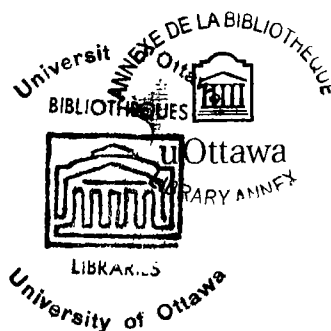


COMPARING THE VOCATIONAL INTERESTS OF ARTS AND
SCIENCE FRESHMEN USING THE STRONG-CAMPBELL
INTEREST INVENTORY

by Dorothy M. Meuser

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of Ottawa as partial fulfillment
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CURRICULUM STUDIORUM

Dorothy M. D. Meuser (nee Stern) was born in Flin Flon, Manitoba, on December 27, 1950. She received the Bachelor of Arts degree from the University of British Columbia in 1973. The title of her thesis was The Effects of Simultaneous Visual and Auditory Encoding on Short-Term Memory.

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INTRODUCTION

The fact that characteristic interest patterns can be found in specific groups is supported in the literature and discussed in the following chapter. The current trend of research in this area, is the development of keys to differentiate occupational and subgroup specialties using established interest inventories. The usefulness of such keys is evident in their application to educational planning, occupational training and job selection.

The present study seeks to investigate the use of such an inventory for comparing the vocational interests of two programs of university study. Specifically, this study seeks to determine, using the Strong-Campbell Interest Inventory (SCII), if it is possible to discriminate between the Basic Interests of Arts and Science freshmen. It further investigates the relative contribution or weighting of each Basic Interest scale to the total discrimination and attempts to classify the same individuals in terms of their scores on these discriminating variables. Thus, this study attempts to provide, using discriminant-function analysis, the best combination of variables to differentiate between the groups.

The literature relevant to this study is presented in the first chapter. This chapter also discusses the problems investigated and the hypotheses being tested. The second chapter presents the experimental design and specifically describes the tools, the subject population and the methods of data analysis. The results of the study are presented and discussed in the third chapter along with suggestions for further research.

CHAPTER I

REVIEW OF THE LITERATURE

This chapter presents a review of the literature relevant to this study. It begins, in section one, by discussing a number of studies which have been concerned with determining the interest patterns of various occupational groups. The second section considers the validity and reliability of using the Strong-Campbell Interest Inventory for measuring the interests of university students. The third section examines studies which have differentiated the interests of specific groups within the university population. Section four explores the transition of the long-standing Strong Vocational Interest Blank into the 1974 Strong-Campbell Interest Inventory. The fifth section presents the problems posed by the present study. The chapter concludes, in section six, with a brief summary and a statement of the experimental hypotheses.

1. Determining the Interest Patterns of Specific Groups

An interest inventory, as defined by Chaplin (1968) is "an instrument designed to measure an individual's interests in a variety of activities". Interest

inventories may also be used to establish differences in interests for specific groups. This serves basically two main functions. First, people may gain greater self-understanding which enables them to make better decisions about the course of their lives. Secondly, it provides information for counselors, teachers, administrators, admissions committees, personnel managers, and so on, to make decisions with a greater degree of reliability.

A number of studies have been concerned with determining the interest patterns of specific groups in the hopes of developing valid scales for predicting future occupations as well as for use in counseling settings. For instance, Campbell and Johansson (1966) found that the Academic Achievement (AACH) scale of the Strong Vocational Interest Blank (SVIB) predicted, to some extent, the eventual occupations of their subjects. They used test-retest reliabilities over 2 weeks, 30 days, 3 years, 22 years and 30 years. They found that AACH scores increase during college, especially graduate school, and remain stable after the age of 28. The score is considered to be more indicative of occupations selected than of actual job-performance.

Campbell and Soliman (1968) made a comparison between the Strong Vocational Interest Blank scores of female psychologists using both longitudinal and cross-sectional data. Occupational activities most often described were "teaching and research" and "working with clients". SVIB scores were found to have changed little over 25 years. There was a slight regression in the psychologist scale, a slight increase in the scales pertaining to musical and literary areas and a slight decrease in the scales of a scientific orientation. The authors interpreted their results as reflecting a possible trend in psychology away from the laboratory toward client-centered interests.

Many studies on the vocational interests of women have focused on characteristics that discriminate between women with career interests and those with home-making or "traditional" feminine interests (Gysbers, Johnston, & Gust, 1968; Rand, 1968; Rezler, 1967). Career oriented women have been described as having greater achievement drive, being more aggressive and independent, having increased scientific and research ability, and generally more masculine interests than home-making oriented women. Gysbers et al.

(1968) found that home-maker oriented women scored significantly higher on all the occupations in Group V (Buyer, Business Education Teacher, Stenographer-Secretary, Office Worker), Group VI (Elementary Teacher, Housewife, Home-Economics Teacher, Dietitian), and on the Masculinity-Femininity (MF) scale of the SVIB. Career oriented women scored higher on the scales in Group II (Artist, Author, Librarian, English Teacher) and on the Psychologist, Lawyer and Physician scales.

The use of interest inventories with non-professional women was demonstrated by Harmon and Campbell (1968). A large sample of airline stewardesses and dental assistants were used to develop mean Strong Vocational Interest Blank profiles and SVIB scales. They found that the stewardess profile had peaks on the Musician Performer and Model scales. The dental assistant profile had peaks on the Nurse, Housewife and Office Worker scales. Their study demonstrated the feasibility of differential measurement of women's vocational interests at the nonprofessional level.

Other research has shown that engineers

engaged in different activities (basic research, developmental engineering, production, sales, and technical service) differ in vocational interests. Johnson (1971) attempted to develop SVIB item keys that would differentiate among engineers engaged in the above functions. He concluded that the item keys are of moderate validity but do not exceed the validity of existing scoring keys. The criterion groups were found to differ primarily on preference patterns ranging from research through production engineering to sales at the opposite extreme.

Differences in interests between professional counselors and nonprofessionals were shown by Engen and Miller (1969). They were able to develop a professional school counselor key using Campbell's revised procedure (differences are significant if they are greater than 15-20% with men-in-general). A sample of 203 professional counselors were included in the professional counselors scale. It was found that professionals indicated greater people orientation than the non-professional group.

Glendy and Caple (1972) used the Strong Vocational Interest Blank to measure characteristics

of community/junior college and university counselors. They found that university counselors scored significantly higher than community college counselors on the Physician, Psychiatrist, Psychologist and Computer Programmer scales, indicating a scientific-research orientation. Community college counselors were found to score significantly higher on the Banker, Funeral Director, Sales Manager, Real Estate Salesman, Life Insurance Salesman and Advertising Man scales, indicating a sales or entrepreneur orientation. They further discovered that university counselors had a greater number of graduate hours earned beyond the M A degree, more had attained Ph D degrees, and nearly half were interns who would probably complete Ph D's in the near future. The authors thus concluded that the two types of institutions seek and attract counselors with somewhat different characteristics.

The vocational interests of sociologists have been inventoried by Rossmann, Lips and Campbell (1967). Their results indicated that sociologists with Ph D's were more closely oriented towards scientific and numerical occupations while the non-Ph D's had social service interests. This scientific

and numerical orientation was also found more in university than in liberal arts or state college sociologists. The nonprofessionals were found to be the least oriented in this respect. It was further shown that sociologists and psychologists could be differentiated on the basis of Strong Vocational Interest Blank profiles. Sociologists scored higher on the social service and cultural occupations whereas psychologists scored higher in scientific and business occupations.

In a similar study, Rossmann et al. (1971) used SVIB profiles to establish the vocational interests of political scientists. They found that political scientists' interests were most similar to those of psychologists and psychiatrists, public administrators and social workers, librarians, musicians, lawyers and author-journalists. Political scientists related interests least like those of physical scientists, members of the skilled and semi-professional occupations and businessmen. It was also found that on the Basic Interest scales, political scientists had higher scores than psychologists on three scales (Public Speaking, Writing and Law/Politics) while

psychologists' scores were higher on Science, Mathematics, Medical Service, Technical Supervision and Mechanical Interests. Thus, it was concluded that political scientists were more verbal/linguistic in orientation but considerably less scientific/mechanical than psychologists.

Specific interest patterns among economists have been established by Johansson and Rossmann (1971). They collected Strong Vocational Interest Blank data from four groups of behavioral scientists: sociologists, anthropologists, political scientists, psychologists, and economists. Their findings indicated that while the vocational interest patterns of economists did not differ significantly from the other behavioral science groups, their interests were closer to those of psychologists and differed most from those of anthropologists. Results further revealed that all of these groups had relatively strong interests in scientific and intellectually oriented areas and tended to reject those of sales and skilled trades.

In order to assist schools of social work in the task of selecting and recruiting students, McCornack (1956) developed a social worker key on

both the men's and women's form of the SVIB. It was hoped that the two forms of the SVIB would be more useful in the guidance of students. McCornack concluded that male social workers had homogeneous interests, permitting the construction of a key which successfully differentiated them from a men-in-general group. Sex differences were found which make it unwise to use the key on female subjects. Female social workers were also shown to have homogeneous interests, making it possible to construct a key which differentiated them from women-in-general. However, this key was less successful than the men's key, although it was more successful in differentiating than the 1952 Social Worker key for women (Strong and Tucker, 1952).

The usefulness of the SVIB for the purposes of employment selection was demonstrated by Perry (1967) in his study of the interests of computer programmers. He found that satisfied programmers obtained higher than average scores on the Physicist, Engineer, Printer, C.P.A. Owner, Senior C.P.A. and Programmer keys. However, they obtained a lower than average score on the Life Insurance Salesman key. Dissatisfied programmers

obtained lower than average scores on Production Manager, Accountant, Purchasing Agent and Programmer keys. They were also shown to score higher than average on the Minister, Art Teacher and Musician keys.

In another study with computer programmers, Perry and Cannon (1968) found the vocational interests of female programmers to be quite similar to those of their male counterparts, although the interests of the women were somewhat higher in aesthetic and scientific fields and lower in technical and technical supervision occupations. Female programmers indicated interests in all forms of math and a lack of interest in people. Perry et al. composed a key of items with a 12% or larger difference between female programmers and other professional women. They also found that this key differentiated satisfied from dissatisfied computer programmers.

Anderson and Barry (1965) found that the Strong Vocational Interest Blank could be useful in discriminating specific occupational interests between female students intending to enter occupational therapy, physical therapy, medical technology and "other" related health professions. No discrimination could be made on

the basis of personality, attitudinal, and basic abilities variables. However, significant differences were determined by the Florida Placement Examination and the SVIB. Strong Vocational Interest profiles indicated that medical technologists were low on factors that contained nontechnical vocations requiring interaction with people; physical therapists were low on the Artist-Author-Librarian factor but high on the Physical Education Teacher scales.

Attempts have even been made to use the Strong Vocational Interest Blank to discriminate among psychotherapists from various mental health disciplines. The SVIB was selected because it yields scores and patterns related to personality traits which, in turn, may relate to differences in therapeutic approach (Darley & Hagenah, 1955; Kelly & Goldberg, 1959). In an attempt to assess therapy techniques, Klein, McNair and Lorr (1962) studied the SVIB scores of clinical psychologists, psychiatrists and social workers and found that the disciplines differed on a number of scales and patterns other than those established for their own profession. Psychiatrists and psychologists differed markedly from social workers but relatively little

from each other. However, their findings about the quality of therapy were negative.

Thus, many studies with the Strong Vocational Interest Blank have been able to develop useful keys or profiles to differentiate numerous occupational groups. These scales are an aid to counseling situations where it may be desirable to compare an individual's interests to those of a specific group. In some cases, this has been an aid in making career choices, in predicting job satisfaction and as a selection device.

Literature pertaining to the usefulness of the Strong Interest Blank as a discriminating device having been examined, the next section will focus upon the validity and reliability of using the SVIB for studying the interests of university students.

2. Measures of SVIB Validity and Reliability in University Populations

The SVIB has been used in studies covering a wide range of populations. In particular, a large volume of research deals with measuring the interests of university students for the purpose of counseling individuals about fields of study and future careers

(Strong, 1943, 1955; McArthur, 1954; Berdie, 1955, 1960; Smith, 1960). The benefits of such an inventory therefore rest on it's predictive validity. Basically, there are at least three ways to determine predictive validity. The first is to work with a sample of people, all of whom are in the same occupation, and determine if inventories completed earlier by them would have predicted that occupation. The results may vary from one occupation to another depending on how predictable the occupation is. The second technique is to work with a sample where all members score high on one occupational scale, then wait to see if they actually entered that occupation. Here, results may vary according to the predictive ability of the scale used. A third method, an extension of those mentioned previously, is to have a sample of individuals from a number of occupations with diverse interest patterns and then determine if, in general, their scores predict those occupations.

The first method, working with men in a specified occupation, was used by Berdie (1960, 1965). He identified graduates of the University of Minnesota in studies which are very predictive of future occupat-

ions, specifically Law, Medicine, Dentistry, Mechanical Engineering, Accounting and Journalism. Berdie studied their Strong Vocational Interest scores obtained while they were high school seniors. His results indicated that the SVIB scores, on the average, were quite predictive of the general direction of the student's career and fairly predictive of the actual occupation, with the level of predictive validity being highest for mechanical engineers and lowest for journalists. In a follow-up study by Schletzer (1963), it was found that the concurrent validity of scores from inventories completed by these individuals as adults, was higher than the earlier predictive validity.

The second method of studying eventual occupations of a sample who score high on a single scale was used by Campbell (1966). He identified a group of 72 high school seniors with A ratings on the Life Insurance Salesman scale, then located them to see what occupation they had entered. Of these, 10% were in the life insurance business, 32% were in other sales jobs, 12% were in business-contact jobs, 22% were in social service persuasive jobs such as lawyer or minister, and 24% were in essentially unrelated jobs. Each profile was further

analyzed as to it's appropriateness for the individual's current occupation. 64% were classified as "hits", 22% as "misses" and 14% as "indeterminate". Campbell's results clearly indicate that there is a substantial relationship between high scores on the Strong Vocational Interest Blank and eventual occupation.

The third method, using a sample with varied interests from a wide range of occupations, was used by Strong (1955) in his follow-up of Stanford University students 18 years after graduation. Strong summarized his results by concluding that college students have a 3:1 chance of entering and remaining in an occupation where they have an A rating on the appropriate scale (i.e., standard score above 45), and 5:1 odds against being in an occupation where they have a C rating (i.e., standard score of 25 or below). Thus, the results from the Berdie, Campbell and Strong studies all lend support for the predictive validity of the Strong Vocational Interest Blank.

The SVIB, because of the reliability of many of it's scales and it's wide usage, has been included in a considerable amount of research on academic achievement. Several of these studies have been summarized

by Strong (1943). Over the years, several new scales have been developed from SVIB items to aid in predicting college achievement (Campbell & Johansson, 1966; Martin, 1964; Rust & Ryan, 1954). Each of these scales has survived cross-validation study in at least one setting.

Rust and Ryan (1954) developed separate scales to predict overachievement, normal achievement and underachievement at Yale University. These scales significantly differentiated between various groups of over-, normal and underachievers at both Yale and Harvard Universities (McArthur, 1965).

