

A PERSONALITY STUDY OF SUCCESSFUL
MALE AND FEMALE: ATHLETES AND PROFESSIONALS

by

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ABSTRACT

The hypotheses that there would be no significant differences between successful male and female individuals in law, medicine and athletics on six selected personality traits and five socio-cultural factors were tested by administering Cattell's 16 PF Form C and a socio-cultural questionnaire.

Cattell's 16 PF data obtained from: twenty-eight male athletes, twenty-nine female athletes, twenty male professionals and twelve female professionals (professionals being lawyers and doctors), was analyzed using a one-way analysis of variance. Results indicated that there were no significant differences among the four groups on the six personality traits examined: emotional stability, assertiveness, conscientiousness, tough-mindedness, self-assuredness and self-sufficiency.

A Chi Square statistic was used to analyze the data from the socio-cultural questionnaire. The results indicated that there were no significant differences among the four groups on birth order, family size and culture. Significant differences were observed for athletic experience ($p \leq .00001$) and educational experience ($p \leq .008$). These differences, however, were anticipated as the criteria for selection of subjects was based on their achievement in athletics and education.

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CHAPTER I

INTRODUCTION

Presently, within the field of personality psychology, there is no consistent agreement as to the definition of personality. Definitions usually emphasize that an individual's personality is what makes one unique. The majority of definitions also depict personality as a hypothetical internal process or structure.

According to Lazarus (1971:1) "the psychologist thinks of personality as a study of psychological processes that organize human experience and shape a person's actions and reactions to his environment."

There are basically two rival schools of thought in personality psychology: the "Social Theories" and the "Individual Theories" (Bavelas, 1978). The social theorists emphasize the environment as having the most influence on personality. These theorists assume that the study of personality must include the social influences and processes that surround the individual.

Individual theories, a rival paradigm of the social theories, are based on the assumption that personality is influenced mainly by the traits, characteristics or dispositions that are within an individual.

There are a wide variety of individual theories. One such theory is the "Trait Approach" which is perhaps the most enduring approach to the study of personality (Mischel, 1976).

The trait approach conceptualizes traits as relatively stable qualities, properties, characteristics or factors that exist within an individual. Lazarus (1971:28) defines traits as "...dispositional concepts that is, they refer to tendencies to react or act in certain ways. Psychological dispositions are presumably carried around by the person from situation to situation, they imply a certain likelihood of his behaving in some given way."

Not only has the trait approach been a dominant approach within personality psychology, but also within the fields of sport psychology as related to personality and athletic performance.

Henry (1941), one of the earliest workers within the area of personality and athletics, relied on the trait approach. This approach to the study of personality and athletics persisted through the 1950's (Johnson, Hutton and Johnson 1954) and represented the dominant approach in the 1960's (Cooper, 1969).

Within the sport literature, researchers have attempted to describe an athletic personality in terms of various personality traits. For example, in review articles by Cooper (1969) and Ogilvie (1970) the "successful" athlete was described as possessing high levels of aggression, mental toughness, emotional stability, assertiveness and self-sufficiency.

The personality traits which "successful" athletes possess may also be predictive of "success" in other walks of life. Bachtold and Werner (1970), for example, found

"successful" female psychologists to be independent, secure, as well as emotionally stable, mentally tough, assertive and self-sufficient.

Up until the 1970's personality psychologists relied mainly on the trait approach in their study of personality. In the early 1970's however, there emerged a general awareness of the limitations of the trait approach. While the trait approach is important in the prediction of behavior, it is, however, far from perfect (Hogen et al 1977).

The awareness that the trait approach does not fully predict behavior, but that the behavior is a function of the person and the environment is known as the "Interactionist Approach". Kane (1970), Smith (1970) and Morgan (1972, 1980) consider the interactionist approach a more powerful predictor of behavior than person or environment considered alone.

Interactionism is not a new mode of thinking. In 1935 Lewin suggested that behavior was a function of both the dispositions of the person and the variable aspects of the environment. Moreover, Cattell (1957) who is one of the leading trait theorists (Mischel 1976) has suggested that personality is a function of both the individual and the environment (Bavelas 1978).

The importance of considering both the "Individual" and the "Social" approach to the study of personality is examined in Bem and Funder's 1978 article in which they emphasize that behavior is a function of both the person and the environment.

For the future, experiments will have to consider the contributions of both individual differences and the environment (Hjelle and Ziegler 1976). In fact, Sarason, Smith and Diener (1975) found that the proportion of studies in which both dispositional and situational variables are incorporated into the experimental design appears to be increasing.

Statement of the Problem

The purpose of this study was to determine if "successful" male and female athletes and "successful" male and female professionals possessed certain personality traits to the same degree. The traits investigated were: assertiveness, self-sufficiency, emotional stability, mental toughness, conscientiousness and self-assurance.

"Successful" professionals and "successful" athletes were also examined to see if they possessed similar background characteristics such as: birth order, family size, cultural, educational and athletic experience.

The following hypotheses were advanced:

1. That there would be no significant differences within and between groups of successful male and female athletes and successful male and female professionals on the following personality traits: assertiveness, tough mindedness, conscientiousness, self-sufficiency, self-assurance and emotional stability.
2. That there would be no significant differences within and between groups of successful male and female athletes and

successful male and female professionals in the following five areas of concern: birth order, family size, culture, education and athletic experience.

Delimitations

The sample was delimited by the athletes being Canadian and by the "successful" professionals being selected by a panel of "judges" consisting of either four male lawyers or four male doctors.

Limitations

It was also necessary to consider that certain limitations are inevitable when questionnaires are used. Whitla (1958) has found that subjects may respond to a questionnaire in a manner that is socially accepted. Cattell, Eber and Tatsuoka (1970) believe that the results may be affected by the level of co-operation, education and honesty of the subjects.

Another variable which could not be controlled for was the wide age range of the subjects. This age range may have affected the results. There is evidence however, as suggested by Stagner 1977, that traits show high consistency over periods of ten, twenty and thirty years.

Significance of the Study

Support for the hypotheses may help to establish a new

trend in the study of personality and athletic performance. It would seem that in our highly competitive society which places so much emphasis on the pursuit of and reinforcement of "success", individuals "successful" in other walks of life as well as "successful" athletes might be described as: assertive, tough minded, conscientious, self-assured, self-sufficient and emotionally stable.

It would therefore seem appropriate to compare "successful" athletes with those "successful" in other walks of life as well as athletes of one sport with athletes of another sport.

As previously mentioned, (Hjelle and Ziegler (1976) and Sarason, Smith and Diener (1975)) research within the field of personality psychology has begun to emphasize the importance of the interaction between the individual and the environment. An approach to personality must therefore consider both individual and environmental variables.

The present study has taken this approach by administering Cattell's 16 Personality Factor Questionnaire (See Appendix B) and a Socio-Cultural Questionnaire (See Appendix B) designed by the researcher to examine five areas of concern: birth order, family size, culture, education and athletic experience.

Definition of Terms

Personality - "is a stable set of characteristics and tendencies that determine those commonalities and differences in the

psychological behavior (thought, feeling and actions) of people that have continuity in time and that may or may not be easily understood in terms of the social and biological pressures of the immediate situation alone." (Maddi, 1968:10)

Cattell Sixteen Personality Factor Questionnaire (16PF) - is an analytical questionnaire designed to measure sixteen independent dimensions of human personality. (See Appendix B for Form C)

An Athlete - is any individual actively participating in competitive sports, where sport is considered an institutionalized game.

Successful Athlete - a Canadian athlete currently competing at the international level of competition.

Professional - a doctor or lawyer currently practising within the boundaries of British Columbia.

Successful Professional - a professional who is selected by three of four panel "judges". Judges for the lawyers will be four lawyers and judges for the doctors will be four doctors.

Assertiveness - defined as a desire to influence or control others. It is measured by the Factor E scale on Cattell's 16 Personality Factor Questionnaire. This dimension of personality ranges from submissive behavior, humble and

conforming to dominant behavior, aggressive and competitive.
(Cattell et al 1970)

Tough-mindedness - this trait represents a tough, practical mature and realistic behavior. It is measured by Factor I on Cattell's 16 Personality Factor Questionnaire. This dimension ranges from tender-minded behavior, which is dependent and sensitive to tough-minded behavior, which is realistic and self-reliant. (Cattell et al 1970)

Self-assuredness - is defined as behavior that is resilient, tough, expedient and vigorous. This trait is Factor 0 on the Sixteen Personality Factor Questionnaire. (Cattell et al 1970)

Conscientiousness - defined as being persistent, being able to continue even in the face of opposition. This is Factor G on the Sixteen Personality Factor Questionnaire, a dimension dealing with behavior which ranges from expedient to persistent and rule bound behavior. (Cattell et al 1970)

Self-sufficiency - defined as being resourceful, preferring one's own decisions rather than being a joiner. It is measured on the Factor Q₂ scale of Cattell's Sixteen Personality Factor Questionnaire. This dimension deals with behavior ranging from, following the group to resourceful and preferring one's own decisions. (Cattell et al 1970)

Emotional stability - this trait represents a realistic, stable, calm, thoughtful behavior. It is measured by Factor C on Cattell's Sixteen Personality Factor Questionnaire. This dimension ranges from restless, changeable and neurotic behavior to emotionally mature and persevering behavior. (Cattell et al 1970)

CHAPTER II

REVIEW OF THE LITERATURE

The major research thrust, within the area of personality and athletics has been aimed at the identification of personality traits. Research within this field has dealt with the comparison of: (1) athletes and non-athletes, (2) athletes of differing ability levels and (3) athletes from different sport groups.

The following review is limited to only those studies administering Cattell's 16 Personality Factor Questionnaire. This personality inventory is the most frequently used questionnaire by those researchers interested in studying the athletic personality (Morgan 1980). It is also felt that an accurate examination of the present study could be made only by comparing it with other studies administering the 16 PF. Examination of the studies not included in this review revealed results that are similar to those found in the 16 PF studies.

Athletes compared to Non-athletes

In a review of literature Cooper (1969) suggested that the male athlete compared to the male non-athlete could be described as: (1) more outgoing and socially confident, (2) more outgoing and socially aggressive, (3) more dominant and leading, (4) higher in social adjustment, (5) higher in self-confidence, (6) more competitive, (7) more emotionally

stable, (8) having greater pain tolerance, (9) less anxious and (10) less compulsive.

This description of a male athlete was found among the research studies prior to 1969. In fact, Cooper (1969:19) states "...the most striking aspect of the research is the coherence of the picture of the athlete which emerges."

An example of a study concerned with the personality of male athletes is that of Kroll (1967). In this study the 16 PF was administered to ninety-four (94) male amateur and collegiate wrestlers. When compared to the norm, the wrestlers were described as being significantly more tough-minded and self-reliant.

Omizo (1979) also found significant differences between athletes and non-athletes. The athletes were American male World Class Olympic contenders who were more reserved, intellectual, critical, aloof, conservative and traditional when compared to non-athletes.

