which exist between new students who differ in their level of self-actualization. The identification of such differences could well have a significant impact on the types of services and experiences offered future new students.

Approximately 300 students are being asked to participate in the second phase of the study. This involves taking three tests which measure values, self-concept and achievement motivation and filling out a questionnaire designed to gather background information.

It should take you from 1½ to 1½ hours to complete everything. The tests and questionnaire will be administered as follows:

November 1 McNary Cafeteria 7 - 9 p.m. & 9 - 11 p.m.
November 4 West Cafeteria 7 - 9 p.m. & 9 - 11 p.m.

You may come on the day and at the time which is most convenient for you.

All your responses will be held in strictest confidence. We are interested in group responses and will not be analyzing individual scores.

Students often complain that they have little opportunity to bring about re-examination or change within the University. Participation in the second phase of this study will give you just such an opportunity.

If you have any questions or would like to participate but have a time conflict, please call 753-0489.

Sincerely,

Byron S. Wills, Graduate Assistant
College Student Personnel Program

Arthur L. Tollefson, PhD
Professor, School of Education
APPENDIX E

INFORMATION ON MULTIPLE DISCRIMINANT ANALYSIS
INFORMATION ON MULTIPLE DISCRIMINANT ANALYSIS

Multiple discriminant analysis is, quite simply, a variation of multivariate analysis. A useful concept in considering several variables together is the space concept (Cooley and Lohnes, 1962). If m measurements have been made on N individuals, each individual can be represented as a point in the m-dimensional space. While it may be hard to imagine more than two or three dimensional space, higher numbers or dimensions can be handled through the use of matrix algebra (Cooley and Lohnes, 1962).

When more than two groups are considered at a time, multiple regression is no longer appropriate (Tiedeman, 1951). Some method which will summarize the information contained in the data about the aspects of the data points in multidimensional space is needed. Multiple discriminant analysis provides such a method. The purposes of this method are to find out whether discrimination between groups is possible and then to reduce the size of space in which it is necessary to think about regions of classification (Tiedeman, 1951). The group means on the variables are represented by a swarm of data points or centroids (Tiedeman and Bryan, 1954).

Multiple discriminant analysis does what a multiple correlational approach fails to do. It uses group membership as the criteria and makes all comparisons between
groups and not within groups (Rulon, 1951). This is accomplished by "reaching through test space to the minimum number of dimensions needed to describe the relevant information contained in the original observations" (Cooley and Lohnes, 1962, p. 2). In other words, multigroup discriminant analysis finds the minimum number of dimensions or discriminant functions required for the description of group differences (Cooley and Lohnes, 1962). The number of discriminant functions that may be obtained in any analysis is the smaller of m (number of measurements) and \( g - 1 \) (\( g = \) the number of groups used). In the present study, therefore, two discriminant functions were obtained in each analysis since \( g = 3 \).

The actual statistical analysis involves the following steps: (1) determining whether group differences are significant through use of Wilkes Lamda criteria, (2) proceeding by examining group differences obtained by examining the group mean vectors, the scaled discriminant vector and the group centroids, and finally (3) testing the contribution of each variable through use of the univariate F test (Cooley and Lohnes, 1962).

Multiple discriminant analysis is particularly attractive because it takes into account the variability of group means on the \( n \) variables and the interrelationships of the \( n \) variables (Tiedeman, 1951). The method also frees one from having to deal with more discriminant functions than
are necessary to represent the centroids of a population in n dimensional space. Multiple discriminant analysis also maximizes the ratio among means of group sums of squares to within group sums of squares. This has the effect of spreading the groups apart while at the same time reducing the scatter of the individual points about their respective means. Thus, the variance in the distribution of scores for the various groups is reduced (Tiedeman, 1951).

Tatsuoka and Tiedeman (1954) pointed out further attractions of this method. They observed that multiple discriminant analysis can be used as a useful approach in solving a research problem involving multivariate comparisons of several groups which is likely to have as its three phases:

(a) the establishment of significant group differences,
(b) the study and "explanation" of these differences,
(c) the utilization of multivariate information from the samples studied in classifying a future individual known to belong to one of the groups represented.

Tatsuoka and Tiedeman pointed out that if the object of the research is (a) or (c) alone, other more direct measures are available which do not require the computation of multiple discriminant functions. It is when the basic research purpose (b) is included that the discriminant analysis offers a distinctively new contribution and at the same time provides statistics for studying objects (a) and (b)
without independent attack.