Martin (1964) constructed a series of academic interest scales (both long and short forms) from SVIB items for males enrolled in engineering and mines at the University of Pittsburgh. The scales significantly contributed to a multiple correlation based in part upon Scholastic Aptitude Test scores and high school rank in predicting first year grades at that University.

Finally, Campbell and Johansson (1966) developed the Academic Achievement (AACH) scale to differentiate between high and low achievers in the College of Liberal Arts at the University of Minnesota.

Although the AACH scale correlated significantly with first year grade point averages in the cross-validation study at Minnesota ($r=.36$), it did not add significantly to a multiple correlation coefficient consisting of scholastic aptitude test and high school scores in predicting grades.

The clinical and statistical uses of the Academic Achievement scale of the SVIB for predicting changes in occupational choice were demonstrated by Wagman (1971). He found that relatively low scores on the AACH scale generally predicted changes of occupational planning toward business and other applied directions, whereas higher scores were associated with changes toward more academic and scientific orientations. His results support the description of the AACH scale in the Strong Vocational Interest Blank Manual (Campbell, 1966) as being intended to measure preferences for "things academic" and a serious interest in studying and learning.

Borgen (1972) illustrated the usefulness of the Occupational and Basic Interest scales of the SVIB for predicting career choices of college men. High ability men who were winners of National Merit Scholar-

ships in 1966 were used to study the capacity of pre-college Strong Vocational Interest scores to predict major and career choices at the end of college. Criterion groups contained 1,031 men in 16 major fields and 780 men planning to enter 10 career fields. The SVIB Basic Interest and Occupational scales were compared using both univariate and discriminant-function predictive methods. For each of the predictor-criterion conditions, a moderately high level of prediction was possible. Borgen also found that the Basic Interest scales, as a predictor set, performed as well as the Occupational scales. His results support the use of the Basic Interest scales in research and counseling as well as exemplify the utility of the discriminant-function method for the validation of interest measures.

In a 19 year follow-up of 306 Stanford University freshmen, Strong (1952) demonstrated both the predictive validity of SVIB scores and the persistence of interests over time. The reliability of the Engineer interest scale was found to be .936. The permanency of scores was .91 for one year, .77 for nine years and .76 for nineteen years. Freshmen who became engineers had scores when freshmen that overlapped

99 percent with the engineer criterion group, whereas those freshmen who became physicians, had Engineer scores that overlapped 48 percent with the criterion group. For lawyers, the overlapping was 16 percent.

Strong concluded:

Whatever an interest test measures, whether interests, preferences, values, goals, or what have you, it measures something very stable and permanently possessed and something that contributes very greatly to occupational choice (p. 75).

Other studies on the Strong Vocational Interest Blank have also supported the reliability, stability and permanence of inventoried interests (Chisney, 1944; Strong, 1951; Trinkaus, 1954; Stordahl, 1953; McCornack, 1959; Sprinkle, 1961; Tucker & Strong, 1962).

The value of interest testing, the significance of inventoried interests, and the rationale behind their interpretation in counseling, rests not only on the validity of the instrument but on the reliability, significance and permanence of interests as inventoried. Studies on the Strong Vocational Interest Blank supporting these factors have already been discussed. With this in mind, it follows that differentiating groups within university

populations can be beneficial for counseling purposes. This will be discussed in the following section.

3. Differentiation of Groups Within University Populations

Studies by Strong (1943, 1955), McArthur (1954), and Berdie (1955) have shown the extent to which the scores of college students are related to their occupations as adults. These studies support the use of the SVIB for counseling college or university students. Layton (1958) suggested using the Strong in aiding students with their selection of a college major. Duntzman (1966) also gave a broad endorsement of the use of the SVIB in educational-vocational situations. The use of the Strong Vocational Interest Blank in counseling university students rests on a wide range of research which has differentiated interests of various groups within the university population.

The variables which determine the choice of college major and responses to interest inventory items are extremely complex. There is evidence that individuals in certain college majors have similar psychological characteristics. Sternberg (1959) is one of many investigators to find that individuals in related college

majors share greater similarity in interest and personality-trait characteristics than individuals in other college majors.

Korn (1962) conducted a study differentiating the interests between freshmen majors in engineering and physical sciences on the basis of the California Psychological Inventory (CPI) and the Strong Vocational Interest Blank. Students majoring in chemistry, mathematics and physics were combined into the Physical Science group (N=55). Students majoring in engineering comprised the second group (N=156). The results of chi-square analyses indicated that Physical Science majors had more primary patterns and Engineering majors had fewer primary patterns than expected on the basis of chance. On replication, the same distribution pattern was observed, but this time, did not result in a chi-square significant at the .05 level. The results of the Physical Science family were found to be similar to the Business Contact family on replication. Engineering majors also had significantly fewer primary and secondary patterns than expected by chance on the following families: Social Service, Business Contact, and Verbal/Linguistic (these relationships were also confirmed by

replication). On the basis of this data, Korn concluded that we should describe the interests of students within majors, not only in terms of what interests they share, but also according to what interests are absent. He hypothesized that:

students will choose a major,
not only in terms of the inter-
ests they think it might satisfy,
but also in terms of the inter-
ests they think will not be de-
manded (p.311).

In a longitudinal study using the SVIB, Notling (1970) found significantly different interests between major and nonmajor university females. Test-retest means of each sample on the Artist, Home-Economics Teacher, Occupational Therapist, Librarian, Physician, and Social Worker scales were established and significant differences were found between the groups' Occupational Interests for all comparisons. Notling thereby concluded that his findings provided substantial support for the power of the female SVIB to separate major groups.

Differentiation between "high ability" females (N=1,039) and women-in-general (N=530) attending the same university was made by Faunce (1971). Results of

the t-test analysis indicated that mean differences existed for 35 of the 44 Strong Vocational Occupational scales and for 3 of the 4 Non-occupational scales. She concluded that the differences obtained reflected three salient dimensions: academic orientation, conformity and social conscience. High ability females were interpreted to be more independent, liberal, occupationally competitive and oriented to theoretical and aesthetic ideas.

In a study of medical students' interests, Peterson (1972) found that females and males had similar interests. He compared the interests of 2,469 medical freshmen in 25 American universities and found that the interests of both sexes were quite similar. Differences that did occur were in the non-stereotype direction i.e., female students showing more "non-people" or concept oriented interests. Females also tended to score higher on the Academic Achievement scale. A retest four years later showed that the interest patterns of both groups had remained stable and that although there were differences, these were in items which would not be significant in the weightings for the medical criterion group.

The work of E. K. Strong, Jr. on the measurement of adult interests has been extended a great deal since his revised SVIB in 1938. Additional scales were developed and original scales were revised according to changing needs (Campbell, 1971). One study which arose to meet the need for a Biologist scale (Form M) was conducted by Herman, Lindsay and Zeigler (1962). Their results indicated that the scale differentiated the interests of biologists from Strong's men-in-general group, biologists from the interests measured by 36 other SVIB scales, and the concurrent validation groups in the expected direction. Reliabilities of .88 (criterion, N=251) and .87 (cross-validation, N=89) were obtained. It was concluded that the scale had sufficient validity and reliability to be a useful device in counseling students.

In another study using the Biologist scale, Ross, Denenberg and Chambers (1965) found consistent interest patterns between college (N=53) and high school (N=81) biological research apprentices. Evidence of high interest in a particular occupation was considered when 50 percent or more of the group had B+ or A scores. Even though the small sample size resulted in unstable

percentages, there was evidence of good agreement in interest for the high school and college students, especially in the female samples. The most outstanding characteristics of the groups were the high interest in the biologically related disciplines and lack of interest in mathematics and physical sciences. These findings were consistent with the data obtained on this population by means of a content analysis of autobiographical information and parallel findings on Social Science undergraduate majors (Wilson, 1954).

A study exemplifying the usefulness of the Strong Vocational Interest Blank for counseling purposes was conducted by Dunteman (1966). A multiple discriminant-function analysis was used to successfully distinguish between groups of women majoring in Occupational Therapy (N=46), Medical Technology (N=41), Physical Therapy (N=27), Nursing (N=61), and Education (N=25). He was able to differentiate the groups from each other on the basis of 29 SVIB scales for women. Furthermore, two discriminant analyses using 11 scales also indicated successful discrimination ($p < .001$) and accounted for approximately 92% of the variation among groups.

Dunteman stated:

The usefulness of the SVIB is certainly highlighted by discriminant-function analysis. ... the discriminant-analysis approach with the SVIB should be useful for developing group prediction equations for other types of college majors as well.

He concluded that the discriminant analysis method:

should yield more information about the SVIB than has been yielded in the past by the more traditional types of analyses (p.515).

This is the method of analysis employed in the present study.

The usefulness of the Strong Vocational Interest Blank as a discriminating device for counseling university groups having been explored, it is now fitting to consider briefly the reasons for the 1974 revision of the SVIB. This latest updating has resulted in the formation of the Strong-Campbell Interest Inventory (SCII) with which the present study is concerned.

4. Reasons for the Development of the Strong-Campbell Interest Inventory (SCII)

A number of studies have been concerned with

changes in interest over time. The findings of much of the research have raised implications for the revision of interest inventories to meet changing needs. For example, Campbell (1968) illustrated a general shift in the interests of the general population over the past 30 years on certain items of the SVIB. This shift appeared to be toward more verbal activities, away from the outdoor activities and away from the skilled trades areas, while others remained about the same. This study gave support for the revision of interest inventories since it appears desirable that men-in-general groups be tested at the same relative time as the occupational groups.

In a similar study, Clemens (1970) found significant changes in the interests of engineers over the past thirty-one years. The changes were sufficiently significant for the author to caution counselors against using the single score on the Engineers scale exclusively. Clemens suggested taking into account the client's entire profile when making such considerations.

Numerous studies have been concerned with how adequately the interests of women have been measured using contemporary inventories. The literature is replete

with imperatives for change. Johansson and Harmon (1972) studied the problems in the use of separate forms of the SVIB for males and females. Their results indicated that on the average, 42% of the 229 common items differentiated between sexes in the same occupation. They concluded:

differentiating items that are included on scales potentially can have a noticeable effect on scores, the ultimate goal for the SVIB is one form with scales that do not incorporate sex differences (p.404).

The drawback of two separate forms was reiterated by Munley, Fretz and Mills (1973). They contended that even with the 1969 revision of the women's blank, many Occupational scales on the men's blank that might be considered relevant for women, were not used. For example, Veterinarian, Psychiatrist, Biologist, Architect, Personnel Director, and Pharmacist were not incorporated into the revision. This discrepancy in scope and type of occupational coverage offered by the two forms influenced counselors to use the men's blank with women (Darley & Hagenah, 1955). To test the usefulness of the men's blank in counseling women, Munley et al. administered both forms of the SVIB to 90 under-

graduate women. They found significant differences between mean scores on the Occupational scales common to both forms. Significant differences were also found on the mean number of B+ and A ratings on the two forms. The Occupational scale scores and number of B+ and A interest ratings were examined in relation to career versus home-maker orientation. Those individuals that were differentiated on the basis of career orientation, obtained significantly different mean numbers of B+ and A interest ratings on the women's SVIB. The writers concluded that it is most appropriate to allow women, at least college women, to compare their interests with those of men and thus recommended the use of both forms with college women requesting vocational counseling. It was their belief that:

Only if such a practice is
adopted will college female
clients be assured a complete
picture of their interests
(p.289).

Numerous other studies support these findings and advocate the amelioration of existing inventories (Rossmann & Campbell, 1965; Harmon, 1967, 1969; Gump, 1972; Peterson, 1972; Cole, 1973; Huth, 1973).

The many imperatives for change culminated in

the writings of Schlossberg and Goodman (1972). In acknowledgment of their criticism of the two-form inventory, Campbell (1972) revealed the preparation of a new version of the SVIB. This resulted in a single booklet combining the best items from both existing forms into a single profile as well as the addition of personality correlates according to Holland's Personality Theory (1973). Campbell cited social trends moving towards greater freedom for women's vocational choice as a major contributor towards the revision. This trend is symbolically reflected in the form of the Strong-Campbell Interest Inventory (1974).

5. The Problem

The present study concerns itself with the vocational interests of Arts and Science freshmen. It is proposed that a comparison of the Basic Interest scores of these groups on the Strong-Campbell Interest Inventory, may yield significant differences. If significant differences in interests are found, they will manifest themselves in the form of discriminating factors. It is further proposed that an analysis of these factors may provide information about the relative

contribution of each of the Basic Interest scales to the overall discrimination. Thus, it would indicate the best possible combination of interest scales to differentiate between the specified groups. The accuracy of these factors to discriminate between individuals may be assessed initially by a classification of the subjects into predicted group membership on the basis of their scale scores. If in fact, factors are found which correctly classify a large percentage of cases, a discriminating profile may be established. The validity of such a profile would have to be assessed by continued investigation.

The primary concern of this study is thus to compare the Basic Interest scores of Arts and Science freshmen at the University of Ottawa. It is hoped that such a comparison will yield patterns of Basic Interest which may be employed to classify individuals in terms of their similarity to an Arts or Science group. The problem may be rephrased in terms of the following questions: Do students in Arts possess vocational interests that are significantly different from those in Science? Do the sexes within these curricula possess significantly different interests? Are the interests of

Males in Arts significantly different from Males in Science? Are the interests of Females in Arts significantly different from Females in Science? How significant is the discrimination in each case? What is the best combination of variables to discriminate the interests? Can these variables be used to classify an individual in terms of his/her similarity to one of the academic groups? The usefulness of the discriminant-function analysis for such purposes has been supported by a number of authors (Rao, 1952; Tatsuoaka & Tiedeman, 1954; Kendall, 1957; Duntleman, 1966; Brown, 1970).

It might be suggested then, in the context of the present study, that discriminating patterns of interest may manifest themselves in differing scores (high or low) on the 23 Basic Interest scales of the SCII. For instance, students in Science may typically score low on Social Service whereas students in Arts may tend to score low on Science and Mathematics. Of course, it is not suggested that these are necessarily the scaled directions, nor that all students in the curricula will score in the same manner. However, such directions

could reasonably be expected for these scales. It is also possible that some scales may have little or no discriminating power.

As to which scales either group will tend to score high or low on, the expectations are not definite. With no previous studies to substantiate the hypotheses, any prediction concerning the scaled directions would be purely intuitive. However, on the basis of past research with university groups, there does not seem to be any reason to believe that differentiating interests would not exist. A lack of significant differences would be interesting.

The next section will summarize the focus of this study and restate the problems in terms of the null hypotheses.

6. Summary and Hypotheses

To summarize, it has been indicated by the research of Strong (1952, 1955), Campbell (1966, 1968), and Duntzman (1966), to name a few, that various occupational and educational groups have vocational interests specific to that group. The fact that these groups have interests that may differentiate them from others

serves a valuable function in counseling settings where it may be necessary to assess how similar or dissimilar an individual's interests are to a known group. This in turn, allows counselors to guide individuals in study or career choices and may even be employed for selection purposes by various institutions. The benefits of this were demonstrated by Harmon and Campbell (1968) in counseling nonprofessional women, by Strong and Tucker (1952) for advising students planning medical careers, by Smith (1960) for predicting academic performance in a State College, and by Nolting (1971) in predicting job satisfaction for computer programmers (both male and female).