In a more recent study significant differences between athletes and non-athletes were also observed in a study by Tripathi (1980). The athletes were male college participants in hockey, cricket and football. Athletes were significantly more outgoing, emotionally stable, assertive, sober, expedient, shy, tough-minded, practical, conservative, group dependent, undisciplined and relaxed when compared with 30 non-athletes.

In the 1950's and 1960's the majority of studies pertaining to personality and sport performance were concerned with the male athlete (Cooper 1969). During the 1970's

researchers also became interested in studying female athletic personality profiles.

For example, Marks (1971) administered the 16 PF to forty female varsity college athletes involved in basketball, bowling, field hockey, golf, gymnastics, lacrosse, softball, swimming, tennis and volleyball. Results of the 16 PF indicated that the female athletes compared to the norm were more assertive, suspicious, experimenting, controlled, stubborn, competitive, liberal, socially precise and independent.

In 1974, Brasher administered the 16 PF to women participating in extramural athletics at Brigham Young University. The athletes were involved in basketball, field hockey, softball, volleyball, track and field, archery, badminton, gymnastics, skiing, swimming and tennis. Results indicated that the athletic group in this study could be described as emotionally stable, self-controlled, reserved, forthright, conservative, intelligent and happy-go-lucky.

While there appears to be a degree of consistency in the personality research of athlete compared to non-athlete, there are also some discrepancies evident. For example, in a longitudinal study Werner (1966) found no significant difference in personality traits of athletes and non-athletes. This four year study on a group of three hundred and forty U.S. male cadets also found no evidence that college athletic participation (over a four year period) significantly influences personality structure as measured by the 16 PF.

Darden (1972) also found the athlete in his study to be

within normal or average range on their personality factors as measured by the 16 PF Questionnaire. The 16 PF was given to twenty-two competitive male body builders and thirty competitive male weight lifters. The results showed no significant difference between the subjects and the normal population.

Seventy-one male karate participants in Kroll's (1967) study were also administered the 16 PF. Kroll concluded that there were no significant differences between his subjects and the normal population.

In summary it becomes apparent that there are discrepancies within the findings of research dealing with the personality of athletes as compared to non-athletes.

Perhaps one of the major reasons for the discrepancies is the way in which researchers have defined "athlete". The term "athlete" has been defined so that it encompasses individuals of a wide range of skill, and competitive level.

For example, in Darden's study, one might wonder if body builders are classified as athletes. While in Kroll's (1967) study, amateur and collegiate wrestlers may vary in skill level, in competitive level, as well as in experience prior to college or university competition.

Athletes of differing ability levels

The concept that high level, champion or successful performers in athletics are characterized by psychological

profiles which distinguish them from lower level performers, is a view which has created a great deal of controversy.

A researcher who has found significant differences between high and low level competitors is Bushan (1978). In this study the 16 PF was administered to five males and five females who represented India at international events in badminton and table tennis, as well as five male and five female athletes who had never achieved any distinction in badminton and table tennis. Bushan found that the successful players when compared with the remaining subjects scored significantly higher on dominance, extroversion and surgency.

Williams et al (1970) also found significant differences between high and low level competitors. In this study the 16 PF, Form B of Jackson's Personality Research Form and Edward's Personal Preference Schedule were administered to thirty female amateur fencers to determine if there was any correlation between personality traits and levels of achievement in the 1968 National American Fencing Championships. Williams et al found that the national level competitive fencer was ambitious, intelligent, analytical, assertive, aggressive, independent, self-sufficient and reserved. The authors however, found only one personality trait--dominance, which discriminated between high and low level competitors at the championships.

A more recent study by Dowd and Innes (1981) of ninety-three male and female players in volleyball and squash who had achieved a high level of participation (training at the State level) were differentiated from lower level players by

a combination of factors. The high achievers were more intelligent, experimenting and conscientious when compared with low achievers.

The previously mentioned studies are examples of studies which have found significant differences between athletes of differing skill ability. Kroll (1967) however, found that athletes of various achievements had few if any differences in personality variables. Kroll administered the 16 PF to twenty-eight collegiate male wrestlers of superior ability, thirty-three collegiate wrestlers of average to below average ability. Results of this study showed no personality differences between groups.

In another study by Kroll (1967), seventy-one male amateur karate participants were divided into advanced, intermediate and novice. Using the 16 PF, Kroll found that the sample studied showed no personality differences between the three groups of participants.

Results of a study by Rushall (1967) also showed no personality differences between successful and unsuccessful male athletes. Rushall administered the 16 PF to the 1966, 1967 and 1968 Indiana University football teams. Results indicated that personality was not related to success, and there was no difference in personalities when comparing those on a winning football team and those on a losing football team.

In another study by Rushall (1970) three levels of swimmers: NCAA and AAU national qualifiers, college swimmers and age group swimmers were given the 16 PF to investigate the

personality characteristics which enhance superior performance in swimming. Rushall, however, concluded that success in swimming is not dependent upon personality traits alone.

In summary, it is apparent that there are discrepancies within the findings of research studies dealing with the comparison of athletes of differing ability levels.

One major reason for such discrepancies is that different levels of competition may not be indicative of skill ability. For example, in studies where athletes are subdivided into varsity, intramural and non-participants, the division is often based on participation rather than skill level.

Athletes from different sports groups

Two hypotheses that have created a great deal of controversy are: (1) that specific sport groups can be distinguished on the basis of personalities, and (2) that differences exist in the personality traits of athletes involved in individual and team sports.

In a study dealing with a comparison of individual and team sport athletes, Peterson (1967) gave the 16 PF to thirty-eight female U.S. Olympic athletes participating in individual sports and fifty-nine female U.S. Olympic and AAU athletes participating in team sports. Results showed that women engaged in individual sports when compared with those in team sports were more dominant, aggressive, adventurous,

sensitive, imaginative, radical, self-sufficient and resourceful.

Another study comparing personalities of individual and team sports athletes was done by Malumphy (1968). Using the 16 PF Malumphy compared the personalities of seventy-seven intercollegiate female athletes in: individual sports (tennis, golf, competitive swimming, archery), subjectively judged sports (synchronized swimming and gymnastics), team sports (basketball, softball and field hockey) and team-individual sports (active in team and individual sports) as well as forty-eight non-participants. Results of the 16 PF indicated that the individual participants were less anxious, more venturesome, more extroverted and had more leadership qualities than the other sport groups. Participants in subjectively judged sports were less anxious than team participants, and were also more conscientious than the team-individual group and more extroverted than the team and team-individual participants.

Significant differences between male athletes of specific sport groups were found in a study by Kroll and Crenshaw (1970). The 16 PF was administered to eighty-one male collegiate football players, ninety-four wrestlers, seventy-one karate participants and one hundred and forty-one gymnasts. Results indicated that the football players and wrestlers exhibited profiles which were homogeneous but significantly different from those who were gymnasts and karate participants. The gymnasts and karate participants were more self-sufficient, more reserved and detached than wrestlers or football players. The profiles of the gymnasts and karate

participants in this study were also significantly different from each other. Karate participants were more tense, conscientious, rule bound and independent when compared with gymnasts while the gymnasts were more relaxed than the three other groups.

Another study dealing with the comparison of athletes of various sport groups was done by O'Connor (1976). O'Connor administered the 16 PF to four groups of intercollegiate female athletes and one control group consisting of non-competitors. The subjects were: thirteen basketball players, six gymnasts, nine tennis players, thirteen swimmers and fourteen non-competitors. Analysis of the data found significant differences on four of the sixteen personality traits: intelligence, radicalism, self-sufficiency and self-control.

A more recent study by Dolphin et al (1980) also found personality differences between the various athletic groups in their study. Cross country runners were described as very sober, while Judo participants were very happy-go-lucky. Rowers and cross country runners were very controlled while Judo participants were found undisciplined. Judo players also tended to be more reserved in contrast to the other group of cross country runners and rowers.

Despite many studies which have found significant differences among specific sport groups, Alderman (1974) suggests that the data does not support the two hypotheses previously mentioned: (1) that specific sport groups can be distinguished on the basis of personalities, and (2) that

differences exist in the personality traits of athletes involved in individual and team sports. This view has been supported by several studies. For example, the 16 PF was administered to two hundred and seventy-eight male athletes representing twenty different sport groups (four team sports and sixteen individual sports) and eighty female athletes representing eight different sport groups (two team sports and six individual sports) all of whom were members of Czechoslovakian national teams and participants in the final trials for the Olympics (Kroll et al 1973). The purpose of the study was to make comparisons of the personality profiles of the three hundred and eight athletes. Results of the sample studied did not support the premise that participants in a specific sport have similar personality profiles.

Results of a study by Marks (1971) also indicated no evidence of a difference in personality characteristics as measured by the 16 PF between individual and team sport participants. The 16 PF was given to forty female collegiate athletes selected from the sports: basketball, bowling, field hockey, golf, gymnastics, lacrosse, softball, swimming, tennis and volleyball.

The 16 PF was also administered by Foster (1971) to fifty-six female basketball players as well as forty female softball players. Results indicated no significant difference or no particular set of personality factors that differentiated between the two groups studied.

A recent study by Tripathi (1980) also found no

significant differences associated with particular sport groups. In this study college male athletes participating in football, cricket and hockey were examined.

Upon reviewing the research studies comparing the personality of athletes in different sport groups, it is obvious that they have been unable to come to any consistent agreement. One of the reasons for the inconsistency is in the experimental design of many of the research studies.

In Mark's (1971) study, for example, forty athletes were spread over ten groups. This meant that there was an average of four subjects per group, making the experiment less sensitive to detecting experimental effects.

It is also important that the athletic groups being studied are as homogenous as possible. When comparing athletes of different sport groups, consideration must be made as to whether the athletes are all within the same skill level and competitive level.

The successful non-athletic personality

Despite the importance our society places on "success" few personality studies have examined successful individuals in order to determine whether a general description of high achieving individuals could be ascertained.

An exception to this is an investigation by Bachtold and Werner (1970). In this study successful female psychologists were given the 16 PF and found to be independent,

assertive, emotionally stable, tough-minded, self-sufficient and secure.

In a more recent study by Bachtold (1976) eight hundred and sixty-three women of distinction were administered the 16 PF. These women were scientists, artists, writers, psychologists and politicians. When compared with the norms the four groups were all more intelligent, assertive, adventurous and less conservative. Also there were no significant differences between the four groups on any personality traits as measured by the 16 PF.

Henney (1975) also investigated success using the 16 PF. The sample in this study was limited to thirty-six male managers directly responsible for production at the Longbridge factory of British Leyland. Each manager was directly responsible for roughly 400 people and each manager had experience in engineering and 3 to 5 years experience at the managerial level. Results of the study indicate that the subjects could be described as being: assertive, emotionally stable, outgoing, mentally tough and extroverted.

Morgan (1973) compared successful female athletes, attorneys and physicians. The 16 PF was administered to eleven professional female golfers and tennis players, eleven female attorneys and twelve female physicians. Results of this study indicated that there were no significant differences between the three groups in personality structure. Significant differences however, were observed when the three groups combined were compared to the population norms. As a combined

group of subjects compared to the norms the athletes, attorneys and physicians were described as being more: intelligent, assertive, tough-minded, independent, relaxed, reserved, emotionally stable, imaginative, experimenting and controlled.