Multiple discriminant analysis is not a new method but its use in education and psychology has been quite limited. Tatsuoka and Tiedeman (1954) and Cooley and Lohnes (1962) have commented on the small number of studies in the areas of Education and Psychology which have used multiple discriminant analysis. One of the problems seems to have been a lack of understanding of the differences between discriminant analysis, regression analysis and multiple correlational analysis (Tiedeman, 1951). Rulon (1950) made it quite clear that each type of analysis had its place. Another reason for lack of use of discriminant analysis was the complex computations involved. Campbell (1969) pointed out that with the availability of computers, the use of this method should be facilitated.

Studies with implication for education and student personnel services have been conducted using multiple discriminant analysis. Christensen (1952) used multiple discriminant analysis to examine differences existing between students who had different majors. He found significant differences between all combinations of pairs of groups except pre-business and pre-law. He examined differences between those students achieving a C average or better and those who had lower than a C average in the different majors.

Stevens (1953) used the same classifications as
Christensen (1952) to examine how the groups differed on certain demographic variables. He again found significant differences to exist between all groups. He also found that multiple discriminant analysis could classify a student into one of the groups significantly better than chance.

Apostalakos (1957) examined differences between four pre-professional groups and a group of unsuccessful students using multiple discriminant analysis. He compared the groups on four cognitive and four noncognitive items. He found significant differences between all groups except between pre-law and pre-business.

Cooley (1958) examined the relationship between 200 sophomore and senior engineering students who later went into three different types of occupations and their scores on the Study of Values. Flanders (1965) used multiple discriminant analysis in his study of decided/undecided freshmen, as did Brown (1965); they both found significant differences between the two groups. Vacchiano and Adrian (1966) used this method to study vocational choice, Centra (1967) used the method in a study of the effects of living-learning residence halls versus traditional units. Finally, Campbell (1969) used this method in studying the leisure time activities of four different age groups.

In summary, multiple discriminant analysis provides a powerful method of studying the multivariate differences
between groups. Enough use has been made of this method
to demonstrate its utility in discriminating between
groups in ways which have important implications for those
involved in student development.
APPENDIX F

FORMULA AND EXTENSION FOR THE MANN–WHITNEY TEST
FORMULA AND EXTENSION FOR THE MANN-WHITNEY TEST

The following is the basic formula for the Mann-Whitney Test:

\[ U = n_1n_2 + \frac{n_1(n_1+1)}{2} - R_1 \]

or

\[ U' = n_1n_2 + \frac{n_2(n_2+1)}{2} - R_2 \]

where
- \( n_1 \) = size of the smaller sample
- \( n_2 \) = size of the larger sample
- \( R_1 \) = sum of the ranks of the smaller sample
- \( R_2 \) = sum of the ranks of the larger sample

Taken from Bruning and Kintz (1968), p. 201-202.

The following is the formula for the extension of the Mann-Whitney Test:

\[ Z = (\mu - T^* - \frac{1}{2})/\sigma \]

where
- \( \mu = n_1(n_1+n_2+1)/2 \)
- \( \sigma = n_2\mu/6 \)

Taken from Snedecor and Cochran (1967), p. 131.

* Snedecor and Cochran substituted \( T \) for \( U \).
APPENDIX G

FORMULA FOR THE t-TEST
FORMULA FOR THE $t$-TEST

The following is the formula for the $t$-Test:

\[
t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left[\frac{\sum x_1^2}{N_1} - \frac{\left(\sum x_1\right)^2}{N_1} + \frac{\sum x_2^2}{N_2} - \frac{\left(\sum x_2\right)^2}{N_2}}\right] \cdot \left[\frac{1}{N_1} + \frac{1}{N_2}\right]}
\]

where

- $\bar{x}_1$ = the mean of the first group of scores
- $\bar{x}_2$ = the mean of the second group of scores
- $\sum x_1^2$ = the sum of the squared score values of the first group
- $\sum x_2^2$ = the sum of the squared score values of the second group
- $\left(\sum x_1\right)^2$ = the square of the sum of the scores in the first group
- $\left(\sum x_2\right)^2$ = the square of the sum of the scores in the second group
- $N_1$ = the number of scores in the first group
- $N_2$ = the number of scores in the second group

Taken from Bruning and Kintz (1968), p. 10.