The Strong Vocational Interest Blank and the new Strong-Campbell Interest Inventory, have their scales standardized over hundreds of people considered successful and satisfied in their work. These scales have been established in a wide range of occupations. Considerable research has shown that a person with an A rating on a given scale has interests very similar to those people engaged in that occupation for a number of years; a B+, B,

or B- rating means that although the individual probably has those occupational interests, we cannot be as sure as we can with an A rating; a C rating means the testee does not have such interests. In both guidance and selection settings, occupations not in harmony with the person's interests should usually be eliminated from consideration. If a person's interests are very similar to a particular occupation or group of occupations, all other things being equal, the probability is that he would enjoy being employed in that occupation. It is important to note that interests are better indicators of occupational persistence than of occupational excellence (Campbell, 1971).

The present study proposes to compare the vocational interests of Arts and Science freshmen to determine whether discriminating Basic Interest scale scores can be established. If discriminant-functions are found between groups, a discriminating profile of weighted items may be composed and its classification ability assessed. Such a profile, if it appears to have significant classification power, could be useful in counseling university students faced with the

dilemma of choosing between Arts or Science curricula. It is understood that the establishment of such an instrument would rest on a large-scale validation study.

Having established the theoretical and experimental background, the problem posed by this study can be presented in terms of the hypotheses being stated in the null form.

The main hypothesis is this:

- 1.1 There are no significant differences at $p \leq .01$ on patterns of Basic Interest between two groups of subjects. One of the groups being university freshmen enrolled in Arts and the other being in Science curricula.

The sub-hypotheses flowing from and connected to the main hypothesis are these:

- 2.1 There is no significant difference at $p \leq .01$ on patterns of Basic Interest between all Males and all Females.
- 2.2 There is no significant difference at $p \leq .01$ on patterns of Basic Interest between Arts Males and Science Males.
- 2.3 There is no significant difference at $p \leq .01$ on patterns of Basic Interest between Arts Females and Science Females.

- 2.4 There is no significant difference at $p \leq .01$ on patterns of Basic Interest between Arts Males and Arts Females.
- 2.5 There is no significant difference at $p \leq .01$ on patterns of Basic Interest between Science Males and Science Females.

The following chapter presents the experimental design for the testing of these hypotheses.

CHAPTER II

EXPERIMENTAL DESIGN

This chapter presents the design of the study. It opens, in section one, with a description of the tools and a discussion of the rationale for their use. Section two deals with the subjects who participated in the study. The third section discusses the experimental procedures involved. The chapter concludes with section four examining the statistical procedures used to analyze the data.

1. The Tools

The measurement instrument used in this study was the Strong-Campbell Interest Inventory (Campbell, 1974). The question booklet and answer sheet which appear in Appendix 1 and 2 were administered after a brief introduction to the test and to the study. All subjects were presented with marking pencils.

The SCII questionnaire lists 325 items, most of which the subject responds to by filling in either "Like," "Indifferent," or "Dislike" on the answer sheet. These items are divided into seven

sections in the test booklet. These include: Occupations (131 items), School Subjects (36 items), Activities (51 items), Amusements (39 items), Types of People (24 items), Preference Between Two Activities (30 items), and Your Characteristics (14 "yes" or "no" items).

The results of the inventory are presented to the subject in a profile on three dimensions: General Occupational Themes, Basic Interest Scales, and the Occupational Scales.

The General Occupational Themes analyze the subject's responses in terms of six themes represented by the occupational types hypothesized and identified by Holland (1966, 1973). Measures of reliability and validity using the General Occupational Themes, are given in the SCII Manual (1974, p.31-32).

The Basic Interest Scales provide a picture of how the subject groups his interests in terms of "likes" and "dislikes" to form 23 homogeneous scales. The specific details of the construction of these scales are given in the Handbook for the SVIB (Campbell, 1971). The SCII Handbook (Campbell, 1974) lists

numerous studies supporting the predictive validity of the Basic Interest Scales. Test-retest reliabilities for the SCII are slightly higher than those of the SVIB scales (SCII Manual, p.44).

Each of the 79 Occupational Scales was formed according to items that differentiated samples of males and females (N=200 to 300) in specific occupations from the general population (N=600). A high score on a particular scale reflects that the subject answered with "likes" and "dislikes" very similar to the reference group on which the scale was based. Test-retest correlations as well as percent overlap in scores for criterion and reference samples are presented in the SCII Manual (Campbell, 1974). The predictive validity of the Occupational Scales has been amply supported (Strong, 1955; Campbell, 1971).

The Strong-Campbell Interest Inventory is currently the most up-to-date interest inventory. It's usefulness as a counseling device has been established in thousands of studies over the past fifty years. The research as already reviewed, ranges from developing interest profiles for non-

professional women to assessing the interests of satisfied computer programmers. Now, with it's latest revision, the Strong-Campbell Interest Inventory offers both personality and interest information which will be a valuable tool for counselors. For a further discussion of the reliabilities and validities of the SCII, the Manual and the Handbook are both useful sources of information.

2. The Subjects

Altogether, 371 subjects participated in this study. Of these, 10 were eliminated as having incomplete or otherwise improperly completed forms and one subject could not be "grouped" by the computer. Thus, the remaining usable number of subjects was 360, 202 Males and 158 Females.

The subjects were all freshmen registered in Arts or Science curricula at the University of Ottawa. In the Arts group there were 154 subjects, 54 Males and 101 Females. In the Science group, 206 subjects were tested, 149 Males and 57 Females. The number of Males to Females within each group is a representative distribution of the sexes enrolled in that faculty. Subjects were chosen on the basis of being registered

within compulsory courses for either Arts or Science programs.

Incentive for subject participation was given in the form of their own interpreted interest profile with a 3,500 word explanation of how to utilize their results. This may also have helped to insure more "honest" responses to the questionnaire.

3. The Procedure

With professor permission, tests were administered to nine classes within the Faculties of Arts and Science at the University of Ottawa. Classes were chosen on the basis of being required first-year courses, hence the best possible representative sample of Arts and Science freshmen. Every student in the given curricula had to be registered in one section of the course, no student was registered in more than one section of the course. The courses included English Literature 1111-1112 for Art students and Math 1400 A and B for Science students.

All tests were administered by a male and a female experimenter, both 24 years of age. The two experimenters were present during the entire class testing. Subjects were given a brief explanation of

of the study and told that participation was entirely voluntary. Subjects were also informed of the relative length of time needed to complete the test although it was pointed out that the test is not timed. Instructions were then given on how to complete the test.

4. Analysis of the Data

The 360 completed Strong-Campbell Interest Inventory answer sheets were scored by National Computer Systems in Minneapolis. Computer cards with each subject's raw scores were obtained along with the standard score counselor's and testee's copy of the profiled results. For information on the raw scores see Appendix 3. An example of a typical profile and corresponding interpretation instructions are presented in Appendix 4.

The data was examined in terms of the raw scores obtained by each subject on the 23 Basic Interest scales of the SCII. These scales are: Agriculture, Nature, Adventure, Military Activities, Mechanical Activities, Science, Mathematics, Medical Science, Medical Service, Music/Dramatics, Art, Writing, Teaching, Social Service, Athletics, Domestic Arts,

Religious Activities, Public Speaking, Law/Politics, Merchandising, Sales, Business Management and Office Practices.

All analyses were performed using an IBM computer at the University of Ottawa's Computing Centre. The discriminant-function analysis method was chosen on the basis of being the technique most suitable to test the hypotheses of this study. The analyses were conducted using the Statistical Package for the Social Sciences (SPSS). Each analysis was aimed at finding the best combination of Basic Interest scales to discriminate between the specified groups. The statistical significance for all comparisons was based on the acceptance of the .01 level of probability. From the results obtained, this study focused on the following:

- i) the degree of discrimination made between groups in terms of Wilks' Lambda (Cooley & Lohnes, 1962, ch. 6);
- ii) the contribution of each scale to the final discrimination in terms of discriminant-function coefficients;
- iii) the mean Basic Interest scale scores and standard deviations of each group on the 23 variables;
- iv) the centroids of the function or functions for each group in reduced space; and

- v) the accuracy of the discriminant-function scores to classify individuals as members of the specified groups in terms of the percentage of "grouped" cases correctly classified.

The prior probabilities of group size were taken into consideration when the classification was computed.

Six discriminant-function analyses were made using two groups at a time. The stepwise method was employed for all analyses to eliminate less contributing factors. A significant change in Rao's V was used as the criterion for inclusion in the final analysis (Rao, 1952). Each analysis was performed by combining the Basic Interest scale raw scores of the subjects in the specified groups. The first comparison was made between Arts and Science students. The second analysis was made between all Males and all Females to determine if differences existed necessitating separate sex comparisons. The remaining analyses were performed in the following order: Arts Males vs Science Males, Arts Females vs Science Females, Arts Males vs Arts Females, and Science Males vs Science Females. To yield a more complete picture of the discriminant-functions, a four-group discriminant analysis was conducted between Arts Males, Science Males, Arts

Females, and Science Females. This provided the same type of information as the two-group analysis of the data. As a cross-validation of the SPSS findings, a discriminant-function analysis was also computed using the SOUPAC program. The results of this last analysis substantiated the previous findings.

The results of these analyses are presented and discussed in the following chapter.

CHAPTER III

PRESENTATION AND DISCUSSION OF RESULTS

The first section of this chapter presents the results of the analyses performed on the experimental data. The second section discusses the implications of these findings. Section three presents suggestion for further research. The chapter ends with a summary of the study and conclusions.

1. Presentation of Results

The hypotheses regarding the differences in Basic Interest scale patterns with respect to the experimental variables were tested by discriminant-function analyses performed in a stepwise manner. Thus, the most discriminating variable was considered alone first, then the variables accounting for most of the remaining unexplained variance were added separately in order of importance.

In each analysis, a number of scales were found to indicate differences between the performance of the groups significant at the .01 level. Tables 1.1 through 2.6 present the group means and standard deviations of the analyses on the 23 Basic Interest scales.

Table 1.1
Basic Interest Scales: Group Means
for Arts and Science

Basic Interest Scales	Arts N=154	Science N=206	Total N=360
Agriculture	0.377	0.719	0.614
Nature	3.396	2.922	3.125
Adventure	0.864	2.777	1.958
Military Activities	-2.318	-1.689	-1.958
Mechanical Activities	-9.045	1.146	-3.214
Science	-0.981	6.913	3.536
Mathematics	-2.312	2.796	0.611
Medical Science	0.578	3.442	2.217
Medical Service	-1.357	-0.320	-0.764
Music/Dramatics	3.273	-1.636	0.464
Art	3.279	-2.354	0.056
Writing	3.916	-1.723	0.689
Teaching	2.987	0.413	1.514
Social Service	2.779	-0.966	0.636
Athletics	0.643	1.874	1.347
Domestic Arts	0.266	-2.413	-1.267
Religious Activities	-2.208	-3.607	-3.008
Public Speaking	-1.020	-2.583	-1.914
Law/Politics	-0.097	-1.490	-0.894
Merchandising	-3.312	-5.786	-4.728
Sales	-7.046	-6.680	-6.836
Business Management	-2.831	-4.151	-3.586
Office Practices	-8.935	-10.039	-9.567

Note: Calculations are based on both + and - raw scores.

Table 1.2
Basic Interest Scales: Group Means
for Males and Females

Basic Interest Scales	Males N=202	Females N=158	Total N=360
Agriculture	0.728	0.468	0.614
Nature	2.035	4.519	3.125
Adventure	3.015	0.608	1.958
Military Activities	-1.416	-2.652	-1.958
Mechanical Activities	1.545	-9.298	-3.214
Science	5.352	1.215	3.536
Math	1.980	-1.139	0.611
Medical Science	2.208	2.228	2.217
Medical Service	-1.500	0.177	-0.764
Music/Dramatics	-1.629	3.139	0.464
Art	-2.683	3.557	0.056
Writing	-0.842	2.646	0.689
Teaching	0.634	2.639	1.514
Social Service	-0.743	2.399	0.636
Athletics	2.574	-0.222	1.347
Domestic Arts	-3.520	1.614	-1.267
Religious Activities	-3.559	-2.304	-3.008
Public Speaking	-1.208	-2.817	-1.914
Law/Politics	0.050	-2.101	-0.894
Merchandising	-4.495	-5.025	-4.728
Sales	-5.708	-8.279	-6.836
Business Management	-2.475	-5.006	-3.586
Office Practices	-10.188	-8.772	-9.567

Note: Calculations are based on both + and - raw scores.

Table 1.3
Basic Interest Scales: Group Means
for Arts Males and Science Males

Basic Interest Scales	Arts(M) N=53	Science(M) N=149	Total N=202
Agriculture	0.830	0.691	0.728
Nature	2.151	1.993	2.035
Adventure	3.057	3.000	3.015
Military Activities	-1.113	-1.524	-1.416
Mechanical Activities	-3.057	3.181	1.545
Science	0.566	7.054	5.352
Mathematics	-1.359	3.168	1.980
Medical Science	0.359	2.866	2.208
Medical Service	-2.340	-1.201	-1.500
Music/Dramatics	1.698	-2.812	-1.629
Art	0.208	-3.711	-2.683
Writing	3.906	-2.530	-0.842
Teaching	2.132	0.101	0.634
Social Service	1.509	-1.544	-0.743
Athletics	2.472	2.611	2.574
Domestic Arts	-3.264	-3.611	-3.520
Religious Activities	-2.736	-3.852	-3.559
Public Speaking	1.585	-2.201	-1.208
Law/Politics	3.151	-1.054	0.050
Merchandising	-1.925	-5.409	-4.495
Sales	-5.057	-5.940	-5.708
Business Management	-0.076	-3.329	-2.475
Office Practices	-9.830	-10.315	-10.188

Note: Calculations are based on both + and - raw scores.

Table 1.4

Basic Interest Scales: Group Means for
Arts Females and Science Females

Basic Interest Scales	Arts(F) N=101	Science(F) N=57	Total N=158
Agriculture	0.139	1.053	0.468
Nature	4.050	5.351	4.519
Adventure	-0.287	2.193	0.608
Military Activities	-2.951	-2.123	-2.652
Mechanical Activities	-12.188	-4.175	-9.298
Science	-1.792	6.544	1.215
Mathematics	-2.812	1.825	-1.140
Medical Science	0.693	4.947	2.228
Medical Service	-0.842	1.983	0.177
Music/Dramatics	4.099	1.439	3.139
Art	4.891	1.193	3.557
Writing	3.921	0.386	2.646
Teaching	3.436	1.228	2.639
Social Service	3.446	0.544	2.399
Athletics	-0.317	-0.053	-0.222
Domestic Arts	2.119	0.719	1.614
Religious Activities	-1.931	-2.965	-2.304
Public Speaking	-2.386	-3.579	-2.817
Law/Politics	-1.802	-2.632	-2.101
Merchandising	-4.040	-6.772	-5.025
Sales	-8.089	-8.614	-8.279
Business Management	-4.277	-6.298	-5.006
Office Practices	-8.465	-9.316	-8.772

Note: Calculations are based on both + and - raw scores.