In summary the few studies presented here have examined the personalities of successful individuals. Each study found differences between the subject group and the population norm.

An important aspect to consider when making these comparisons is how the term "success" has been defined. Definitions of "success" range from success in terms of monetary achievement to success in terms of popularity to success in terms of employment position or success in terms of seniority.

Factors influencing success

A review of the literature on environmental variables such as birth order and family size has produced a lack of consistent findings. For example, Adams (1972) suggests that generalizations can be made about birth order while Schooler (1972) disputes this finding and suggests that there is no reliable evidence supporting birth order effects. Mitchell and Schroers (1973) also conclude, that while some general birth order effects have been found, the literature tends to display a picture of confusion.

Much of the research in the area of birth order has

dealt with the comparison of first born to later-born children. For example, Sampson et al (1967) studied the differences between first and later born children on need achievement. They collected data from two hundred and fifty-one high school students of two sibling families representing all possible combinations of ordinal position, subject sex and sibling sex. Results of the modified version of the Winterbottom scale indicated that the first borns had higher need achievement than later born children.

Karabenich (1971) also found no significant differences between selected birth order groups on need achievement. In this study one hundred and seventy male introductory psychology college students were divided into sixty-two first borns, sixty-one second borns and forty-seven later borns. Results of this study were obtained from two tests: the TAT and the test anxiety TAQ scale.

Another study that found no significant differences between birth order groups on need achievement was Strumpfer (1973). The Holmes-Tyler self-peer rating test and the Mehrabian Resultant measures of achievement motivation were given to one hundred fifty-eight female university students and one hundred and sixty male university students. The subjects were grouped in terms of sex, ordinal position and family size.

The evidence for birth order differences on intellectual ability is somewhat stronger than that for differences in need achievement. Lunneborg (1968) for example, studied 2,878 males and 2,523 females who were high school seniors. The subjects

took a pre-college battery of tests and analysis of the data revealed that among the first borns, the mean grades in English, foreign language, mathematics, social studies, natural sciences and electives were always higher when compared with the later born subjects. Similar results have been found by others (Adams and Phillips 1972; Burton 1968; Bradley and Sanbon 1969; Lessing and Oberlander 1967).

Family size as well as birth order has been a heavily researched topic. Masterton (1971) for example, administered the Marlowe-Crowne Social Desirability Scale to one hundred and fifty-five introductory psychology students consisting of thirteen only children, thirty-seven with one sibling, forty-eight with two siblings, fifty-seven with three or more. Significant main effects for family size and sex indicated that subjects with smaller families showed lower need approval and that females in general showed higher need approval.

Migliorino (1974) also studied family size as well as socio-economic level and intelligence. A positive correlation was found between socio-economic level and the mental development of the subject. In general, the higher the socio-economic level, the greater the mental development. There was however, a negative correlation between mental development and family size. For example, children from smaller families tend to have higher levels of intelligence while children from larger families tend to display lower levels of intelligence.

In summary, disagreement among investigators is quite evident in the literature concerning the effects of birth order

and family size on intelligence, need achievement and need approval.

It might be expected that an individual's personality development would be affected by interaction with other family members. This interaction would be determined by ordinal position and size of family. However, the evidence for such effects in general is weak.

Warren (1968:48) describes the findings of studies relating to birth order as a "confused but intriguing concept". Perhaps a major reason for this confusion lies in the various modifications of the basic definition of birth order. Simply defined birth order is "the sequential position of a person among his or her siblings with respect to order of birth" (Warren 1968:48). Some investigators compare first born with all later born children. Others compare eldest with youngest children. Some investigators consider only children to be first borns, while other investigators eliminate only children from their study.

Another reason for the confusion among birth order studies is presented by Masterton (1971) who suggests that many authors have failed to control for effects of subject's sex. In addition subjects from larger families who are fourth and fifth born are often eliminated from studies.

Chapter Summary

Upon review of the literature presented in this

chapter, it becomes apparent that there is no consistent agreement among the research findings of studies dealing with the comparisons of: (1) athlete and non-athlete, (2) athletes of differing ability levels and (3) athletes from different sport groups.

Perhaps one of the major reasons for the discrepancies within the research findings is the manner in which the term "athlete" has been defined. Researchers have defined the term "athlete" in such a way that it includes a variety of individuals in a wide range of skill level, participation level, competitive level and level of experience.

Another reason for the inconsistent findings is that different levels of competition may not be indicative of skill ability. For example, an athlete participating at the collegiate level is not necessarily more skilled than an athlete competing at the amateur level. Researchers rather than considering only level of participation should also consider levels of achievement accomplished by the athlete.

Another aspect is the experimental design which may be a reason for the inconsistent results of research studies dealing with the athletic personality. For example the greater number of subjects in a research study, the more sensitive that study is to detecting experimental effects. Researchers should also concern themselves with making their subject population as homogenous as possible. Consideration should be given as to whether the athletes are all within the same skill level, participation level, competitive level and level of

achievements.

Unlike the studies dealing with the athletic personality, few discrepancies were presented in the review of literature for the successful non-athletic personality. This is an area in personality where little research has occurred despite our society's continued emphasis on success.

Studies by Bachtold and Werner (1970), Bachtold (1976), Henney (1975) and Morgan (1973) were all presented and showed that consistently significant differences have been found within successful male and female individuals when compared to the population norm.

An important aspect to consider when studying successful individuals is how the term "success" has been defined. Definitions of success have a wide range of possibilities and researchers should make an attempt to clearly state their definition.

While few discrepancies were found within the research studies dealing with the successful non-athletic personality, the literature on the factors influencing success produced a lack of consistent findings. It is suggested that the main reason for this confusion lies in how researchers have defined birth order. Another reason for the confusion is that children from large families have often been eliminated from many research studies.

It is important that the experimental design be carefully examined when studying factors influencing success, as well as studies concerned with personalities of successful

non-athletes and studies dealing with the athletic personality. The definition of terms must be clearly stated, the number of subjects carefully considered as well as the statistical procedure used to analyze the data.

CHAPTER III

PROCEDURE AND ANALYSIS

Subject Population

The selection of successful professional subjects for this study was performed by four male lawyers and four male physicians who volunteered as "judges". These individuals were arbitrarily selected by the experimenter and asked if they would list male and female colleagues whom they considered successful. The "judges" were not provided with any criteria for identifying "success". If an individual's name appeared on three of the four "judges" lists, this person was included in the sample population.

From the judges' lists twelve (12) female and twenty-seven (27) male doctors, eight (8) female lawyers and twenty (20) male lawyers were selected. Mailing addresses for these potential subjects were obtained from the "Medical Directory: College of Physicians and Surgeons of B.C." and from the "British Columbia Provincial Directory of Attorneys".

The successful subjects in the athletic group were contacted through the National Volleyball Sport Governing Body and through mailing lists of basketball, gymnastics, field hockey and weightlifting national team members. From these lists the following number of athletes were included in the sample population: twelve (12) female and twelve (12) male volleyball athletes, fifteen (15) female and thirteen (13)

male basketball athletes, sixteen (16) female and eighteen (18) male gymnasts, sixteen (16) male field hockey athletes and twelve (12) male weight-lifters.

Once the mailing lists for the athletic group and the professional group were complete, each candidate was mailed a letter of introduction (See Appendix A) along with Cattell's 16 PF Form C and a Socio-cultural questionnaire designed by the experimenter (See Appendix B). A stamped self-addressed envelope was also enclosed for the convenience of the subject.

The subjects for this study were given one month to respond to the initial test package. After the one month period, all those who had not yet responded were sent a second test package consisting of a reminder letter (See Appendix A), 16 PF Form C and the Socio-cultural questionnaire along with a stamped, self-addressed envelope. A final letter of reminder was sent to those subjects who had still not responded after a two month period.

At the end of this two month period, the subject population for this study consisted of eighty-nine successful male and female subjects from a possible one hundred and eighty-one subjects. The subjects were: 1) Twenty-eight (28) successful male athletes from the sports of basketball (4), volleyball (5), gymnastics (9), field hockey (7) and weight lifting (3);

2) Twenty-nine (29) successful female athletes from the sports basketball (6), volleyball (11) and gymnastics (12);

3) Twenty (20) successful male professionals currently

practising law (8) or medicine (12) in the province of British Columbia;

4) Twelve (12) successful female professionals currently practising law (5) and medicine (7) in the province of British Columbia.

Instruments

In this investigation the instruments which were used included a personality inventory (Cattell's 16 PF Form C) and a Socio-cultural questionnaire (See Appendix B).

Cattell's 16 PF Form C. This personality inventory was selected for use in this study because it met the following requirements:

1) The 16 PF is, according to Cratty (1973), the inventory most used by psychologists interested in studying the personality of athletes.

2) Cattell's 16 PF has a well established set of norms for all four 16 PF forms.

3) Scores obtained from the 16 PF can be corrected for age differences.

4) The limitations of this study required the use of an objectively scored personality instrument which would give a profile of the subjects in the short length of time available for testing.

5) The 16 PF is a multidimensional set of sixteen questionnaire scales. Reliability of the various factors

ranges from .50 to .85. These reliabilities correspond roughly to the internal validities (Cattell 1953).

6) It has been experimentally demonstrated by Spielberger (1970) that subjects may tend to answer inventories not honestly but in a manner which will best reflect them. This type of response is known as "Response Distortion".

Form C as well as Form D of Cattell's 16 PF are the only forms which contain a scale referred to as the "Motivational Distortion" scale or the "MD" scale. This scale measures the level of the subject's response distortion.

Presented in Table I are the six personality factors being tested for using the 16 PF Form C. These six factors: emotional stability, assertiveness, conscientiousness, toughmindedness, self-assurance and self-sufficiency have been frequently used in describing "successful" individuals.

The Socio-cultural Questionnaire. This questionnaire was designed to obtain information on five areas of concern: birth order, family size, culture, educational and athletic experience. The questionnaire is composed of twenty-three test items, fifteen related to the subject's own background and the remaining eight items related to parental background information.

TABLE I
TESTED SIX PERSONALITY TRAITS
FROM THE 16 PF FORM C

FACTOR	DESCRIPTION OF THE BEHAVIOR
C.....	Affected by feelings versus emotionally stable
E.....	Humble versus assertive
G.....	Expedient versus conscientious
I.....	Tough-minded versus tender-minded
O.....	Self-assured versus apprehensive
Q ₂	Group-dependent versus self-sufficient

Analysis of the Data

As the completed questionnaires were returned by the subjects, each set was coded so that all information on specific individuals could be kept together. The 16 PF was scored by hand using scoring stencils and following the procedure described in the Manual (Cattell 1972). The raw scores were then corrected for any age differences using the age correction tables found in the manual.

A tally sheet was devised for the socio-cultural questionnaire (See Appendix B) and responses recorded for each subject's return. All subjects were then mailed an expression of appreciation (See Appendix A) for their participation plus a 16 PF personality profile of their answers to Cattell's 16 PF Form C.

The hypothesis that there would be no significant differences among means for male and female successful athletes and professionals on six dimensions of the 16 PF (Factor C, E, G, I, O and Q₂) was analyzed using a one way analysis of variance on each factor. To avoid the probability of one or more Type II errors the .05 level of significance was established for rejection of the first hypothesis. This level of significance ($p=0.05$) is considered to be the conventional level used (Robson 1974).

The .05 level of significance was also established for rejection of the second hypothesis which states that: there would be no significant differences among male and female successful athletes and professionals on five areas of concern: birth order, family size, culture, educational and athletic experience. A Chi Square statistic was used on the data obtained from the socio-cultural questionnaire.

CHAPTER IV

RESULTS

This study was designed to investigate the similarities and/or differences among four groups of successful individuals with regard to personality and socio-cultural information.

Data and results will be presented according to the type of information obtained. Personality information is followed by the socio-cultural information.

Personality Assessment

Cattell's 16 PF was used to test the first hypothesis that there would be no significant differences among means for male and female successful athletes and professionals on six factors, C, E, G, I, O and Q₂.

Table II contains the means, standard deviations, F ratios and sten scores for each of the six personality factors tested.

TABLE II
MEANS, STANDARD DEVIATIONS, STEN SCORES AND
F RATIOS FOR FACTORS C, E, G, I, O AND Q₂

FACTOR	GROUP	\bar{x}	s	STEN	F RATIO
Emotional Stability (C)	Male Athletes	8.39	2.12	6	1.128
	Female Athletes	8.59	2.08	7	"
	Male Professionals	7.60	2.07	6	"
	Female Professionals	7.66	2.70	6	"
Assertiveness (E)	Male Athletes	5.86	1.65	6	2.240
	Female Athletes	4.90	2.74	6	"
	Male Professionals	5.95	2.65	6	"
	Female Professionals	6.92	2.50	7	"
Conscientiousness (G)	Male Athletes	7.07	2.45	6	.684
	Female Athletes	6.80	1.93	5	"
	Male Professionals	7.65	1.90	6	"
	Female Professionals	6.67	3.21	5	"
Tough-mindedness (I)	Male Athletes	5.39	2.51	5	2.297
	Female Athletes	6.00	1.83	4	"
	Male Professionals	5.03	1.98	5	"
	Female Professionals	6.85	1.77	5	"
Self-assurance (O)	Male Athletes	4.83	2.39	5	2.550
	Female Athletes	6.62	3.17	5	"
	Male Professionals	6.03	1.60	6	"
	Female Professionals	6.15	0.63	5	"
Self-sufficient (Q ₂)	Male Athletes	4.43	3.01	5	2.375
	Female Athletes	4.37	1.93	6	"
	Male Professionals	6.10	2.61	7	"
	Female Professionals	5.19	2.14	7	"

On Factor C, the sten score for the female athletes was above the normal range of 4.5 to 6.5. On Factors E, G, O and Q₂, the sten scores fell within the normal range and for Factor I the sten score fell below the norm as shown in Figure 1.

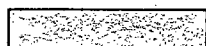
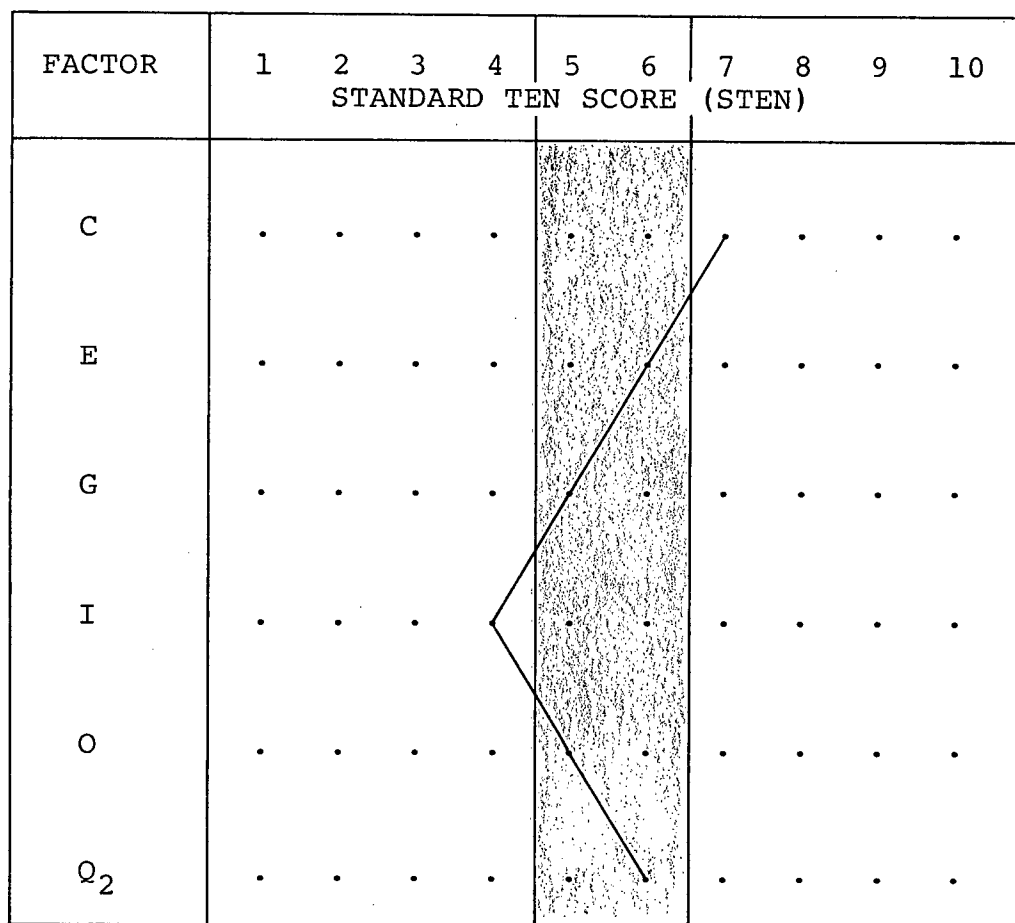
The sten score for the male athletes on all six personality Factors C, E, G, I, O and Q₂ were all within the normal range of 4.5 to 6.5 as shown in Figure 2.

Male professionals' sten scores were above the average on Factor Q₂ while they were all average for Factors C, E, G, I and O as shown in Figure 3.

Figure 4 shows the sten scores for the female professionals. On Factors E and Q₂ the sten scores were above the normal range. The sten scores were average for Factors C, G, I and O.

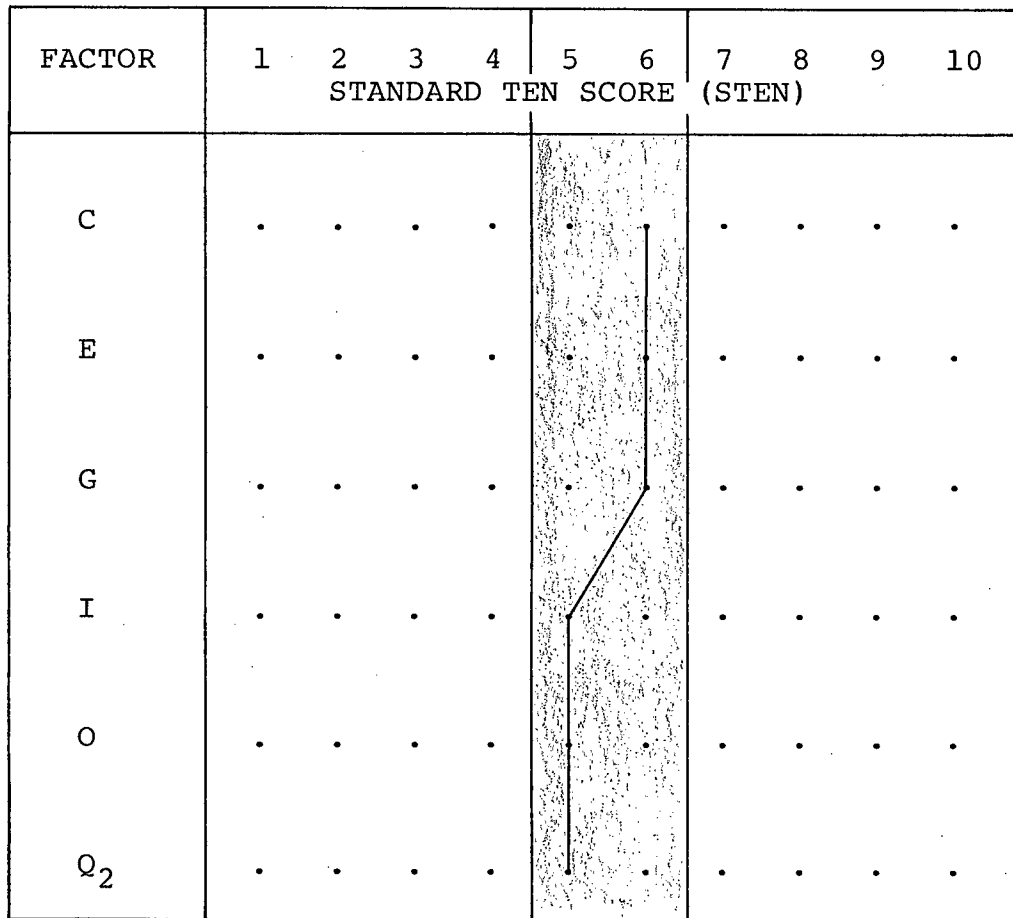
Analysis of the personality data indicated no significant difference at the .05 level between the four groups on the six personality traits examined. Hypothesis one, was therefore supported.

Summary tables of the one-way analysis of variance for all Variables C, E, G, I, O and Q₂ are presented in Appendix C.