Table 1.5

Basic Interest Scales: Group Means for
Arts Males and Arts Females

Basic Interest Scales	Arts(M) N=53	Arts(F) N=101	Total N=154
Agriculture	0.830	0.139	0.377
Nature	2.151	4.050	3.396
Adventure	3.057	-0.287	0.864
Military Activities	-1.113	-2.951	-2.318
Mechanical Activities	-3.057	-12.188	-9.046
Science	0.566	-1.792	-0.981
Mathematics	-1.359	-2.812	-2.312
Medical Science	0.359	0.693	0.578
Medical Service	-2.340	-0.842	-1.357
Music/Dramatics	1.698	4.099	3.273
Art	0.208	4.891	3.279
Writing	3.906	3.921	3.916
Teaching	2.132	3.436	2.987
Social Service	1.509	3.446	2.779
Athletics	2.472	-0.317	0.643
Domestic Arts	-3.264	2.119	0.266
Religious Activities	-2.736	-1.931	-2.208
Public Speaking	1.585	-2.386	-1.020
Law/Politics	3.151	-1.802	-0.097
Merchandising	-1.925	-4.040	-3.312
Sales	-5.057	-8.089	-7.046
Business Management	-0.076	-4.277	-2.831
Office Practices	-9.830	-8.465	-8.935

Note: Calculations are based on both + and - raw scores.

Table 1.6

Basic Interest Scales: Group Means for
Science Males and Science Females

Basic Interest Scales	Science(M) N=149	Science(F) N=57	Total N=206
Agriculture	0.691	1.053	0.791
Nature	1.993	5.351	2.922
Adventure	3.000	2.193	2.777
Military Activities	-1.524	-2.123	-1.689
Mechanical Activities	3.181	-4.175	1.146
Science	7.054	6.544	6.913
Mathematics	3.168	1.825	2.796
Medical Science	2.866	4.947	3.442
Medical Service	-1.201	1.983	-0.320
Music/Dramatics	-2.812	1.439	-1.636
Art	-3.711	1.193	-2.354
Writing	-2.530	0.386	-1.723
Teaching	0.101	1.228	0.413
Social Service	-1.544	0.544	-0.966
Athletics	2.611	-0.053	1.874
Domestic Arts	-3.611	0.719	-2.413
Religious Activities	-3.852	-2.965	-3.607
Public Speaking	-2.201	-3.579	-2.583
Law/Politics	-1.054	-2.632	-1.490
Merchandising	-5.409	-6.772	-5.786
Sales	-5.940	-8.614	-6.680
Business Management	-3.329	-6.298	-4.151
Office Practices	-10.315	-9.316	-10.039

Note: Calculations are based on both + and - raw scores.

Table 2.1

Basic Interest Scales: Group Standard
Deviations for Arts and Science

Basic Interest Scales	Arts N=154	Science N=206	Total N=360
Agriculture	2.908	2.799	2.850
Nature	4.604	4.596	4.599
Adventure	5.010	4.460	4.791
Military Activities	2.876	3.038	2.982
Mechanical Activities	10.285	11.437	12.053
Science	7.551	5.737	7.641
Mathematics	5.106	3.606	4.994
Medical Science	4.388	3.988	4.393
Medical Service	4.001	3.855	3.946
Music/Dramatics	5.989	6.374	6.664
Art	7.156	6.713	7.439
Writing	6.868	7.700	7.859
Teaching	4.094	4.450	4.481
Social Service	4.905	4.882	5.226
Athletics	5.603	5.540	5.593
Domestic Arts	5.081	4.410	4.885
Religious Activities	4.482	4.168	4.354
Public Speaking	5.171	4.627	4.921
Law/Politics	6.611	5.918	6.253
Merchandising	5.379	5.259	5.443
Sales	4.088	4.239	4.173
Business Management	6.068	6.072	6.097
Office Practices	5.689	5.276	5.476

Table 2.2

Basic Interest Scales: Group Standard
Deviations for Males and Females

Basic Interest Scales	Males N=202	Females N=158	Total N=360
Agriculture	2.699	3.034	2.850
Nature	4.318	4.584	4.599
Adventure	4.253	5.105	4.791
Military Activities	3.117	2.652	2.982
Mechanical Activities	11.128	10.357	12.053
Science	7.116	6.682	7.641
Mathematics	4.621	4.919	4.994
Medical Science	4.482	4.292	4.393
Medical Service	3.620	4.152	3.946
Music/Dramatics	6.384	6.044	6.664
Art	6.557	7.037	7.439
Writing	7.648	7.711	7.859
Teaching	4.469	4.251	4.481
Social Service	4.793	5.241	5.226
Athletics	5.504	5.322	5.593
Domestic Arts	3.762	4.645	4.885
Religious Activities	4.158	4.509	4.354
Public Speaking	4.944	4.756	4.921
Law/Politics	6.427	5.824	6.253
Merchandising	5.697	5.104	5.443
Sales	4.375	3.403	4.173
Business Management	6.422	5.346	6.097
Office Practices	4.895	6.062	5.476

Table 2.3

Basic Interest Scales: Group Standard Deviations
for Arts Males and Science Males

Basic Interest Scales	Arts(M) N=53	Science(M) N=149	Total N=202
Agriculture	2.806	2.668	2.699
Nature	4.521	4.258	4.318
Adventure	4.258	4.265	4.253
Military Activities	3.166	3.103	3.117
Mechanical Activities	10.805	10.811	11.128
Science	8.427	5.718	7.116
Mathematics	5.485	3.608	4.621
Medical Science	4.650	4.245	4.482
Medical Service	3.980	3.448	3.620
Music/Dramatics	5.859	6.157	6.384
Art	6.915	6.126	6.557
Writing	5.845	7.516	7.648
Teaching	4.225	4.446	4.469
Social Service	4.627	4.605	4.793
Athletics	5.889	5.381	5.504
Domestic Arts	4.124	3.635	3.762
Religious Activities	4.386	4.049	4.158
Public Speaking	4.435	4.743	4.944
Law/Politics	6.292	6.126	6.427
Merchandising	5.964	5.326	5.697
Sales	4.696	4.248	4.375
Business Management	6.510	6.191	6.422
Office Practices	4.922	4.896	4.895

Table 2.4

Basic Interest Scales: Group Standard Deviations
for Arts Females and Science Females

Basic Interest Scales	Arts(F) N=101	Science(F) N=57	Total N=158
Agriculture	2.946	3.125	3.034
Nature	4.533	4.596	4.584
Adventure	5.001	4.926	5.105
Military Activities	2.503	2.842	2.652
Mechanical Activities	8.494	11.407	10.357
Science	6.955	5.819	7.682
Mathematics	4.849	3.444	4.919
Medical Science	4.263	2.722	4.292
Medical Service	3.934	3.939	4.152
Music/Dramatics	5.919	5.937	6.044
Art	6.772	6.932	7.037
Writing	7.375	7.839	7.711
Teaching	3.971	4.396	4.251
Social Service	4.937	5.292	5.241
Athletics	5.225	5.534	5.322
Domestic Arts	4.537	4.739	4.645
Religious Activities	4.528	4.436	4.509
Public Speaking	5.020	4.183	4.756
Law/Politics	6.145	5.216	5.824
Merchandising	4.921	4.993	5.104
Sales	3.302	3.580	3.403
Business Management	5.307	5.213	5.346
Office Practices	6.023	6.148	6.062

Table 2.5

Basic Interest Scales: Group Standard Deviations
for Arts Males and Arts Females

Basic Interest Scales	Arts(M) N=53	Arts(F) N=101	Total N=154
Agriculture	2.806	2.946	2.908
Nature	4.521	4.533	4.604
Adventure	4.258	5.009	5.010
Military Activities	3.166	2.504	2.876
Mechanical Activities	10.805	8.494	10.285
Science	8.427	6.955	7.551
Mathematics	5.485	4.849	5.106
Medical Science	4.650	4.263	4.388
Medical Service	3.980	3.934	4.001
Music/Dramatics	5.859	5.919	5.989
Art	6.915	6.772	7.156
Writing	5.845	7.375	6.868
Teaching	4.225	3.971	4.094
Social Service	4.627	4.937	4.905
Athletics	5.889	5.225	5.603
Domestic Activities	4.124	4.537	5.081
Religious Activities	4.386	4.528	4.482
Public Speaking	4.435	5.020	5.171
Law/Politics	6.292	6.145	6.611
Merchandising	5.964	4.921	5.379
Sales	4.696	3.302	4.088
Business Management	6.510	5.307	6.068
Office Practices	4.922	6.023	5.689

Table 2.6

Basic Interest Scales: Group Standard Deviations
for Science Males and Science Females

Basic Interest Scales	Science(M) N=149	Science(F) N=57	Total N=206
Agriculture	2.668	3.125	2.799
Nature	4.258	4.596	4.596
Adventure	4.265	4.926	4.460
Military Activities	3.103	2.842	3.038
Mechanical Activities	10.811	11.407	11.437
Science	5.718	5.819	5.737
Mathematics	3.608	3.444	3.606
Medical Science	4.245	2.722	3.988
Medical Service	3.448	3.939	3.855
Music/Dramatics	6.157	5.937	6.374
Art	6.126	6.932	6.713
Writing	7.516	7.839	7.700
Teaching	4.446	4.396	4.450
Social Service	4.605	5.292	4.882
Athletics	5.381	5.534	5.540
Domestic Arts	3.635	4.739	4.410
Religious Activities	4.049	4.436	4.168
Public Speaking	4.743	4.183	4.627
Law/Politics	6.126	5.216	5.918
Merchandising	5.326	4.993	5.259
Sales	4.248	3.580	4.239
Business Management	6.191	5.213	6.072
Office Practices	4.896	6.148	5.276

The differences in scale scores are reflected by these differing means and standard deviations. Tables 3.1 through 3.7 present the Wilks' lambdas and univariate F ratios for the 23 variables in the individual comparisons. In each analysis, a minimum of 10 variables were found to be significant for discriminating between the groups at the .01 level. The six two-group analyses indicated 14, 19, 13, 12, 10, and 11 significantly discriminating scales respectively.

The significant discriminant scales are organized such that they combine to form a discriminant function(s) onto which group centroids may be plotted. The discriminating power of the function for each two-group analysis, as well as for a four-group analysis, were tested by chi-square approximations with $p(k-1)$ degrees of freedom, where p is the number of variables and k is the number of groups (Table 4.1). The results of the Arts-Science comparison yielded a chi-square of 234.499 ($df=11$; $p < .01$). The Male-Female analysis resulted in a chi-square of 283.915 ($df=14$; $p < .01$). The comparison between Arts Males and Science Males provided a chi-square of 105.534 ($df=10$; $p < .01$).

Table 3.1

Basic Interest Scales: Wilks' Lambdas and
Univariate F-Ratios for Arts and Science

Basic Interest Scale	Wilks' Lambda	F-Ratio	p
Agriculture	0.995	1.870	n.s.
Nature	0.997	0.935	n.s.
Adventure	0.961	14.583	.001
Military Activities	0.989	3.951	n.s.
Mechanical Activities	0.825	76.197	.001
Science	0.738	127.056	.001
Mathematics	0.743	123.687	.001
Medical Science	0.896	41.689	.001
Medical Service	0.983	6.170	n.s.
Music/Dramatics	0.867	55.010	.001
Art	0.859	58.648	.001
Writing	0.874	51.790	.001
Teaching	0.919	31.565	.001
Social Service	0.874	51.652	.001
Athletics	0.988	4.308	n.s.
Domestic Arts	0.926	28.528	.001
Religious Activities	0.975	9.307	.005
Public Speaking	0.975	9.090	.005
Law/Politics	0.988	4.414	n.s.
Merchandising	0.949	19.134	.001
Sales	0.998	0.676	n.s.
Business Management	0.989	4.163	n.s.
Office Practices	0.990	3.607	n.s.

ndf = 1;358

Table 3.2

Basic Interest Scales: Wilks' Lambdas and
Univariate F-Ratios for Males and Females

Basic Interest Scale	Wilks' Lambda	F-Ratio	p
Agriculture	0.998	0.734	n.s.
Nature	0.928	27.801	.001
Adventure	0.938	23.804	.001
Military Activities	0.958	15.863	.001
Mechanical Activities	0.800	89.403	.001
Science	0.928	27.929	.001
Mathematics	0.904	38.172	.001
Medical Science	1.000	0.002	n.s.
Medical Service	0.955	16.715	.001
Music/Dramatics	0.874	51.811	.001
Art	0.826	72.282	.001
Writing	0.951	18.298	.001
Teaching	0.951	18.634	.001
Social Service	0.911	35.078	.001
Athletics	0.938	23.545	.001
Domestic Arts	0.727	134.226	.001
Religious Activities	0.980	7.505	.01
Public Speaking	0.974	9.701	.005
Law/Politics	0.971	10.773	.005
Merchandising	0.998	0.841	n.s.
Sales	0.906	37.017	.001
Business Management	0.957	15.913	.001
Office Practices	0.984	6.011	n.s.

ndf = 1;358

Table 3.3

Basic Interest Scales: Wilks' Lambdas and Univariate
F-Ratios for Arts Males and Science Males

Basic Interest Scale	Wilks' Lambda	F-Ratio	p
Agriculture	1.000	0.103	n.s.
Nature	1.000	0.005	n.s.
Adventure	1.000	0.007	n.s.
Military Activities	0.997	0.676	n.s.
Mechanical Activities	0.939	13.019	.001
Science	0.838	38.569	.001
Mathematics	0.813	45.885	.001
Medical Science	0.939	12.964	.001
Medical Service	0.981	3.921	n.s.
Music/Dramatics	0.903	21.505	.001
Art	0.931	14.933	.001
Writing	0.862	31.946	.001
Teaching	0.960	8.373	.005
Social Service	0.921	17.140	.001
Athletics	1.000	0.025	n.s.
Domestic Arts	0.998	0.331	n.s.
Religious Activities	0.986	2.844	n.s.
Public Speaking	0.886	25.751	.001
Law/Politics	0.917	18.159	.001
Merchandising	0.927	15.701	.001
Sales	0.992	1.597	n.s.
Business Management	0.950	10.507	.005
Office Practices	0.998	0.383	n.s.

ndf = 1;200

Table 3.4

Basic Interest Scales: Wilks' Lambdas and Univariate
F-Ratios for Arts Females and Science Females