RANGE OF NORMAL SCORES FOR THE GENERAL
POPULATION

Figure 1.--Personality Profile for Female Athletes
as a Group




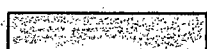
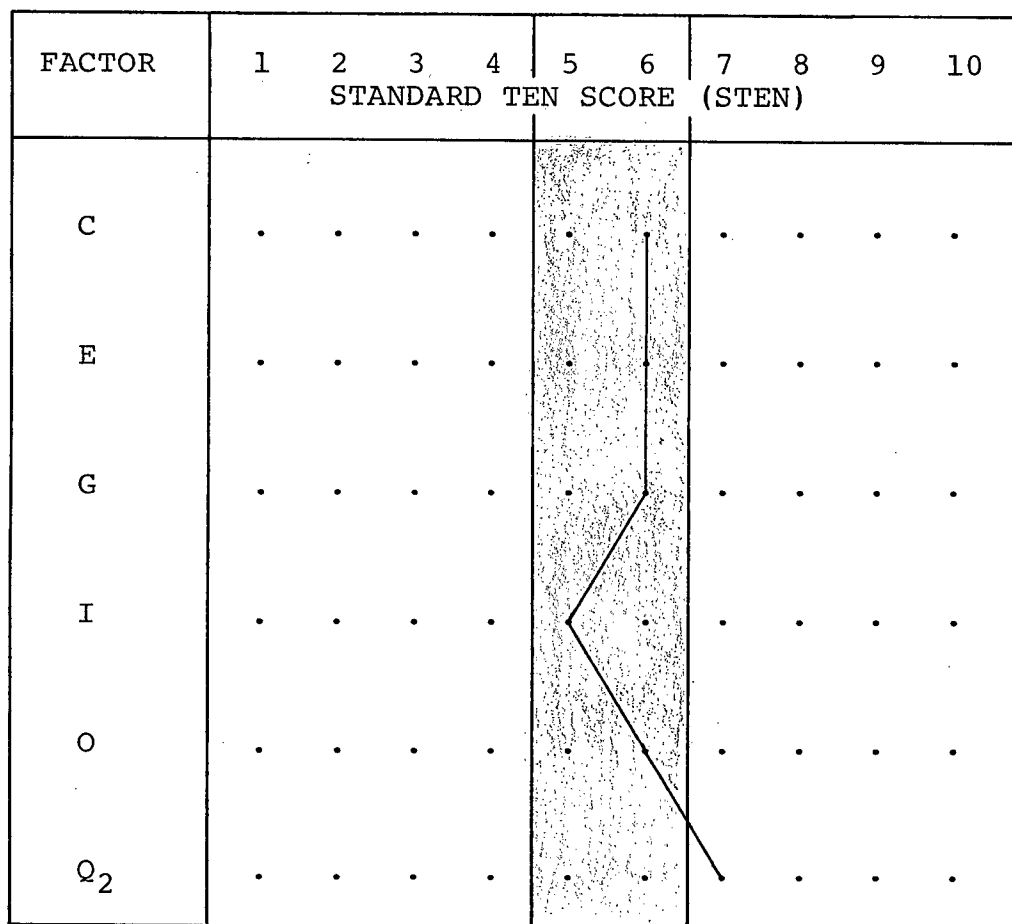
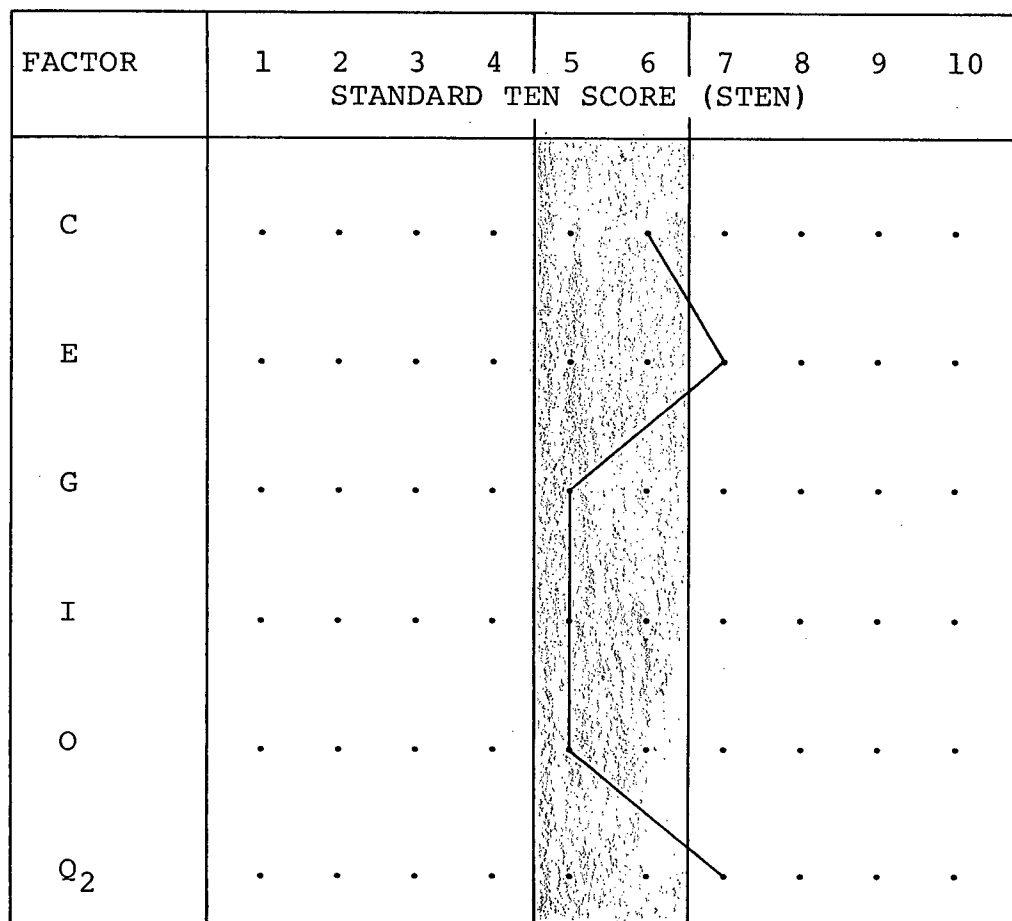
 RANGE OF NORMAL SCORES FOR THE GENERAL POPULATION

Figure 2.--Personality Profile for Male Athletes as a Group



RANGE OF NORMAL SCORES FOR THE GENERAL
POPULATION

Figure 3.--Personality Profile for Male Professionals
as a Group




 RANGE OF NORMAL SCORES FOR THE GENERAL POPULATION

Figure 4.--Personality Profile for Female Professionals as a Group

Socio-cultural Assessment

Birth Order. Table III shows that the female professional group had the highest percentage of first borns compared with the other three groups. Six of the twelve female professionals, exactly 50%, were first born children, while 30% of the male professionals, 21.4% of the male athletes and 10.3% of the female athletes were first borns.

TABLE III
FREQUENCY COUNT AND PERCENTAGES
OF GROUPS ON BIRTH ORDER

	1	2	3	4	5	6	7	8
	BIRTH ORDER							
GROUP 1	6 21.4%	6 21.4%	7 25.0%	3 10.7%	2 7.1%	2 7.1%	0 0.0%	2 7.1%
GROUP 2	3 10.3%	8 27.6%	11 37.9%	1 3.4%	2 6.9%	2 6.9%	1 3.4%	1 3.4%
GROUP 3	6 30.0%	6 30.0%	0 0.0%	5 25.0%	3 15.0%	0 0.0%	0 0.0%	0 0.0%
GROUP 4	6 50.0%	4 33.3%	1 8.3%	1 8.3%	0 0.0%	0 0.0%	0 0.0%	0 0.0%

GROUP 1 = MALE ATHLETES

GROUP 2 = FEMALE ATHLETES

GROUP 3 = MALE PROFESSIONALS

GROUP 4 = FEMALE PROFESSIONALS

Athletic Experience. At the time the data was taken one hundred percent of the male and female athletes, only 8.3% of the female professionals and 15% of the male professionals had been or were involved in international athletic competition. However, 80% of the male professionals and 58% of the female professionals had been competitive in athletics at either the university, national or international level. Of the male professionals 100% had been or were still active in athletics, while 16.7% of the female professionals had never participated in athletics as shown in Table IV.

TABLE IV
FREQUENCY COUNT AND PERCENTAGES
OF GROUPS ON ATHLETIC EXPERIENCE

	NEVER COMPETED	RECREATIONAL CLUB COMPETITION	HIGH SCHOOL COMPETITION	UNIVERSITY COMPETITION	NATIONAL COMPETITION	INTERNATIONAL COMPETITION
GROUP 1	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	28 100.0%
GROUP 2	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	29 100.0%
GROUP 3	0 0.0%	2 10.0%	2 10.0%	7 35.0%	6 30.0%	3 15.0%
GROUP 4	2 16.7%	3 25.0%	2 16.7%	2 16.7%	2 16.7%	1 8.3%

GROUP 1 = MALE ATHLETES
GROUP 2 = FEMALE ATHLETES
GROUP 3 = MALE PROFESSIONALS
GROUP 4 = FEMALE PROFESSIONALS

Culture. Table V shows that 92.9% of the male athletes were born in Canada, while 93.1% of the female athletes, 70% of the male professionals and 75% of the female professionals were also born in Canada.

The male professionals compared with the other three groups had the largest percentage (30%) of those born outside of North America. Only 6.9% of the female athletes, 7.1% of the male athletes and 25% of the female professionals were also born outside of North America.

TABLE V
FREQUENCY COUNT AND PERCENTAGES
OF GROUPS ON CULTURE

	CANADA	AMERICA (Place of Birth)	OTHER
MALE ATHLETE	26 92.9%	0 0.0%	2 7.1%
FEMALE ATHLETE	27 93.1%	0 0.0%	2 6.9%
MALE PROFESSIONALS	14 70.0%	1 5.0%	6 30.0%
FEMALE PROFESSIONALS	9 75.0%	0 0.0%	3 25.0%

Family size. Table VI shows that none of the male or female athletes was an only child. Of the male athletes 42.9% came from three child families, as did 44.8% of the female athletes.

The female professionals were also well represented in the three child family (58.3%). Only 15% of the male professionals came from three child families. Ten percent of the male professionals were the only child as were 16.7% of the female professionals.

TABLE VI
FREQUENCY COUNT AND PERCENTAGES
OF GROUPS ON FAMILY SIZE

	1	2	3	4	5	6	7	8	9
	(Number of Children in Family)								
GROUP 1	0 0.0%	4 14.3%	12 42.9%	7 25.0%	1 3.6%	2 7.1%	0 0.0%	0 0.0%	2 7.1%
GROUP 2	0 0.0%	6 20.7%	13 44.8%	7 24.1%	2 6.9%	0 0.0%	0 0.0%	1 3.4%	0 0.0%
GROUP 3	2 10.0%	4 20.0%	3 15.0%	4 20.0%	2 10.0%	3 15.0%	0 0.0%	1 5.0%	1 5.0%
GROUP 4	2 16.7%	2 16.7%	7 58.3%	0 0.0%	0 0.0%	1 8.3%	0 0.0%	0 0.0%	0 0.0%

GROUP 1 = MALE ATHLETES

GROUP 2 = FEMALE ATHLETES

GROUP 3 = MALE PROFESSIONALS

GROUP 4 = FEMALE PROFESSIONALS

Educational experience. All of the male and female professionals had attended university. While 85.7% of the male athletes and 62.1% of the female athletes had or were still attending university. Of the female athletes 37% were still in high school with 10.3% of these enrolled in a private school. None of the 14.3% of male athletes still in high school were enrolled in a private school as shown in Table VII.

TABLE VII
FREQUENCY COUNT AND PERCENTAGES
OF GROUPS FOR EDUCATIONAL EXPERIENCE

	HIGH SCHOOL PUBLIC	HIGH SCHOOL PRIVATE	UNIVERSITY
	(Educational Experience)		
MALE ATHLETE	4 14.3%	0 0.0%	24 85.7%
FEMALE ATHLETE	8 27.6%	3 10.3%	18 62.1%
MALE PROFESSIONALS	0 0.0%	0 0.0%	20 100.0%
FEMALE PROFESSIONALS	0 0.0%	0 0.0%	12 100.0%

The Chi Square analysis used to compare the five areas of concern on the socio-cultural questionnaire showed a significant difference ($\chi^2_{15} = 89.81$, $p \leq .00001$) when comparing athletic and educational experience ($\chi^2_6 = 17.48$, $p \leq .008$). Hypothesis two was, therefore, not supported.