Basic Interest Scale	Wilks' Lambda	F-Ratio	p
Agriculture	0.979	3.356	n.s.
Nature	0.981	2.973	n.s.
Adventure	0.945	9.040	.005
Military Activities	0.977	3.609	n.s.
Mechanical Activities	0.861	25.165	.001
Science	0.727	58.665	.001
Mathematics	0.794	40.518	.001
Medical Science	0.772	46.085	.001
Medical Service	0.893	18.760	.001
Music/Dramatics	0.955	7.345	.01
Art	0.936	10.683	.005
Writing	0.951	7.997	.005
Teaching	0.937	10.418	.005
Social Service	0.929	11.950	.001
Athletics	0.999	0.089	n.s.
Domestic Arts	0.979	3.357	n.s.
Religious Activities	0.988	1.929	n.s.
Public Speaking	0.985	2.311	n.s.
Law/Politics	0.995	0.738	n.s.
Merchandising	0.934	11.115	.001
Sales	0.995	0.866	n.s.
Business Management	0.967	5.352	n.s.
Office Practices	0.995	0.716	n.s.

ndf = 1;156

Table 3.5

Basic Interest Scales: Wilks' Lambdas and Univariate
F-Ratios for Arts Males and Arts Females

Basic Interest Scale	Wilks' Lambda	F-Ratio	p
Agriculture	0.987	1.978	n.s.
Nature	0.961	6.109	n.s.
Adventure	0.899	17.115	.001
Military Activities	0.907	15.535	.001
Mechanical Activities	0.821	33.159	.001
Science	0.978	3.445	n.s.
Mathematics	0.982	2.850	n.s.
Medical Science	0.999	0.201	n.s.
Medical Service	0.968	5.000	n.s.
Music/Dramatics	0.964	5.759	n.s.
Art	0.903	16.387	.001
Writing	1.000	0.000	n.s.
Teaching	0.977	3.584	n.s.
Social Service	0.965	5.579	n.s.
Athletics	0.944	9.063	.005
Domestic Arts	0.745	52.023	.001
Religious Activities	0.993	1.123	n.s.
Public Speaking	0.866	23.517	.001
Law/Politics	0.873	22.214	.001
Merchandising	0.965	5.534	n.s.
Sales	0.875	21.720	.001
Business Management	0.891	18.582	.001
Office Practices	0.987	2.014	n.s.

ndf = 1;152

Table 3.6

Basic Interest Scales: Wilks' Lambdas and Univariate
F-Ratios for Science Males and Science Females

Basic Interest Scale	Wilks' Lambda	F-Ratio	p
Agriculture	0.967	0.686	n.s.
Nature	0.893	24.525	.001
Adventure	0.993	1.352	n.s.
Military Activities	0.992	1.609	n.s.
Mechanical Activities	0.917	18.515	.001
Science	0.998	0.325	n.s.
Mathematics	0.972	5.857	n.s.
Medical Science	0.945	11.824	.001
Medical Service	0.863	32.429	.001
Music/Dramatics	0.911	20.035	.001
Art	0.893	24.535	.001
Writing	0.971	6.000	n.s.
Teaching	0.987	2.668	n.s.
Social Service	0.963	7.786	.01
Athletics	0.954	9.943	.005
Domestic Arts	0.806	49.080	.001
Religious Activities	0.991	1.877	n.s.
Public Speaking	0.982	3.704	n.s.
Law/Politics	0.986	2.959	n.s.
Merchandising	0.987	2.791	n.s.
Sales	0.920	17.756	.001
Business Management	0.952	10.307	.005
Office Practices	0.993	1.484	n.s.

ndf = 1;204

Table 3.7

Basic Interest Scales: Wilks' Lambdas and Univariate
F-Ratios for Arts Males, Science Males,
Arts Females, and Science Females

Basic Interest Scale	Wilks' Lambda	F-Ratio	p
Agriculture	0.987	1.532	n.s.
Nature	0.920	10.363	.005
Adventure	0.910	11.673	.001
Military Activities	0.948	6.550	n.s.
Mechanical Activities	0.726	44.752	.001
Science	0.728	44.264	.001
Mathematics	0.727	44.626	.001
Medical Science	0.869	17.833	.001
Medical Service	0.894	14.017	.001
Music/Dramatics	0.808	28.287	.001
Art	0.771	35.255	.001
Writing	0.858	19.671	.001
Teaching	0.904	12.673	.001
Social Service	0.842	22.218	.001
Athletics	0.938	7.844	.01
Domestic Arts	0.718	46.508	.001
Religious Activities	0.967	4.103	n.s.
Public Speaking	0.903	12.719	.001
Law/Politics	0.920	10.352	.005
Merchandising	0.928	9.283	.005
Sales	0.900	13.213	.001
Business Management	0.915	10.984	.001
Office Practices	0.980	2.399	n.s.

ndf = 1;356

Table 4.1

Basic Interest Scales: Discriminant Function Summary
Data for the Discriminant Analyses

Analysis	Function	% Contrib.	Wilks' Lambda	Chi- Square	df	p
Arts-Science	1	100.00	0.5114	234.499	11	.01
Male-Female	1	100.00	0.4445	283.915	14	.01
Art _M -S _M	1	100.00	0.582	105.534	10	.01
Art _F -S _F	1	100.00	0.525	97.108	11	.001
Art _M -Art _F	1	100.00	0.4114	129.124	11	.01
S _M -S _F	1	100.00	0.539	122.232	12	.01
A _M -S _M -A _F -S _F	1	75.28	0.246	489.080	51	.01
	2	21.85	0.642	154.512	32	.01
	3	2.87	0.942	20.761	15	n.s.

The Arts Female-Science Female analysis yielded a chi-square of 97.108 ($df=11$; $p < .001$). The Arts Male-Arts Female comparison resulted in a chi-square of 129.124 ($df=11$; $p < .01$). The analysis between Science Males and Science Females resulted in a chi-square of 122.232 ($df=12$; $p < .01$). A four-group analysis between Arts Males-Science Males-Arts Females-Science Females provided a chi-square of 489.080 ($df=51$; $p < .01$) on the first function and 154.512 ($df=32$; $p < .01$) on the second. The third function failed to achieve significance at the .01 level.

Thus, with reference to hypothesis 1.1 concerning differences in the patterns of Basic Interest between Arts and Science, the null condition was rejected. The best combination of discriminating scales are indicated by their corresponding standardized discriminant function coefficients presented in Table 5.1. The three scales contributing most to the Arts-Science discrimination were Merchandising, Sales, and Science respectively. In turn, these scales are the major contributors to the resulting group centroids shown in Table 6.1. On the basis of the weightings

Table 5.1

Basic Interest Scales: Standardized Discriminant Function
Coefficients for the Art-Science, Male-Female, and
Arts Male-Science Male Discriminations

Basic Interest Scale	Discriminant Function Coefficient		
	Art-Science	Male-Female	$A_M - S_M$
Agriculture	-	-0.055	-
Nature	-	0.087	-0.097
Adventure	0.078	-	-
Military Activities	-	-	-
Mechanical Activities	0.091	-0.154	-
Science	0.207	-0.145	0.160
Mathematics	0.188	-	0.156
Medical Science	0.178	-	0.224
Medical Service	-	0.119	-0.078
Music/Dramatics	-	0.075	-
Art	-0.155	-	-
Writing	-	-	-0.203
Teaching	-0.095	-	-
Social Service	-0.124	0.061	-0.123
Athletics	-	-0.092	-
Domestic Arts	-	0.247	0.169
Religious Activities	-	-	-
Public Speaking	-	-0.266	-
Law/Politics	-0.089	0.125	-
Merchandising	-0.275	0.120	-0.308
Sales	0.268	-0.166	0.218
Business Management	-	-0.100	-
Office Practices	-	-	-

Note: Scales not included were not of a significant enough level to be included in the stepwise analysis.

Table 5.2

Basic Interest Scales: Standardized Discriminant Function
Coefficients for the Arts Female-Science Female, Arts
Male-Arts Female, and Science Male-
Science Female Discriminations

Basic Interest Scale	Discriminant Function Coefficient		
	$A_F - S_F$	$A_M - A_F$	$S_M - S_F$
Agriculture	0.276	-0.146	-
Nature	-0.145	0.081	-
Adventure	-	-	-
Military Activities	-	-	-
Mechanical Activities	-	-0.190	-0.081
Science	0.301	-0.144	-0.110
Mathematics	0.123	-	-
Medical Science	-	0.228	-
Medical Service	0.199	-0.073	0.172
Music/Dramatics	-0.090	-	0.097
Art	-	-	-
Writing	-	0.104	-
Teaching	-0.126	-	-0.055
Social Service	-0.099	0.127	-
Athletics	-0.117	-	-0.071
Domestic Arts	-	0.248	0.223
Religious Activities	-	-	-
Public Speaking	-	-0.247	-0.203
Law/Politics	-	-	0.119
Merchandising	-0.160	-	0.149
Sales	0.193	-0.089	-0.192
Business Management	-	-	-0.114
Office Practices	-	-	-

Note: Scales not included were not of a significant enough level to be included in the stepwise analysis.

Table 5.3

Basic Interest Scales: Standardized Discriminant Function
Coefficients for the Arts Male-Science Male-
Arts Female-Science Female Discrimination

Basic Interest Scale	Discriminant Function Function 1	Discriminant Function Function 2
Agriculture	-	-
Nature	0.033	0.021
Adventure	-0.019	0.105
Military Activities	-	-
Mechanical Activities	-0.161	-0.085
Science	-0.192	0.007
Mathematics	-0.048	0.176
Medical Science	-0.031	0.169
Medical Service	0.053	0.108
Music/Dramatics	0.068	-0.013
Art	0.082	-0.050
Writing	-	-
Teaching	0.028	-0.102
Social Service	0.102	-0.025
Athletics	-0.066	-0.136
Domestic Arts	0.175	0.266
Religious Activities	-	-
Public Speaking	-0.200	-0.152
Law/Politics	0.119	-0.004
Merchandising	0.148	-0.159
Sales	-0.234	0.021
Business Management	-	-
Office Practices	-	-

Note: Scales not included were not of a significant enough level to be included in the stepwise analysis.

Table 6.1

Basic Interest Scales: Group Centroids in Reduced
Space for the Discriminant Analyses

Analysis	Group Centroids in Reduced Space	
	Function 1	Function 2
Arts-Science		
Arts	-0.617	-
Science	0.453	-
Male-Female		
Males	-0.385	-
Females	0.493	-
Arts _M -Science _M		
Arts _M	-0.576	-
Science _M	0.205	-
Arts _F -Science _F		
Arts _F	-0.299	-
Science _F	0.530	-
Arts _M -Arts _F		
Arts _M	-0.551	-
Arts _F	0.289	-
Science _M -Science _F		
Science _M	-0.187	-
Science _F	0.488	-
A _M -S _M -A _F -S _F		
Arts _M	-0.066	-0.510
Science _M	-0.506	0.028
Arts _F	0.700	-0.051
Science _F	0.143	0.491

given by the discriminant analysis, Arts and Science subjects were assigned to their predicted group membership (Table 7.1). Utilizing the discriminant analysis data, the prediction results for the Arts-Science discrimination indicated that 82.78% of the cases were correctly classified.

On the basis of the previously mentioned findings (Table 4.1), hypothesis 2.1 concerning differences in interest patterns between Males and Females, the null condition was also rejected. Table 5.1 shows the best combination of scales for discriminating between these groups. Among the discriminating scales, Public Speaking, Domestic Arts, and Sales were found to be the ones contributing most to the discrimination. The corresponding group centroids are presented in Table 6.1. From the discriminant analysis information, 86.67% of the Males and Females were correctly classified according to their group membership (Table 7.2).

With reference to hypothesis 2.2 concerning differences in patterns of interest between Arts Males and Science Males, the null condition was again rejected.

Table 7.1

Basic Interest Scales: Prediction Results for
the Arts-Science Discrimination

Actual Group	N	Prior Probability	Predicted Arts	Gr. Membership N	Science	N
Arts	154	42.8%	74.7%	115	25.3%	39
Science	206	57.2%	11.2%	23	88.8%	183
Cases Correctly Classified: 82.78%						

Note: Prior probabilities are based on relative group size.

Table 7.2

Basic Interest Scales: Prediction Results for
the Male-Female Discrimination

Actual Group	N	Prior Probability	Predicted Gr. Membership			
			Male	N	Female	N
Males	202	56.1%	90.6%	183	9.4%	19
Females	158	43.9%	18.4%	29	81.6%	129
Cases Correctly Classified: 86.67%						

Note: Prior probabilities are based on relative
group size.

on the basis of the data (Table 4.1). Table 5.1 presents the scales contributing most to the Arts Male-Science Male discrimination. Of these, Merchandising, Medical Science, and Sales were the best discriminators. The group centroids for this analysis are given in Table 6.1. Of the 202 Male subjects, 87.62% were classified correctly as being in Arts or Science on the basis of the discriminant data (Table 7.3).

With respect to the findings mentioned in the opening of this section, the null condition was rejected for hypothesis 2.3 concerning differences in interest between Arts Females and Science Females. In this analysis, the discriminant function was found to be significant at the .001 level (Table 4.1). Here, the best scales for differentiating between Arts Females and Science Females were Science, Agriculture, and Medical Service respectively (Table 5.2). The group centroids on the derived function are shown in Table 6.1. The information from this analysis was used to correctly classify 83.54% of the Females into their respective groups (Table 7.4).

In the case of hypothesis 2.4 concerning

Table 7.3

Basic Interest Scales: Prediction Results for
the Arts Males-Science Males Discrimination

Actual Group	N	Prior Probability	Predicted Gr. Membership			
			Arts _M	N	Science _M	N
Arts Males	53	26.2%	64.2%	34	35.8%	19
Science Males	149	73.8%	4.0%	6	96.0%	143
Cases Correctly Classified: 87.62%						

Note: Prior probabilities are based on relative
group size.

Table 7.4

Basic Interest Scales: Prediction Results for the
Arts Females-Science Females Discrimination

Actual Group	N	Prior Probability	Predicted Gr. Membership			
			Arts _F	N	Science _F	N
Arts Females	101	63.9%	87.1%	88	12.9%	13
Science Females	57	36.1%	22.8%	13	77.2%	44
Cases Correctly Classified: 83.54%						

Note: Prior probabilities are based on relative
group size.

differences in interest between Arts Males and Arts Females, the null condition was also rejected. The results of the analysis indicated that the discriminant function was significant at the .01 level for differentiating between Males and Females in Arts (Table 4.1). The Basic Interest scales forming the discriminant function are shown in Table 5.2. Of these scales, Domestic Arts, Public Speaking, and Medical Science were found to be contributing most to the differentiation. The group centroids of Arts Males and Arts Females are presented in Table 6.1. Among the series of two-group analyses, this last analysis provided the highest number of correct classifications. In this instance, 89.61% of the 154 subjects were correctly classified by predicted group membership (Table 7.5).

The final two-group analysis between Males and Females in Science provided significant differentiation at the .01 level (Table 4.1). Thus, the null **condition** for hypothesis 2.5 regarding differences between the interests of Science Males and Science Females, was rejected. Table 5.2 presents the dis-

Table 7.5

Basic Interest Scales: Prediction Results for the
Arts Males-Arts Females Discrimination

Actual Group	N	Prior Probability	Predicted Gr. Membership			
			Arts _M	N	Arts _F	N
Arts Males	53	34.4%	77.4%	41	22.6%	12
Arts Females	101	65.6%	4.0%	4	96.0%	97
Cases Correctly Classified: 89.61%						

Note: Prior probabilities are based on relative
group size.

criminating Basic Interest scales. In differentiating between Male and Female Science students, Domestic Arts, Public Speaking, and Sales were found to be the most contributing variables. The corresponding group centroids are shown in Table 6.1. In predicting group membership from the findings, 87.38% of the cases were correctly classified (Table 7.6).

As each of the above two-group analyses provide only one discriminant function, a four-group analysis was conducted to provide a minimum of one and maximum of three discriminant functions. The four-group analysis indicated significant discrimination ($p < .01$) between Arts Males, Science Males, Arts Females, and Science Females on two discriminant functions. The third function failed to achieve significance at the .01 level (Table 4.1). With each of the two functions, 17 Basic Interest scales were found to be contributing to the differentiation. (Table 5.3). On function 1, Sales, Public Speaking, and Science were the highest contributors whereas on function 2, Domestic Arts, Mathematics, and Medical Science were contributing most to the discrimination. Table 6.1 presents the

Table 7.6

Basic Interest Scales: Prediction Results for the
Science Males-Science Females Discrimination

Actual Group	N	Prior Probability	Predicted Gr. Membership			
			Science _M	N	Science _F	N
Science Males	149	72.3%	95.3%	142	4.7%	7
Science Females	57	27.7%	33.3%	19	66.7%	38
Cases Correctly Classified: 87.38%						

Note: Prior probabilities are based on relative
group size.

Table 7.7

Basic Interest Scales: Prediction Results for
the Arts Males, Science Males, Arts Females,
and Science Females Discrimination

Actual Group	Prior Probability	Predicted Gr. Membership			
		A _M	S _M	S _F	A _F
Arts Males	14.7%	43.4%	39.6%	0.0%	17.0%
N	53	23	21	0	9
Science Males	41.4%	4.0%	90.6%	4.0%	1.3%
N	149	6	135	6	2
Science Females	15.8%	1.8%	29.8%	50.9%	17.5%
N	57	1	17	29	10
Arts Females	28.1%	5.0%	4.0%	11.9%	79.2%
N	101	5	4	12	80

Cases Correctly Classified: 74.17%

Note: Prior probabilities are based on relative
group size.

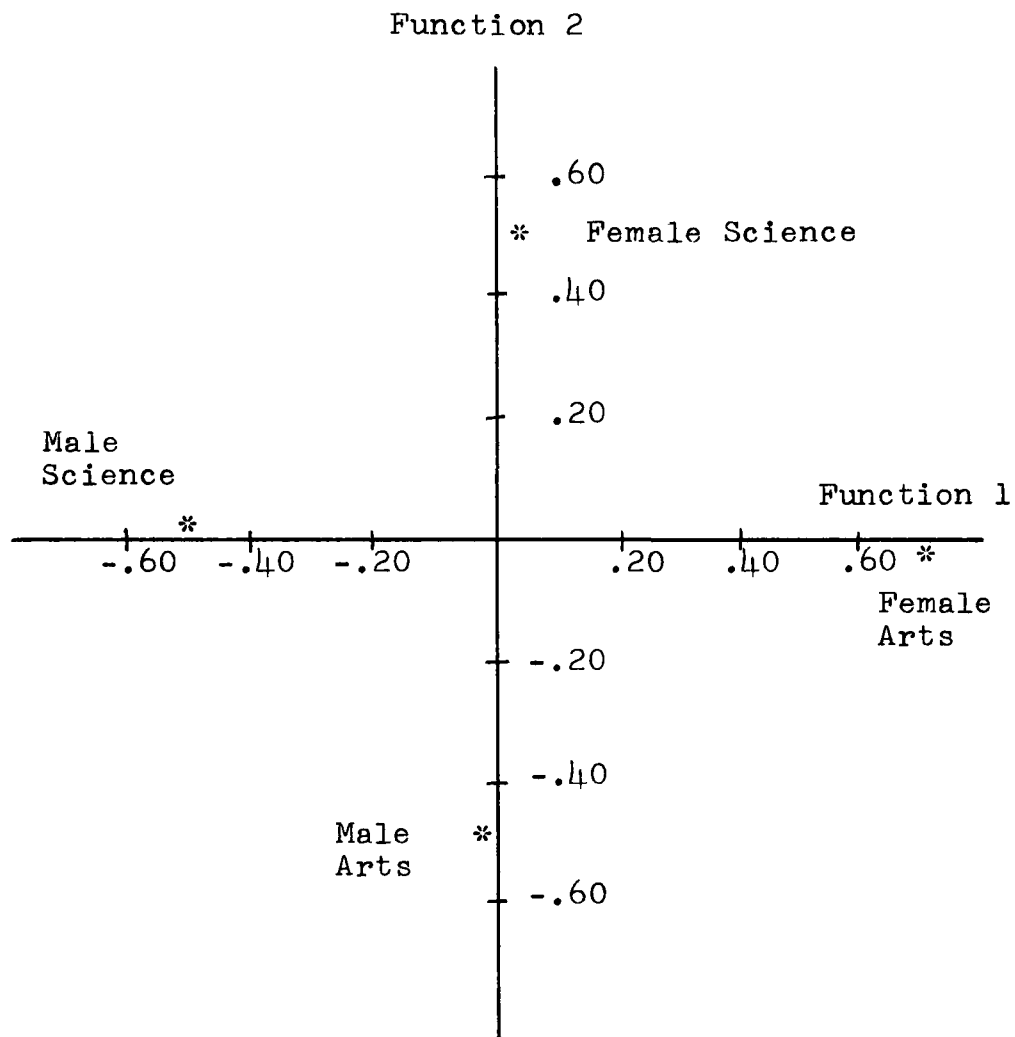


Figure 1. Basic Interest Scales: Group Centroids in the Discriminant Function Space for the Arts Males-Science Males-Arts Females-Science Females Discrimination.

centroids for the four-group analysis. The centroids are shown in the discriminant-function space in Figure 1. The Arts Males' centroid is shown on the negative pole and Science Females' centroid is on the positive pole of function 2. Science Males have their centroid on the negative side and Arts Females on the positive side of the function 1 axis. In predicting group membership, 43.4% of the Arts Males, 90.6% of the Science Males, 50.9% of the Science Females, and 79.2% of the Arts Females were correctly classified (Table 7.7). This resulted in 74.17% of the 360 subjects being correctly classified on the basis of the four-group discriminant analysis data.

Having presented the discriminant analyses findings, the next section will discuss the implications of these results.

2. Discussion of Results

The variable of Basic Interest was found to be a significant factor in differentiating between Arts and Science freshmen as well as between Males and Females within these curricula. Among the 23 Basic Interest

items, certain scales provided more information than others for the discriminant function(s). In turn, some of these scales made positive contributions while other provided negative weightings for the discrimination.

The most interesting aspect of these findings is the question of which scales characterized what group. The results indicated that Arts Males have high scores on the Writing, Law/Politics, Adventure and Athletics scales, and low scores on the Office Practices, Sales, Domestic Arts, and Religious Activities scales. On the other hand, Arts Females typically scored higher on the Art, Music/Dramatics, Writing, and Social Service scales and lower on Mechanical Activities, Office Practices, Sales, and Business Management. These findings of significantly different interests between Arts Males and Females suggest that it is not valid to speak in terms of "Arts students". Rather, it is of importance to consider the sex differences that exist within the curricula and therefore clarify whether it is Males or Females being discussed within the context of Basic Interest patterns.

With reference to Science students, significant

differences were also found between Males and Females on the Basic Interest scales. Therefore, sex must again be clarified before one can speak of a Science group. How these differences manifest themselves is thus of primary importance. Science Males generally scored high on Science, Mechanical Activities, Mathematics, and Adventure. This was contrasted by low scores on Office Practices, Sales, Merchandising, and Religious Activities. Their Female counterparts typically obtained high scores on Science, Nature, Medical Science, and Adventure while at the same time scoring low on Office Practices, Sales, Merchandising, and Business Management. These findings are particularly important when similarities as well as differences in Basic Interest are taken into consideration. Thus, Arts Males and Science Males not only have differing interests, but also possess interests which make them similar to some extent. The same holds true in the case of Arts and Science Females. However, it is the relative strength of these preferences which distinguish the groups on the basis of discriminant scores. In interpreting these findings, it may be hypothesized

that it is the very strength of these Basic Interest scale differences that are the underlying motivators for choosing one curriculum rather than another. Thus, an individual may decide to study Science not only based upon the belief that he shares similar interests with this group, but also on the assumption that his interests are somewhat different from another group. When he sees his interests as being similar to two divergent groups, a conflict may arise. The degree of conflict could be assumed as the direct product of the subject's perception of interest similarities and differences. However, the utility of discriminant-function analysis is exemplified by such a dilemma as it provides the individual with the opportunity to consider which group his interest most closely resemble.

The findings of sex differences within curricula have notable ramifications for individual counseling. As Males and Females were shown to have significantly different Basic Interests within a given faculty, the counselor must take this into account when making curricular assessments and suggestions with a

client.

These results are particularly intriguing when considering the fact that more and more studies claim that Males and Females should be assessed on the same criterion in vocational counseling. Although women today are typically entering more of the "male professions", it would appear, at least in the case of Arts and Science Females, that they are doing so with an underlying difference in Basic Interest. The Strong-Campbell Interest Inventory has aptly dealt with the repercussions of this dilemma by having a combined form which accomodates individuals who wish to compare their interests with people in the same as well as opposite sex.

When classifying an individual in terms of his/her Basic Interest score, it is important to consider how well the function(s) does in fact predict group membership. (In the present study, the four-group analysis was found to provide more global information than the two-group method.) Utilizing the four-group analysis, it was found that Science Males were the easiest subjects to classify. Of these, 90.6% were correctly assigned into group membership on the

basis of the discriminant functions. Among the Arts Females, 79.2% were correctly classified. Of increasing difficulty to predict group membership were Science Females (50.9%) and Arts Males (43.4%). The provocative question thus arises as to why Science Males could be classed with relative ease while their counterpart in Arts proved most difficult to group. It may be hypothesized that Science Males, as a group, have more homogeneous interests than the other groups, thus making them less difficult to differentiate. However, it must also be noted that Science Males were the largest group in the study. Indeed, predictability was found to decrease with the size of the group being less. Hence, group size may influence predictability despite the fact that relative group size was taken into account during the analysis. Conversely, Arts Males may be the most difficult group to classify in terms of discriminant scores, because they, as a group, have less homogeneous interests. Figure 1 graphically represents the degree of separation between groups. Seeing that Science Males and Arts Females have the largest separation, it is understandable why it is easier to classify

individuals along Function 1 than on Function 2.

The fact that group membership could be fairly well predicted on the basis of the 23 Interest scales (267 correct classifications out of 360), testifies to the validity of the Strong-Campbell for counseling and exemplifies the usefulness of discriminant-function analysis in doing so.

Despite the fact that incorrect classifications were made, it is interesting to note the direction of the errors. In each case, individuals were nevertheless usually classified correctly by sex even when the curriculum was not accurate. In the light of these findings, it is possible that sex similarities play a potent role in the differentiation. For example, in the case of Arts Males, the largest number of incorrect classifications were made not in the Arts Female direction (17.0% of the cases) but in the Science Male direction (39.6% of the incorrect classifications). There were no incorrect classifications into the Science Female group.

It is also important to consider that despite the errors in classification, the degree of predictability using the discriminant scores was always higher than

expected by prior group membership. However, it is not suprising to find that in using the four-group analysis, a lower degree of correct classifications were made than when using the two-group method. It is to be expected intuitively as well as statistically that classifying an individual into one of four groups is more difficult than into two.

With these facts in mind, it is of interest to see what factors comprise the discrimination. In terms of Figure 1, we can readily observe that Science Males scored low on Function 1 while Arts Females scored high on that axis. Conversely, Arts Males scored low on Function 2 whereas Science Females scored high on that continuum. By referring to Table 4.1, it is evident that Function 1 contributed 75.28% to the discrimination while the second function contributed 21.85%.

To interpret the nature of each of the two functions it is necessary to look at the characteristics of the variables that define them. From Table 5.3 it can be seen that the Domestic Arts, Merchandising, Law/Politics, and Social Services scales have the highest positive scaled weights for determining the dis-

criminant scores on Function 1. On the other hand, Sales, Public Speaking, Science and Mechanical Activities have the highest negative weights on this function. This dimension may be interpreted as representing people-oriented versus task-oriented interests. Domestic Arts, Law/Politics, and Social Service presumably indicate an interest in helping other people while the scales with the negative weights indicate interests of a less supportive nature and which require working alone more than with others. This seems reasonable when looking at the means of the groups on the function. The Arts Females who have the highest mean or group centroid on the positive end of the function scored higher on the Social Service scale (Table 1.4). Science Males who have their centroid at the negative end of Function 1 have high mean scores on Science, Mechanical Activities, and Mathematics (Table 1.3).

The second discriminant function is defined by positive weights on Domestic Arts, Mathematics, Medical Science, and Medical Service. The highest negative weights for this function are contributed by

Merchandising, Public Speaking, Athletics, and Teaching scales (Table 5.3). The scales with the highest positive loadings seem to involve professions that are relatively structured and technical while the scales with the highest negative loadings seem to define professions that are less structured and less technical in orientation. Thus, the second function appears to define interests in structured-technical versus non-technical-unstructured work settings. Science Females who have their centroid on the positive side of Function 2, expressed strong interests in Science and Medical Science which require technical training and work in structured settings (Table 1.4). Arts Males have their centroid on the negative pole of that function. As a group, they expressed strong interests in Writing, Law/Politics, Adventure, Athletics, and Teaching. All of these activities seem to be of a less structured and less technical nature. (Table 1.3).

Having examined some of implications of the present findings, the following section provides suggestions for further research.

3. Suggestions for Further Research

This study examined the Basic Interest scale differences of Arts and Science freshmen. It also considered the differences in interests between Males and Females within these curricula. The data was collected for each subject and analyzed by both a two-group and a four-group discriminant-function analysis. All of the analyses provided significant chi-squares.

While these findings are significant, it might prove beneficial for further research to increase the relative subgroup population size and possibly test second and third year students as well. This would provide a more representative sample of each of the subgroups comprising the Arts and Science populations. Conducting this study again with a different sample would also be useful for validation purposes. Although significant interest differences were found here at the University of Ottawa, it may be possible, though highly unlikely, that this particular study involved atypical groups. Thus, it would be wise to attempt to substantiate the present study's findings through a replication study at another university. If similar discriminant

findings were made, the next step would be towards cross-validating the power of these scores to differentiate between a second group of Arts and Science students using their discriminant scores to classify them in terms of previous discriminant-functions. Hence, a discriminating profile may be established and it's usefulness assessed through cross-validation upon an independent sample. From this, a useful tool for counseling purposes may be derived.

Another approach which might be introduced in a future study of Basic Interest patterns is to limit the number of scales being used in an attempt to determine whether the same results can be achieved with a minimum of information.