Table VIII is a frequency table comparing the four groups for athletic experience, while Table IX is a frequency table for educational experience. All other frequency tables are found in Appendix C.

TABLE VIII
SUBJECTS IN THE GROUPS
AT VARIOUS LEVELS OF ATHLETIC EXPERIENCE

	NEVER COMPETED	RECREATION CLUB	COMPETITION HIGH SCHOOL	COMPETITION UNIVERSITY	COMPETITION NATIONAL	COMPETITION INTERNATIONAL	
MALE ATHLETES	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	28 100 45.9 31.5	28 31.5
FEMALE ATHLETES	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	29 100 47.5 32.6	29 32.6
MALE PROFESSIONALS	0 0.0 0.0 0.0	2 10.2 40.0 2.2	2 10.2 50.0 2.2	7 35.0 77.8 7.9	6 30.0 75.0 6.7	3 15.0 4.9 3.4	20 22.5
FEMALE PROFESSIONALS	2 16.7 100.0 2.2	3 25.0 60.0 3.4	2 16.7 50.0 2.2	2 16.7 22.2 2.2	2 16.7 25.0 2.2	1 8.3 1.6 1.1	12 13.5
COLUMN TOTAL	2 2.2	5 5.6	4 4.5	9 10.1	8 9.0	61 68.5	89 100.0

$$\chi^2_{15} = 89.81, p \leq .00001$$

TABLE IX
SUBJECTS IN THE GROUPS
AT VARIOUS LEVELS OF EDUCATIONAL EXPERIENCE

	HIGH SCHOOL PUBLIC	HIGH SCHOOL PRIVATE	UNIVERSITY	
	(Levels of Education)			
MALE ATHLETES	4	0	24	28
	14.3	0.0	85.7	31.5
	33.3	0.0	32.4	
	4.5	0.0	27.0	
FEMALE ATHLETES	8	3	18	29
	27.6	10.3	62.1	32.6
	66.7	100.0	24.3	
	9.0	3.4	20.4	
MALE PROFESSIONALS	0	0	20	20
	0.0	0.0	100.0	22.5
	0.0	0.0	27.0	
	0.0	0.0	22.5	
FEMALE PROFESSIONALS	0	0	12	12
	0.0	0.0	100.0	13.5
	0.0	0.0	16.2	
	0.0	0.0	13.5	
COLUMN	12	3	74	89
TOTAL	13.5	3.4	83.1	100.0

$$\chi^2_6 = 17.48, p \leq .008$$

CHAPTER V

DISCUSSION

It is important when studying behavior that personality variables be considered along with environmental variables. This approach to behavior is known as the interactionist approach and is a much more powerful predictor of behavior than considering traits or environmental variables alone.

This study has taken the interactionist approach and an examination of the results reveal that the representative personality profile of the four groups, as well as their socio-cultural background appear quite similar.

For all four groups, two of the personality traits-- Factor G (conscientiousness) and Factor O (self-assurance) were consistently within the population norm. For Factor C (emotional stability), the female athletes could be described as more emotionally stable when compared with the remaining three groups.

Emotional stability also referred to by Cattell as higher ego strength is frequently found among those who are leaders (Cattell et al 1970). This above average emotional stability is found in those who must adjust to difficulties or emergencies presented to them from the outside. It would be anticipated that those individuals classified as successful or superior in law or medicine as well as athletics would all require this higher than average emotional stability. The

results of the present study as well as the results of Morgan's (1973) study are in disagreement with this argument. In the present study the female athletes were the only group which could be described as emotionally stable. The only group in the Morgan study which could be described as emotionally stable were the female physicians. In Morgan's study the female attorneys and female athletes were within the normal or average range for this trait.

Closer examination of Morgan's study reveals that the age range for the female athletes was twenty-three (23) years of age to forty (40) years. During the time at which the data for Morgan's experiment was gathered a female tennis player, Billie Jean King, was the oldest female professional athlete in terms of prominence. The question must be asked as to the athletic ability, prominence and earnings of the athletes in Morgan's study who were over thirty years old. This may explain why the female athletes in Morgan's study were not described as emotionally stable. Also during the late 60's and early 1970's the professional circuit for the female tennis and golf player was very small as were the financial earnings. The time involvement and commitment could not possibly compare to the commitment of female athletes of the 1980's or to the commitment of female physicians of the 1960's and 70's.

It would be expected that the female physician in Morgan's study could be described as emotionally stable, as only 7% of the physicians at the time the data was collected were women (Morgan 1973:35). Subjects within the female

physicians group were obtained from Who's Who of American Women. These women had obtained prominence in the United States, and therefore it would be expected that they had high levels of dedication and stability to achieve such prominence in a male dominated profession.

While the female physicians were the only group in Morgan's study which could be described as emotionally stable, it was the female athletic group in the present study which could be described as being above average on this trait. Perhaps a reason for this is because of the female athletes' overall youth. Many of the female athletes in the present study hadn't lived long enough to experience a wide variety of failures or disappointments. Also the young female athlete must definitely have a support system of family, coaches, teammates and friends.

The trait of assertiveness was also examined and results indicate that the female professionals were more assertive than all remaining groups. Dominance, as this personality trait is often referred to, is characterized by higher than average aggressiveness and competitive behavior.

Cattell et al (1970) describes dominance as a trait which distinguishes the sexes: suggesting that dominant and achieving behavior is a basis on which society defines masculinity and femininity. Women in the field of athletics while they often compete with men for equal recognition are not in direct competition with men in athletic events and may as a result not exhibit assertive behavior. Female professionals

however are in direct competition with men. In their selection of law or medicine as a career, the female attorney and physician showed some degree of courage and aggressiveness. These careers have in the past been dominated by men whom the female attorney and physician will continue to compete against. This to some extent may be the reason for the female professionals exhibiting a higher degree of assertiveness.

Mental toughness was another trait examined and it was found that the female athletes were more mentally tough than the remaining three groups. Cattell (1969:488) describes an individual possessing this trait as a "hard-boiled, mature, independent, unemotional, poised individual with some smugness, over-precision and blinkered logic."

The female athletic group in the present study has an average age of 19 years. This average age was lower than the male athletes whose average age was 24, the male professionals whose average age was 41 and the female professionals who had an average age of 40 years. Because of the necessary dedication to training that an athlete must pursue in order to compete internationally and because of the overall youth of the female athletes it might be expected that the female athletes could be described as mentally tough.

Another trait which was also examined was self-sufficiency. In the present study, subjects in the male and female professional groups were found to be more self-sufficient than the male and female athletic groups who were within the population norm for this trait.

Self-sufficiency may be defined as preferring one's own decisions rather than being a follower or a joiner. Certainly within the field of law and medicine, male and female attorneys and physicians are required to make their own decisions about legal or medical cases. In athletics however, often the athlete is told what to do by other individuals such as coaches. This may explain to some extent why the professionals in this study could be described as more self-sufficient than the athletic subjects. The results of the present study contrast with the results of a study by Morgan (1973). In Morgan's study none of the subjects in law, medicine as well as athletics could be described as self-sufficient.

In summary it was hypothesized that the personality of the four groups studied would be similar but it was also anticipated that the personality profiles would differ from the population norm. The subject population in the present study however, did not differ from the average range on two of the six personality traits examined--Factor G (conscientiousness) and Factor O (self-assurance). Not one of the six personality traits examined was found to be consistently above or below the population norm or average range for all four groups.

The female professionals could be described as more assertive (Factor E) compared with the other three groups who were within the normal range. Of the four groups the female athletes were the only group which could be described as more mentally tough (Factor I) and more emotionally stable (Factor C), the remaining three groups were within the population norm for

these two traits. The male and female professionals could be described as having a higher degree of self-sufficiency (Factor Q_2) while the athletes in this study were within the average range.

While no significant differences ($p \leq .05$) between the groups were observed for the personality traits, two socio-cultural factors--athletic experience ($p \leq .00001$) and educational experience ($p \leq .008$) were significant.

A significant difference between groups on the factor of athletic experience was anticipated. After all, the criteria for selection of the athletic subjects was their participation at the international level. One hundred percent of the male and female athletes had international athletic experience, while only 15% of the male professionals and 8.3% of the female professionals had ever competed at the international level.

Despite the significant difference between groups on the factor athletic experience, 15% and 8.3% participation at the international level for the male and female professionals respectively, seems quite high for the professional groups. It appears that the athletic and professional groups in this study are very sports minded as only two of the 89 subjects had never been involved in athletics. Of the 89 subjects, 87% had athletic experience at the university, national or international level.

The male and female professionals who responded to the questionnaires were those interested or involved in

athletics. It may be that the remaining professionals who were mailed the questionnaires might not have been athletically inclined. This might explain the overall athletic experience of the subjects in this study.

A significant difference was also observed for the factor of educational experience. While one hundred percent of the male and female professionals had attended university (which is a foregone conclusion), only 62.1% of the female athletes and 85.7% of the male athletes had attended university. The remaining 37.9% of the female athletes and the remaining 14.3% of the male athletes were still enrolled in high school.

Despite the significant difference between the professional and athletic groups on the factor of educational experience, the subjects as a whole appear to be well educated. Eighty-three percent of the subjects have had a university education, but because of their age, the remaining 17% are still involved in a high school program. It is conceivable that upon graduation these 17% will attend university, as universities in Canada offer a high level of competition for the elite athlete.

Birth order, family size and culture were three other socio-cultural factors examined with no significant differences evident. There was however a prevalence of first borns (50%) among the female professionals. Thirty percent of male professionals were also first born, while 21.4% of the male athletes and only 10.3% of the female athletes were first born.

Occurrence of the first born, especially among the professional groups, may be partially accounted for by the way they were brought up. Called upon to take more responsibilities around the house, the first born may have had to strive to live up to the expectations of parents. Parents' expectations tend to be greater for the first born, and once that child has reached an acceptable level of achievement, there appears to be less pressure put on younger children to attain those same expectations.

The high occurrence of first borns in the professional groups and the low occurrence of first borns in the athletic groups may also be due to parents pressuring their first borns into professions leading to high status and prominence in their community. A member of the law or medical profession achieves greater distinction, prominence and earns more money than the majority of amateur athletes.

For many parents raising the first child is a learning experience. This may be another reason for the low incidence of first borns in the athletic groups. Many parents do not become aware of the athletic opportunities (little leagues, dance classes, etc.) for their young first born child. The later born children benefit from the parents' learning experience, as the parents will probably be more aware of the athletic opportunities available in the community for their later born children.

The lower incidence of first borns among the athletic groups may also have something to do with the sport involvement

of the athletes. According to a 1980 article by Hall, Church and Stone, the sport setting investigations show that later borns seek group activities and team sports more readily than first borns. Within the female athletic group of this study two of the three sports are team sports while three of the five sports in the male athletic group are also team sports.

Family size, another factor studied, showed a high incidence of male and female athletes from families of three or more children. This may have something to do with having a guaranteed supply of playmates and more opportunities for competitive experience.

While there was a high incidence of male and female athletes from families of three or more children, there was also a high incidence of male and female professionals from families of four or less. Migliorino (1974) found a negative correlation between mental development of the subject and family size. In Migliorino's study it was found that children from smaller families tend to have higher levels of intelligence while children from larger families tend to display lower levels of intelligence. It is expected that those who have graduated from a university through a medical or law program must have a high level of intelligence. As it is assumed anyone attending university has some degree of intelligence at least above the average or population norm.

Since children tend to surpass the level of achievement attained by their parents, it is also important to consider the educational, occupational and athletic levels reached by the

parents.

Upon examination of the parental background information, it would appear that subjects in this study did not use the parent of the same gender as a role model in choice of career or sport. For example, within the female professionals only 33% of the mothers were employed in professional careers such as teaching, law or medicine. The female athletes also did not use their mothers as role models as only 48% of the mothers were involved in athletics and then mostly at the high school level.

The parents' encouragement of their children to achieve greater heights than they attained for themselves may be a reason for the subjects of this study not selecting their parents as role models. Just as the female subjects in the present study did not select the parent of the same gender as a role model, neither did the male subjects. Only 40% of the fathers of the male professionals were employed in professional careers, and 60% of the male athletes' fathers had been involved in athletics but mostly at the high school and recreational level.

In summary, the results indicate that the information obtained from the socio-cultural questionnaire is quite similar for all subject groups in the present study. Subjects as a whole can be described as well educated and sports minded individuals.

CHAPTER VI

SUMMARY

The purpose of this study was to determine if there were any significant differences between male and female successful individuals in law, medicine and athletics on six personality traits and five socio-cultural factors. Cattell's 16 PF Form C was administered by mail along with a socio-cultural questionnaire (designed by the experimenter) to twenty-eight male athletes, twenty-nine female athletes, twenty male professionals and twelve female professionals.

Summary of the Personality Assessment

A one way analysis of variance performed on the data obtained from the 16 PF showed no significant differences at the .05 level, among the four groups on the six personality traits: self-assurance, self-sufficiency, emotional stability, mental toughness, conscientiousness and assertiveness.

Hypothesis one was therefore supported.

When the four groups were compared it was found that the female athletes were more emotionally stable and mentally tough when compared with the other three groups. The female professionals could be described as having higher levels of self-sufficiency and assertiveness when compared with the other three groups. Self-sufficiency was the only trait exhibited by the male professionals, while the male athletes could be

described as within the average or normal range on all six personality traits. The subject population in the present study did not differ from the average range on two of the six personality traits--Factor G (conscientiousness) and Factor O (self-assurance).

Summary of the Socio-cultural Assessment

No significant differences were found among the four groups on the socio-cultural factors birth order, family size and culture. While significant differences were found among the groups on the factor of athletic ($p \leq .00001$) and educational experience ($p \leq .008$), these differences were anticipated as criteria for selection of the subjects was based on their level of athletic and educational achievement.

Despite this significant difference the subject group of this study could be described as a sports minded and well educated group. Only two of the 89 subjects in the present study had never been involved in athletics. While only 17% of the subjects, because of their age, were still enrolled in a high school program, the remaining 83% of the subjects at the time the data was collected had attended or were still attending a university.

Results of the Chi Squared statistic performed on the socio-cultural data also indicated that there was an occurrence of first born children, especially among the professional groups. There was also a high incidence of athletes from

families of three or more children, while there was a high incidence of professionals from families of four or less.

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Recommendations for Further Study

As a result of this study, the investigator recommends consideration of the following concerns for further research:

- 1) That the "judges" consist of an equal number of men and women when compiling a list of successful male and female individuals.
- 2) That each "judge" be given the criteria for selecting a successful colleague and if no criteria is given each "judge" must state the criteria they used for their selection.
- 3) The socio-cultural questionnaire designed by the experimenter was not validated.
- 4) That the investigation of the personality and socio-cultural characteristics of successful males and females in areas other than law or medicine be undertaken to determine if there is a consistent profile for the successful individual.

APPENDIX A

Correspondence

1. Letter of Introduction to Doctors
2. Letter of Introduction to Lawyers
3. Letter of Introduction to Athletes
4. Reminder Letter to Doctors
5. Reminder Letter to Lawyers
6. Reminder Letter to Athletes
7. Letter of Appreciation to Subjects

August 1980

Dear Doctor,

I am currently on faculty at The University of Lethbridge, but am still in the process of completing my master's thesis from The University of British Columbia. My thesis is a personality study of successful: doctors, lawyers and athletes.

Because your time is valuable, I am mailing the questionnaire to you. The two questionnaires require approximately thirty minutes of your time. For your convenience please return the questionnaires as soon as possible in the stamped return envelope provided.

The results are strictly confidential and a code is used merely for mailing purposes. If you are interested in your own personal personality profile please indicate below and return this letter along with the questionnaires to me.

Your assistance in helping me complete my thesis is greatly appreciated.

Thank you very much,

Louisa W. Zerbe
Instructor, The University of Lethbridge

PLEASE SEND ME MY PERSONAL PROFILE TO:

.....

.....

August 1980

Dear Lawyer,

I am currently on faculty at The University of Lethbridge, but am still in the process of completing my master's thesis from The University of British Columbia. My thesis is a personality study of successful: doctors, lawyers and athletes.

Because your time is valuable, I am mailing the questionnaire to you. The two questionnaires require approximately thirty minutes of your time. For your convenience please return the questionnaires as soon as possible in the stamped return envelope provided.

The results are strictly confidential and a code is used merely for mailing purposes. If you are interested in your own personal personality profile please indicate below and return this letter along with the questionnaires to me.

Your assistance in helping me complete my thesis is greatly appreciated.

Thank you very much,

Louisa W. Zerbe
Instructor, The University of Lethbridge

PLEASE SEND ME MY PERSONAL PROFILE TO:

.....

.....

August 1980

Dear Athlete,

I am currently on faculty at The University of Lethbridge, but am still in the process of completing my master's thesis from The University of British Columbia. My thesis is a personality study of successful: doctors, lawyers and athletes.

Because your time is valuable, I am mailing the questionnaire to you. The two questionnaires require approximately thirty minutes of your time. For your convenience please return the questionnaires as soon as possible in the stamped return envelope provided.

The results are strictly confidential and a code is used merely for mailing purposes. If you are interested in your own personal personality profile please indicate below and return this letter along with the questionnaires to me.

Your assistance in helping me complete my thesis is greatly appreciated.

Thank you very much,

Louisa W. Zerbe
Instructor, The University of Lethbridge

PLEASE SEND ME MY PERSONAL PROFILE TO:

.....

.....

September 1980

Dear Doctor,

During the summer, you received a package containing two (2) questionnaires (Cattell's 16 PF Form C and a Socio-cultural Questionnaire). Success of my master's thesis is dependent upon the completion of these questionnaires.

Along with this letter I have included a second test package, at your earliest convenience could you please return the questionnaires to me. I realize that your time is precious and I appreciate your assistance in helping me.

Thank you very much,

Louisa W. Zerbe, Instructor
The University of Lethbridge

September 1980

Dear Lawyer,

During the summer, you received a package containing two (2) questionnaires (Cattell's 16 PF Form C and a Socio-cultural Questionnaire). Success of my master's thesis is dependent upon the completion of these questionnaires.

Along with this letter I have included a second test package, at your earliest convenience could you please return the questionnaires to me. I realize that your time is precious and I appreciate your assistance in helping me.

Thank you very much,

Louisa W. Zerbe, Instructor
The University of Lethbridge

September 1980

Dear Athlete,

During the summer, you received a package containing two (2) questionnaires (Cattell's 16 PF Form C and a Socio-cultural Questionnaire). Success of my master's thesis is dependent upon the completion of these questionnaires.

Along with this letter I have included a second test package, at your earliest convenience could you please return the questionnaires to me. I realize that your time is precious and I appreciate your assistance in helping me.

Thank you very much,

Louisa W. Zerbe, Instructor
The University of Lethbridge

Fall 1980

Dear Subject,

Here are your results of the 16 PF (Cattell's Sixteen Personality Factor Questionnaire) that you completed during the summer. For your convenience, the results have been put on a "personality profile graph".

I appreciate your assistance in helping me complete my thesis and I would like to re-assure you that your test results will remain confidential.

Again, thank you for your speedy response.

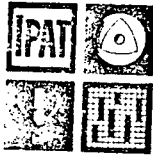
Sincerely,

Louisa W. Zerbe
Instructor, The University of Lethbridge

APPENDIX B

Personality and Socio-Cultural Information

1. Cattell's 16 PF Form C
2. Socio-Cultural Questionnaire
3. Socio-Cultural Tally Sheet
4. 16 PF Personality Profile



Form C
1969 EDITION R

16 PF

WHAT TO DO: Inside this booklet are some questions to see what interests you have and how you feel about things. On most items there are no "right" or "wrong" answers because people have the right to their own views. All you have to do is answer what is true for *you*.

If a separate answer sheet has *not* been given to you, turn this booklet over and tear off the answer sheet on the back page. Write your name and other information asked for on the answer sheet.

First, read the four **EXAMPLES** below and mark your answers *on the answer sheet* where it says **EXAMPLES**. Fill in the box completely:

EXAMPLES:

- | | |
|---|--|
| <p>1. I like to watch team games.
a. yes, b. occasionally, c. no.</p> | <p>3. Money cannot bring happiness.
a. yes (true),
b. in between,
c. no (false).</p> |
| <p>2. I prefer people who:
a. are reserved,
b. (are) in between,
c. make friends quickly.</p> | <p>4. Adult is to child as cat is to:
a. kitten, b. dog, c. baby.</p> |

In the last example there is a right answer—kitten. But there are very few such reasoning items.

Ask *now* if something isn't clear.

When the examiner tells you, start with number 1 and answer the questions. Keep these four things in mind:

1. Give only answers that are true *for you*. It is best to say what you really think.
2. Don't spend too much time thinking over each question. Give the **first, natural answer** as it comes to you. Of course, the questions are too short to give you *all* the information you might like, but give the best answer you can under the circumstances.
3. Answer *every* question one way or the other. Don't skip any.
4. You should mark the *a* or *c* answer *most* of the time. Mark the middle *b* answer *only* when you feel you have to, because neither *a* nor *c* seems to be right for you.