A similar study utilizing other scales of the Strong-Campbell Interest Inventory might also provide interesting and useful information. For example, assessing the degree to which Arts and Science students can be differentiated on the basis of their Occupational Interests may indicate that these scales are better for classification purposes than the Basic Interest scales. A lack of significant interest differences on another set of SCII

scales would certainly stimulate intriguing questions.

Also of substantial value would be the expansion of this type of research to other university groups such as Engineering and Medicine as well as subgroups within these curricula. Thus, if discriminating profiles could be established for a number of academic fields, a counselor will have more resources on which to base educational guidance.

One area of particular neglect in terms of vocational research is that involving non-academic students. By this is meant individuals who choose to study in vocational or technical settings rather than universities. Not only is this a field where research is blatantly lacking, it is also an area where studies would prove most beneficial, in particular with today's increased demand for technical school training. Therefore, a profile which could differentiate between academic and technical interests would be an invaluable asset in vocational counseling.

Still another appealing and purposeful aspect to research would be to evaluate the eventual grades, success in terms of graduation, and corresponding employ-

ment fields of students presently tested on the Basic Interest scales. It may be discovered that high or low scores on these items are predictive of such factors. The ramifications of such findings for counseling are obvious.

Also of considerable value would be the establishment of Basic Interest or other discriminant scale scores for people working in a number of relatively common professions. This information could be utilized to determine if a client expresses interests which indicate similarity with people in these occupations. Thus, it would be of intrinsic interest to determine if males studying in Science to be microbiologists, do indeed manifest scores that would classify them as such. Of course, it is not assumed that a person with atypical scores would not also be a good microbiologist.

Finally, a study which would cast more light onto one aspect of the present findings would involve collecting the same type of Basic Interest data and combining it with self-report questionnaires. These forms could allow subjects to rank-order preferred activities

and to evaluate jobs considered task versus people-oriented and technical-structured versus non-technical-unstructured. The purpose of this would be to determine whether the individual envisions himself, as well as prospective occupations, in the same manner as the discriminant-function continuum seen in the present study.

These have been but a few suggestions for investigation. Further research in this area may prove particularly useful for educational counseling.

SUMMARY AND CONCLUSIONS

The purpose of the present study was to investigate the differences in Basic Interest patterns of Arts and Science freshmen at the University of Ottawa. At the same time, a comparison was made of the interests of Males and Females within these curricula.

The Strong-Campbell Interest Inventory was administered to compulsory classes in each faculty. The final subject pool contained 360 subjects. Among these were 54 Arts Males, 101 Arts Females, 149 Science Males, and 57 Science Females.

The results of each analysis led to the rejection of the null condition for each hypothesis. Thus, Arts and Science students were found to have significantly different interests, as were Males and Females within these groups.

An analysis of the data indicated Basic Interest differences manifesting themselves in high and low scores on different scales. Group centroids were established on two discriminant functions. The first function was found to contribute 75.28% to the differentiation whereas the second function was shown to provide 21.85% of the information for discriminating between the groups.

Finally, prediction into group membership on the basis of discriminant scores yielded 90.6% correct classifications for Science Males, 79.2% for Arts Females, 50.9% for Science Females, and 43.4% for Arts Males. Thus, it was suggested that groups which were less difficult to classify, showed more homogeneous interests.

Although errors in classification were made, they tended to be in the direction of placing the individual into the correct sex category. In all cases, classification by discriminant analysis proved superior to prior group size probability for correctly placing subjects into group membership.

Suggestions for further research were aimed towards investigating other academic and vocational fields with an emphasis on developing information which may prove useful for counseling purposes.

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APPENDIX 1

STRONG-CAMPBELL INTEREST INVENTORY

FORM T325

Strong-Campbell Interest Inventory

Merged Form of the Strong Vocational Interest Blank

EDWARD K. STRONG, JR. 1884-1963

DAVID P. CAMPBELL

This inventory is used to help you understand your work interests in a general way, and to show you some kinds of work you might be comfortable in. The following pages list many jobs, activities, school subjects, and so forth, and you are asked to show your liking or disliking for each. Your answers will be compared with the answers given by people already working in a wide range of jobs, and your scores will show how similar your interests are to the interests of these people. But this is not a test of your *abilities*; it is an inventory of your *interests*. Your scores will be presented to you later, on a special sheet called a profile, with information on how to understand the scores.

Directions:

1. With this booklet, you should have a **special answer sheet** on which to mark your answers.
2. **Please make no marks on this booklet**; it will be used again by other people.
3. Use any soft, black, lead pencil (such as a No. 2) to make your marks on the answer sheet.
4. Fill in your name and other information on the answer sheet. Follow carefully the instructions for filling in your name.
5. **Instructions for marking your answers** are given on the next page of this booklet and also on the answer sheet.
6. **Make a heavy, dark mark for each answer**—not a cross or a check mark.
7. If you make a mistake or change your mind, **erase carefully and thoroughly**.
8. Your answer sheet will be processed by computer. **Please keep it free from wrinkles or stray marks**, so that it will be scored correctly.
9. Try to answer each question. **Work quickly**; first impressions usually give the best results with this inventory. Turn the page and begin.

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Part I. Occupations

Many occupations are listed below. For each of them, show how you would feel about doing that kind of work.

Mark on the answer sheet in the space labeled “L” if you think you would like that kind of work.

Mark in the space labeled “I” if you are indifferent (that is, if you think you wouldn’t care one way or another).

Mark in the space labeled “D” if you think you would dislike that kind of work.

Don’t worry about whether you would be good at the job or about not being trained for it. Forget about how much money you could make or whether you could get ahead. Think only about whether you would like to do the work done in that job.

Work fast. Answer every one.

- | | | |
|-----------------------------------|---------------------------------|--------------------------------|
| 1 Actor/Actress | 46 Editor | 91 Orchestra conductor |
| 2 Advertising executive | 47 Electrical engineer | 92 Pharmacist |
| 3 Architect | 48 Electronics technician | 93 Photographer |
| 4 Art museum director | 49 Elementary school teacher | 94 Physician |
| 5 Art teacher | 50 Employment manager | 95 Playground director |
| 6 Artist | 51 Factory manager | 96 Poet |
| 7 Artist’s model | 52 Farmer | 97 Police officer/ |
| 8 Astronomer | 53 Fashion model | 98 Politician |
| 9 Athletic director | 54 Florist | 99 Private secretary |
| 10 Auctioneer | 55 Foreign correspondent | 100 Professional athlete |
| 11 Author of children’s books | 56 Foreign service officer | 101 Professional dancer |
| 12 Author of novels | 57 Free-lance writer | 102 Professional gambler |
| 13 Author of technical books | 58 Governor of a state | 103 Psychologist |
| 14 Auto mechanic | 59 High school teacher | 104 Public relations director |
| 15 Auto racer | 60 Home economics teacher | 105 Rancher |
| 16 Auto sales | 61 Hospital records clerk | 106 Realtor |
| 17 Bank teller | 62 Housekeeper | 107 Receptionist |
| 18 Beauty and haircare consultant | 63 Hotel manager | 108 Retailer |
| 19 Biologist | 64 Illustrator | 109 Sales manager |
| 20 Bookkeeper | 65 Income tax accountant | 110 School principal |
| 21 Building contractor | 66 Interior decorator | 111 Scientific illustrator |
| 22 Business teacher | 67 Inventor | 112 Scientific research worker |
| 23 Buyer of merchandise | 68 Jet pilot | 113 Sculptor |
| 24 Carpenter | 69 Judge | 114 Secret service agent |
| 25 Cartoonist | 70 Labor arbitrator | 115 Social worker |
| 26 Cashier in bank | 71 Laboratory technician | 116 Specialty salesperson |
| 27 Chemist | 72 Landscape gardener | 117 Sports reporter |
| 28 Children’s clothes designer | 73 Librarian | 118 Statistician |
| 29 Church worker | 74 Life insurance agent | 119 Flight attendant |
| 30 City or state employee | 75 Machine shop supervisor | 120 Stockbroker |
| 31 City planner | 76 Machinist | 121 Surgeon |
| 32 Civil engineer | 77 Manager, Chamber of Commerce | 122 Toolmaker |
| 33 College professor | 78 Manager, child care center | 123 Traveling salesperson |
| 34 Computer operator | 79 Manager, women’s style shop | 124 Travel bureau manager |
| 35 Corporation lawyer | 80 Manufacturer | 125 Typist |
| 36 Costume designer | 81 Mechanical engineer | 126 TV announcer |
| 37 Courtroom stenographer | 82 Military officer | 127 Vocational counselor |
| 38 Criminal lawyer | 83 Minister, priest, or rabbi | 128 Waiter/Waitress |
| 39 Dancing teacher | 84 Musician | 129 Wholesaler |
| 40 Dental assistant | 85 Newspaper reporter | 130 X-Ray technician |
| 41 Dentist | 86 Nurse | 131 YMCA/YWCA staff member |
| 42 Designer, electronic equipment | 87 Nurse’s aide/Orderly | |
| 43 Dietitian | 88 Office clerk | |
| 44 Draftsman | 89 Office manager | |
| 45 Dressmaker/Tailor | 90 Opera singer | |

Part II. School Subjects

Show in the same way whether you are interested in these school subjects, even though you may not have studied them.

Mark "L" for Like.

Mark "I" for Indifferent (when you don't care one way or the other).

Mark "D" for Dislike.

132 Agriculture
133 Algebra
134 Arithmetic
135 Ancient languages (Latin, Sanskrit, etc.)
136 Art
137 Bible history
138 Bookkeeping
139 Botany
140 Calculus

141 Chemistry
142 Civics (government)
143 Dramatics
144 Economics
145 English composition
146 Geometry
147 Home economics
148 Industrial arts
149 Journalism
150 Literature

151 Mathematics
152 Mechanical drawing
153 Military drill
154 Modern languages (French, German, etc.)
155 Nature study
156 Penmanship
157 Philosophy
158 Physical education
159 Physics
160 Physiology
161 Political science
162 Psychology
163 Public speaking
164 Sociology
165 Statistics
166 Typewriting
167 Zoology

Part III. Activities

Show your interests in the same way as before. Give the first answer that comes to mind.

168 Making a speech
169 Doing research work
170 Repairing a clock
171 Cooking
172 Operating machinery
173 Writing reports
174 Discussing politics
175 Taping a sprained ankle
176 Adjusting a carburetor
177 Going to church
178 Heading a civic improvement program
179 Raising flowers and vegetables
180 Interviewing job applicants

181 Teaching children
182 Teaching adults
183 Meeting and directing people
184 Taking responsibility
185 Sewing
186 Making statistical charts
187 Operating office machines
188 Giving first aid assistance
189 Decorating a room with flowers
190 Interviewing prospects in selling
191 Drilling soldiers
192 Pursuing bandits in a sheriff's posse
193 Watching an open-heart operation
194 Checking typewritten material for errors
195 Repairing electrical wiring
196 Organizing cabinets and closets
197 Adjusting difficulties of others
198 Starting a conversation with a stranger
199 Cabinetmaking
200 Being a forest ranger

201 Bargaining ("swapping")
202 Looking at things in a clothing store
203 Buying merchandise for a store
204 Displaying merchandise in a store
205 Competitive activities
206 Regular hours for work
207 Continually changing activities
208 Interviewing clients
209 Arguments
210 Developing business systems
211 Doing your own laundry work
212 Saving money
213 Contributing to charities
214 Raising money for charity
215 Expressing judgments publicly, regardless of what others say
216 Climbing along the edge of a steep cliff
217 Living in the city
218 Discussing the purpose of life

Part IV. Amusements

Show in the same way how you feel about these ways of having fun. Work rapidly. Do not think over various possibilities. Give the first answer that comes to mind.

219 Golf
220 Fishing
221 Jazz or rock concerts
222 Looking at things in a hardware store
223 Boxing
224 Poker
225 Bridge

226 Solving mechanical puzzles
227 Planning a large party
228 Religious music
229 Drilling in a military company
230 Amusement parks
231 Conventions
232 Formal dress affairs
233 Electioneering for office
234 Art galleries
235 Leading a scout troop
236 Writing a one-act play
237 Symphony concerts
238 Night clubs
239 Church young people's group
240 Sports pages in the newspaper
241 Poetry
242 Skiing
243 Business magazines
244 Popular mechanics magazines

245 Reading the Bible
246 Magazines about art and music
247 Building a radio or stereo set
248 Attending lectures
249 Family pages in newspapers
250 Performing scientific experiments
251 Camping
252 Playing chess
253 Preparing dinner for guests
254 Entertaining others
255 Trying new cooking recipes
256 Being the first to wear the latest fashions
257 Organizing a play

Part V.

Types of People

Most of us choose jobs where we can work with people we enjoy. Show in the same way as before how you would feel about having day-to-day contact with the following types of people. Work fast. Don't think of specific examples. Just give the first answer that comes to mind.

- | | |
|----------------------------------|---|
| 258 Highway construction workers | 271 Emotional people |
| 259 High school students | 272 People who have made fortunes in business |
| 260 Military officers | 273 Thrifty people |
| 261 Artistic persons | 274 Musical geniuses |
| 262 Foreigners | 275 Outspoken people with new ideas |
| 263 Ballet dancers | 276 Fashionably dressed people |
| 264 Nonconformists | 277 Prominent business leaders |
| 265 People who assume leadership | 278 Athletic persons |
| 266 Religious people | 279 People who daydream a lot |
| 267 Aggressive people | 280 Outstanding scientists |
| 268 Physically sick people | 281 People who live dangerously |
| 269 Babies | |
| 270 Very old people | |
-

Part VI.

Preference Between Two Activities

Here are several pairs of activities or occupations. Show which one of each pair you like better: if you prefer the one on the **left**, mark in the space labeled "**L**" on the answer sheet; if you prefer the one on the **right**, mark in the space labeled "**R**"; if you like **both the same**, or if you **can't decide**, mark in the space labeled "**=**." Work rapidly. Make one mark for each pair.

- | | |
|--|---|
| Airline pilot | 282 Airline ticket agent |
| Taxicab driver | 283 Police officer |
| Headwaiter/Hostess | 284 Lighthouse keeper |
| Selling things house to house | 285 Gardening |
| Developing plans | 286 Carrying out plans |
| Doing a job yourself | 287 Telling somebody else to do the job |
| Dealing with things | 288 Dealing with people |
| Taking a chance | 289 Playing safe |
| Drawing a definite salary | 290 Receiving a commission on what is done |
| Outside work | 291 Inside work |
| Work for yourself | 292 Carrying out the program of a superior whom you respect |
| Superintendent of a hospital | 293 Warden of a prison |
| Vocational counselor | 294 Public health officer |
| Physical activity | 295 Mental activity |
| Dog trainer | 296 Juvenile parole officer |
| Thrilling, dangerous activities | 297 Quieter, safer activities |
| Physical education director | 298 Free-lance writer |
| Statistician | 299 Social worker |
| Technical responsibility (in charge of 25 people doing scientific work) | 300 Supervisory responsibility (in charge of 300 people doing business-office work) |
| Going to a play | 301 Going to a dance |
| Teacher | 302 Salesperson |
| Experimenting with new grooming preparations | 303 Experimenting with new office equipment |
| Being married to a research scientist | 304 Being married to a sales executive |
| Working in a large corporation with little chance of being president before age 55 | 305 Working for yourself in a small business |
| Working in an import-export business | 306 Working in a research laboratory |
| Music and art events | 307 Athletic events |
| Reading a book | 308 Watching TV or going to a movie |
| Appraising real estate | 309 Repairing and restoring antiques |
| Having a few close friends | 310 Having many acquaintances |
| Work in which you move from place to place | 311 Work where you live in one place |
-

Part VII.

Your Characteristics

Show here what kind of person you are: if the statement describes you, mark in the space labeled "**Y**" (for "**Yes**"); if the statement does **not** describe you, mark in the space labeled "**N**" (for "**No**"); if you cannot decide, mark in the space labeled "**?**." (Be frank in pointing out your weak points, because these are as important as your strong points in choosing a career.)

- | | |
|---|---|
| 312 Usually start activities of my group | 319 Can prepare successful advertisements |
| 313 Have more than my share of novel ideas | 320 Stimulate the ambitions of my associates |
| 314 Win friends easily | 321 Can write a concise, well-organized report |
| 315 Make decisions immediately, not after considerable thought | 322 Enjoy tinkering with small hand tools |
| 316 Prefer working alone rather than on committees | 323 Can smooth out tangles and disagreements between people |
| 317 Have mechanical ingenuity (inventiveness) | 324 Put drive into an organization |
| 318 Am concerned about philosophical problems such as religion, meaning of life, etc. | 325 Have patience when teaching others |

APPENDIX 2

ANSWER SHEET FOR SCII

[illegible]

ITEMS 282-311

- ☐ ☐ ☐ If you prefer the item on the left, mark the "L"
☐ ☐ ☐ If you like both items or can't decide, mark the "="
☐ ☐ ☐ If you prefer the item on the right, mark the "R"

ITEMS 312-325

- ☐ ☐ ☐ If the item describes you, mark "Yes (Y)"
☐ ☐ ☐ If you are not sure, mark the "?"
☐ ☐ ☐ If the item does not describe you, mark "No (N)"

ACTIVITIES			AMUSEMENTS		TYPES OF PEOPLE			YOUR CHARAC- TERISTICS		
168	☐ ☐ ☐	188 ☐ ☐ ☐	208 ☐ ☐ ☐	219 ☐ ☐ ☐	239 ☐ ☐ ☐	258 ☐ ☐ ☐	278 ☐ ☐ ☐	292 ☐ ☐ ☐	312 ☐ ☐ ☐	
169	☐ ☐ ☐	189 ☐ ☐ ☐	209 ☐ ☐ ☐	220 ☐ ☐ ☐	240 ☐ ☐ ☐	259 ☐ ☐ ☐	279 ☐ ☐ ☐	293 ☐ ☐ ☐	313 ☐ ☐ ☐	
170	☐ ☐ ☐	190 ☐ ☐ ☐	210 ☐ ☐ ☐	221 ☐ ☐ ☐	241 ☐ ☐ ☐	260 ☐ ☐ ☐	280 ☐ ☐ ☐	294 ☐ ☐ ☐	314 ☐ ☐ ☐	
171	☐ ☐ ☐	191 ☐ ☐ ☐	211 ☐ ☐ ☐	222 ☐ ☐ ☐	242 ☐ ☐ ☐	261 ☐ ☐ ☐	281 ☐ ☐ ☐	295 ☐ ☐ ☐	315 ☐ ☐ ☐	
172	☐ ☐ ☐	192 ☐ ☐ ☐	212 ☐ ☐ ☐	223 ☐ ☐ ☐	243 ☐ ☐ ☐	262 ☐ ☐ ☐		296 ☐ ☐ ☐	316 ☐ ☐ ☐	
173	☐ ☐ ☐	193 ☐ ☐ ☐	213 ☐ ☐ ☐	224 ☐ ☐ ☐	244 ☐ ☐ ☐	263 ☐ ☐ ☐		297 ☐ ☐ ☐	317 ☐ ☐ ☐	
174	☐ ☐ ☐	194 ☐ ☐ ☐	214 ☐ ☐ ☐	225 ☐ ☐ ☐	245 ☐ ☐ ☐	264 ☐ ☐ ☐		298 ☐ ☐ ☐	318 ☐ ☐ ☐	
175	☐ ☐ ☐	195 ☐ ☐ ☐	215 ☐ ☐ ☐	226 ☐ ☐ ☐	246 ☐ ☐ ☐	265 ☐ ☐ ☐	PREFER ENCE BETWEEN TWO ACTIVITIES	299 ☐ ☐ ☐	319 ☐ ☐ ☐	
176	☐ ☐ ☐	196 ☐ ☐ ☐	216 ☐ ☐ ☐	227 ☐ ☐ ☐	247 ☐ ☐ ☐	266 ☐ ☐ ☐		300 ☐ ☐ ☐	320 ☐ ☐ ☐	
177	☐ ☐ ☐	197 ☐ ☐ ☐	217 ☐ ☐ ☐	228 ☐ ☐ ☐	248 ☐ ☐ ☐	267 ☐ ☐ ☐		301 ☐ ☐ ☐	321 ☐ ☐ ☐	
178	☐ ☐ ☐	198 ☐ ☐ ☐	218 ☐ ☐ ☐	229 ☐ ☐ ☐	249 ☐ ☐ ☐	268 ☐ ☐ ☐		282 ☐ ☐ ☐	302 ☐ ☐ ☐	322 ☐ ☐ ☐
179	☐ ☐ ☐	199 ☐ ☐ ☐		230 ☐ ☐ ☐	250 ☐ ☐ ☐	269 ☐ ☐ ☐		283 ☐ ☐ ☐	303 ☐ ☐ ☐	323 ☐ ☐ ☐
180	☐ ☐ ☐	200 ☐ ☐ ☐		231 ☐ ☐ ☐	251 ☐ ☐ ☐	270 ☐ ☐ ☐		284 ☐ ☐ ☐	304 ☐ ☐ ☐	324 ☐ ☐ ☐
181	☐ ☐ ☐	201 ☐ ☐ ☐		232 ☐ ☐ ☐	252 ☐ ☐ ☐	271 ☐ ☐ ☐		285 ☐ ☐ ☐	305 ☐ ☐ ☐	325 ☐ ☐ ☐
182	☐ ☐ ☐	202 ☐ ☐ ☐		233 ☐ ☐ ☐	253 ☐ ☐ ☐	272 ☐ ☐ ☐		286 ☐ ☐ ☐	306 ☐ ☐ ☐	
183	☐ ☐ ☐	203 ☐ ☐ ☐		234 ☐ ☐ ☐	254 ☐ ☐ ☐	273 ☐ ☐ ☐		287 ☐ ☐ ☐	307 ☐ ☐ ☐	
184	☐ ☐ ☐	204 ☐ ☐ ☐		235 ☐ ☐ ☐	255 ☐ ☐ ☐	274 ☐ ☐ ☐		288 ☐ ☐ ☐	308 ☐ ☐ ☐	
185	☐ ☐ ☐	205 ☐ ☐ ☐		236 ☐ ☐ ☐	256 ☐ ☐ ☐	275 ☐ ☐ ☐	289 ☐ ☐ ☐	309 ☐ ☐ ☐		
186	☐ ☐ ☐	206 ☐ ☐ ☐		237 ☐ ☐ ☐	257 ☐ ☐ ☐	276 ☐ ☐ ☐	290 ☐ ☐ ☐	310 ☐ ☐ ☐		
187	☐ ☐ ☐	207 ☐ ☐ ☐		238 ☐ ☐ ☐		277 ☐ ☐ ☐	291 ☐ ☐ ☐	311 ☐ ☐ ☐		

PLEASE

DO NOT WRITE

IN SHADED AREA

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APPENDIX 3
RAW SCORE INFORMATION
FOR THE SCII

The raw scores for each subject
are available on computer cards
and may be obtained from the
author on request.

APPENDIX 5

ABSTRACT OF

COMPARING THE VOCATIONAL INTERESTS OF ARTS AND
SCIENCE FRESHMEN USING THE STRONG-CAMPBELL
INTEREST INVENTORY

APPENDIX 5

ABSTRACT OF

Comparing the Vocational Interests of Arts and Science Freshmen Using the Strong-Campbell Interest Inventory *

The vocational interests of Arts and Science freshmen were compared in terms of their Basic Interest scale scores on the Strong-Campbell Interest Inventory. The manifestation of significant raw score differences on the 23 Basic Interest scales were investigated with respect to curriculum and sex. Discriminant-function scores were established for each of the scales and used to classify individuals according to predicted group membership. The predictive accuracy of the discriminant-function was assessed by the percentage of correct classifications.

The Strong-Campbell Interest Inventory was completed by 360 freshmen enrolled in the faculties of Arts and Science at the University of Ottawa.

Six discriminant-function analyses were made using two groups at a time. A four-group discriminant analysis was conducted between Arts Males, Science Males, Arts Females, and Science Females. The stepwise

*Dorothy M. Meuser, master of Arts thesis presented to the School of Graduate Studies of the University of Ottawa, Ontario, November 1975, x - 124 p.

method was employed for all analyses.

In each analysis, significant differences in Basic Interests were found between Arts and Science freshmen as well as between sexes within these curricula. On the basis of the four-group analysis, the first function was found to contribute more than the second to the differentiation between groups. Arts Females typically scored high while Science Males scored low on Function 1. On the second function, Science Females tended to score high whereas Arts Males had low scores. Prediction into group membership on the basis of the discriminant scores yielded more correct classifications than expected by prior group size probability.

These findings were discussed in the light of the issues dealt with and the theoretical considerations along with suggestions for further research were offered.

APPENDIX 4
RESPONDENT'S PROFILE AND INTERPRETATION
INSTRUCTIONS FOR THE SCII

SVIB-SCIITM
PROFILE

STRONG-CAMPBELL
INTEREST INVENTORY
OF THE STRONG
VOCATIONAL
INTEREST
BLANK

PROFILE FOR
USE WITH
BOOKLET
T324
STANFORD
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PRESS

RIA OCCUP THERAP	
RIE AF OFFICER	
RIC ARMY OFFICER	
RIC CARTOGRAPHER	
RI VETERINARIAN	
RI NURSE REGIST	
RI NAVY OFFICER	
RI MERCH MAR OFF	
RI RAD TECH (XRAY)	
RI FORESTER	
R SKILLED CRAFTS	
RS PHYS ED TEACH	
RE ARMY OFFICER	
RSE HWY PAT OFF	
RES POLICE OFF	
REC DIETITIAN	
RCE VOC AG TCHR	
RC INSTR ASSEMBL	
RC FARMER	
CRE BEAUTICIAN	
CRI NURSE L P	
CA DENTAL ASSIST	
C SECRETARY	
C ACCOUNTANT	
CSE EXEC HOUSEKPR	
CES BUS ED TCHR	
CE BUS ED TCHR	
CE DEPT STORE SLS	
CE CREDIT MGR	
CE BANKER	
CE BANKER	
CE ACCOUNTANT	
ESR CHIROPRACTOR	
ERC PURCH AGENT	
ERC AGRIBUS MGR	
ECR REALTOR	
ECS FUNERAL DIR	
ECS CREDIT MGR	
ECS BUYER	
EC BUYER	
EIC PHARMACIST	
EI INV FUND MGR	
EI COMPUT SALES	
E LAWYER	
E LAWYER	
E LIFE INS AGENT	
ES LIFE INS AGENT	
ES SALES MGR	
ESCH OF COMM EXEC	
ESA FLIGHT ATTEND	
ESHOME ECON TCHR	
ESC DEPT STR MGR	
SEC PER DIR	
SEC SOC SCI TCHR	
SEC SOC SCI TCHR	
SEC GUID COUNS	
SEC RECREATION LOR	
SER RECREATION LOR	
SCE GUID COUNS	
SCE PUBLIC ADMIN	
SCE SCHL SUPT	
SC ELEM TEACHER	

GENERAL OCCUPATIONAL THEMES	STANDARD SCORE FOR	RESULTS
R THEME		
I THEME		
A THEME		
S THEME		
E THEME		
C THEME		

BASIC INTEREST SCALES						
SCALE	STD SCORE	VERY LOW	LOW	AVERAGE	HIGH	VERY HIGH
AGRICULTURE						
NATURE						
ADVENTURE						
MILITARY ACTIVITIES						
MECHANICAL ACTIVITIES						
SCIENCE						
MATHEMATICS						
MEDICAL SCIENCE						
MEDICAL SERVICE						
MUSIC/ DRAMATICS						
ART						
WRITING						
TEACHING						
SOCIAL SERVICE						
ATHLETICS						
DOMESTIC ARTS						
RELIGIOUS ACTIVITIES						
PUBLIC SPEAKING						
LAW POLITICS						
MERCHANDISING						
SALES						
BUSINESS MGMT						
OFFICE PRACTICE						

SEX	NORM	SCALE	CODE
		ENGINEER	IR
		ENGINEER	IR
		CHEMIST	IR
		PHYSICAL SCIENTIST	IR
		MEDICAL TECH.	IR
		PHARMACIST	IR
		DENTIST	IR
		DENTIST	IR
		DENTAL HYGIENIST	IR
		PHYS. THERAPIST	IRS
		PHYSICIAN	IRS
		MATH-SCI. TEACHER	IRS
		MATH-SCI. TEACHER	IGR
		DIETITIAN	IG
		MEDICAL TECH.	IRG
		OPTOMETRIST	IRG
		COMPUTER PROGR.	IRG
		COMPUTER PROGR.	IRG
		MATHEMATICIAN	IRG
		MATHEMATICIAN	IRG
		PHYSICIST	IRG
		BIOLOGIST	IRG
		VETERINARIAN	IRG
		OPTOMETRIST	IRG
		PHYSICIAN	IRG
		SOCIAL SCIENTIST	IRG
		COLLEGE PROF.	IRG
		COLLEGE PROF.	IRG
		SPEECH PATHOL.	IRG
		SPEECH PATHOL.	IRG
		PSYCHOLOGIST	IRG
		PSYCHOLOGIST	IRG
		LANG. INTERPR.	IRG
		ARCHITECT	ARI
		ADVERTISING EXEC.	A
		ARTIST	A
		ARTIST	A
		ART TEACHER	A
		PHOTOGRAPHER	A
		MUSICIAN	A
		MUSICIAN	A
		ENTERTAINER	A
		INT. DECORATOR	AE
		INT. DECORATOR	AE
		ADVERT. EXEC.	AE
		LANGUAGE TEACH.	A
		LIBRARIAN	A
		LIBRARIAN	A
		REPORTER	A
		REPORTER	A
		ENGLISH TEACHER	AS
		ENGLISH TEACHER	AS
		NURSE, REGIST.	SI
		PHYS. THERAPIST	SIR
		NURSE, L. P.	SRC
		SOCIAL WORKER	S
		SOCIAL WORKER	S
		PRIEST	S
		DIR. CHRISTIAN ED.	S
		YWCA STAFF	SE
		MINISTER	SIE
		ELEM TEACHER	SEA

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