DO NOT TURN PAGE UNTIL TOLD TO DO SO

1. I think my memory is better than it ever was.
a. yes, b. in between, c. no.
2. I could happily live alone, far from anyone, like a hermit.
a. yes, b. occasionally, c. no.
3. If I say the sky is "down" and winter is "hot," I would call a criminal:
a. a gangster, b. a saint, c. a cloud.
4. When going to bed, I:
a. drop off to sleep quickly,
b. in between,
c. have difficulty falling asleep.
5. When driving a car in a line of traffic, I feel satisfied:
a. to remain behind most of the other cars,
b. in between,
c. only after I've reached the front of the line.
6. At a party I let others keep the jokes and stories going.
a. yes, b. sometimes, c. no.
7. It's important to me not to live in messy surroundings.
a. true, b. uncertain, c. false.
8. Most people I meet at a party are undoubtedly glad to see me.
a. yes, b. sometimes, c. no.
9. I would rather exercise by:
a. fencing and dancing,
b. in between,
c. wrestling and baseball.
10. I smile to myself at the big difference between what people do and what they say they do.
a. yes, b. occasionally, c. no.
11. In reading about an accident I like to find out exactly how it happened.
a. always, b. sometimes, c. seldom.
12. When friends play a joke on me, I usually enjoy it as much as the others, without feeling at all upset.
a. true, b. in between, c. false.
13. When someone speaks angrily to me, I can forget the matter quickly.
a. true, b. uncertain, c. false.
14. I like to "dream up" new ways of doing things rather than to be a practical follower of well-tried ways.
a. true, b. uncertain, c. false.
15. When I plan something, I like to do so quite alone without any outside help.
a. yes, b. occasionally, c. no.
16. I consider myself less "high strung" than most people.
a. true, b. in between, c. false.
17. I get impatient easily with people who don't decide quickly.
a. true, b. in between, c. false.
(End, column 1 on answer sheet.)
18. I have sometimes, even if briefly, had hateful feelings towards my parents.
a. yes, b. in between, c. no.
19. I would rather tell my innermost thoughts to:
a. my good friends,
b. uncertain,
c. a diary.
20. I think the opposite of the opposite of "inexact" is:
a. casual, b. accurate, c. rough.
21. I always have lots of energy at times when I need it.
a. yes, b. in between, c. no.

22. I am more annoyed by a person who:
 a. tells off-color jokes and embarrasses people,
 b. uncertain,
 c. is late for an appointment and inconveniences me.
23. I greatly enjoy inviting guests and amusing them.
 a. true, b. uncertain, c. false.
24. I feel that:
 a. some jobs just don't have to be done so carefully as others,
 b. in between,
 c. any job should be done thoroughly if you do it at all.
25. I have always had to fight against being too shy.
 a. yes, b. in between, c. no.
26. It would be more interesting to be:
 a. a bishop, b. uncertain, c. a colonel.
27. If people cheat me in small things, I'd rather humor them than show them up.
 a. yes, b. occasionally, c. no.
28. I like friends who:
 a. are efficient and practical in their interests,
 b. in between,
 c. seriously think out their feelings about life.
29. It bothers me if I hear others expressing ideas that are contrary to those that I firmly believe.
 a. true, b. in between, c. false.
30. I'm over-conscientious and worry over my past acts or mistakes.
 a. yes, b. in between, c. no.
31. If I were good at both, I'd rather:
 a. play chess,
 b. in between,
 c. go bowling.
32. I like to join with people who show lively group enthusiasm.
 a. yes, b. in between, c. no.
33. I put my faith more in:
 a. insurance,
 b. in between,
 c. good fortune.
34. I can forget my worries and responsibilities whenever I need to.
 a. yes, b. sometimes, c. no.
 (End, column 2 on answer sheet.)
35. It's hard for me to admit it when I'm wrong.
 a. yes, b. sometimes, c. no.
36. In a factory it would be more interesting to be in charge of:
 a. machinery or keeping records,
 b. in between,
 c. talking to and hiring new people.
37. Which word does not belong with the other two?
 a. cat, b. near, c. sun.
38. Minor distractions seem:
 a. to irritate me,
 b. in between,
 c. not to bother me at all.
39. I am quite happy to be waited on, at appropriate times, by personal servants.
 a. often, b. sometimes, c. never.
40. I would rather live in a town:
 a. artistically laid out, but relatively poor,
 b. uncertain,
 c. that is rough, prosperous, and booming.
41. People should insist more than they now do that moral laws be followed.
 a. yes, b. sometimes, c. no.
42. I have been told that, as a child, I was rather:
 a. quiet and kept to myself,
 b. in between,
 c. lively and always active.

43. I enjoy routine, constructive work, using a good piece of machinery or apparatus.
a. yes, b. in between, c. no.
44. I think most witnesses tell the truth even if it becomes embarrassing.
a. yes, b. in between, c. no.
45. When I meet new people, I'd rather:
a. discuss politics and social views,
b. in between,
c. have them tell me some good, new jokes.
46. I try to make my laughter at jokes quieter than most people's.
a. yes, b. in between, c. no.
47. I never feel so wretched that I want to cry.
a. true, b. uncertain, c. false.
48. In music I enjoy:
a. military band marches,
b. uncertain,
c. violin solos.
49. I would rather spend two weeks in the summer:
a. bird-watching and walking in the country with a friend or two,
b. uncertain,
c. being a leader of a group in a camp.
50. The effort taken in planning ahead:
a. is never wasted,
b. in between,
c. is not worth it.
51. Inconsiderate acts or remarks by my neighbors do *not* make me touchy and unhappy.
a. true, b. uncertain, c. false.
(End, column 3 on answer sheet.)
52. When I know I'm doing the right thing, I find my task easy.
a. always, b. sometimes, c. seldom.
53. I would rather be:
a. in a business office, organizing and seeing people,
b. in between,
c. an architect, drawing plans in a quiet room.
54. "House" is to "room" as "tree" is to:
a. forest, b. plant, c. leaf.
55. Things go wrong for me:
a. rarely, b. occasionally, c. frequently.
56. In most things in life, I believe in:
a. taking a gamble,
b. in between,
c. playing it safe.
57. Some people may think I talk too much.
a. likely, b. uncertain, c. unlikely.
58. I admire more people who are:
a. clever, but undependable,
b. in between,
c. average, but strong to resist temptations.
59. I make decisions:
a. faster than many people,
b. uncertain,
c. slower than most people.
60. I am more impressed by:
a. acts of skill and grace,
b. in between,
c. acts of strength and power.
61. I am considered a cooperative person.
a. yes, b. in between, c. no.
62. I enjoy talking more with polished, sophisticated people than with outspoken, down-to-earth individuals.
a. yes, b. in between, c. no.
63. I prefer to:
a. keep my problems to myself,
b. in between,
c. talk about them to my friends.

64. If a person doesn't answer when I make a suggestion, I feel I've said something silly.
a. true, b. in between, c. false.
65. I learned more in my school days by:
a. going to class,
b. in between,
c. reading books.
66. I avoid getting involved in social responsibilities and organizations.
a. true, b. sometimes, c. false.
67. When a problem gets hard and there is a lot to do, I try:
a. a different problem,
b. in between,
c. a different attack on the same problem.
68. I get strong emotional moods—anxiety, anger, laughter, etc.—that seem to arise without much actual cause.
a. yes, b. occasionally, c. no.
(End, column 4 on answer sheet.)
69. My mind doesn't work so clearly at some times as it does at others.
a. true, b. in between, c. false.
70. I am happy to oblige people by making appointments at times they prefer, even if it is a bit inconvenient to me.
a. yes, b. sometimes, c. no.
71. I think the proper number to continue the series 1, 2, 3, 6, 5, is:
a. 10, b. 5, c. 7.
72. I have occasionally had a brief touch of faintness, dizziness, or light-headedness for no apparent reason.
a. yes, b. uncertain, c. no.
73. I would rather do without something than put a waiter or waitress to a lot of extra trouble.
a. yes, b. occasionally, c. no.
74. I live for the "here and now" more than most people do.
a. true, b. uncertain, c. false.
75. At a party, I like:
a. to get into worthwhile conversation,
b. in between,
c. to see people relax and completely let go.
76. I speak my mind no matter how many people are around.
a. yes, b. sometimes, c. no.
77. If I could go back in time, I'd rather meet:
a. Columbus,
b. uncertain,
c. Shakespeare.
78. I have to stop myself from getting too involved in trying to straighten out other people's problems.
a. yes, b. sometimes, c. no.
79. In a store or market, I would prefer to:
a. design and do window displays,
b. uncertain,
c. be a cashier.
80. If people think poorly of me, I can still go on calmly in my own mind.
a. yes, b. in between, c. no.
81. If people seem cold and reserved to me, I usually:
a. just think they're in a bad mood,
b. uncertain,
c. worry about what I may have done wrong.
82. More trouble arises from people:
a. changing and meddling with ways that are already satisfactory,
b. uncertain,
c. turning down new, promising methods.
83. I greatly enjoy talking to people about local problems.
a. yes, b. sometimes, c. no.
84. Prim, strict people don't seem to get along well with me.
a. true, b. sometimes, c. false.

85. I guess I'm less irritable than most people.
a. true, b. uncertain, c. false.
(End, column 5 on answer sheet.)
86. I may be less considerate of other people than they are of me.
a. true, b. sometimes, c. false.
87. I would just as soon let someone else have all the worry of being in charge of an organization of which I am a member.
a. true, b. uncertain, c. false.
88. If the two hands on a watch come together exactly every 65 minutes (according to an accurate watch), the watch is running:
a. slow, b. on time, c. fast.
89. I am bored:
a. often, b. occasionally, c. seldom.
90. People say that I like to have things done my own way.
a. true, b. occasionally, c. false.
91. I find it wise to avoid too much excitement because it tends to wear me out.
a. yes, b. occasionally, c. no.
92. At home, with a bit of spare time, I:
a. use it chatting and relaxing,
b. in between,
c. arrange to fill it with special jobs.
93. I am shy, and careful, about making friendships with new people.
a. yes, b. occasionally, c. no.
94. I think that what people say in poetry could be put just as exactly in plain prose.
a. yes, b. sometimes, c. no.
95. I suspect that people who act friendly to me can be disloyal behind my back.
a. yes, generally,
b. occasionally,
c. no, rarely.
96. I think that even the most dramatic experiences during the year leave my personality much the same as it was.
a. yes, b. sometimes, c. no.
97. It would seem more interesting to be a:
a. naturalist and work with plants,
b. uncertain,
c. public accountant or insurance salesperson.
98. I get unreasonable fears or distastes for some things, for example, particular animals, places, and so on.
a. yes, b. sometimes, c. no.
99. I like to think out ways in which our world could be changed to improve it.
a. yes, b. in between, c. no.
100. I prefer games where:
a. you're on a team or have a partner,
b. uncertain,
c. people are on their own.
101. At night I have rather fantastic or ridiculous dreams.
a. yes, b. occasionally, c. no.
102. If left in a lonely house I tend, after a time, to feel a bit anxious or fearful.
a. yes, b. sometimes, c. no.
(End, column 6 on answer sheet.)
103. I may deceive people by being friendly when I really dislike them.
a. yes, b. sometimes, c. no.
104. Which word does not belong with the other two?
a. think, b. see, c. hear.
105. If Mary's mother is Fred's father's sister, what relation is Fred to Mary's father?
a. cousin, b. nephew, c. uncle.
- (End of test.)

EXAMPLES:

1. I like to watch team games.
a. yes, b. occasionally, c. no. ☐ a ☐ b ☐ c
2. I prefer people who:
a. are reserved, ☐ a ☐ b ☐ c
b. (are) in between,
c. make friends quickly.
3. Money cannot bring happiness.
a. yes (true), b. in between, c. no (false). ☐ a ☐ b ☐ c
4. Adult is to child as cat is to:
a. kitten, b. dog, c. baby. ☐ a ☐ b ☐ c

NAME _____
FIRST MIDDLE INITIAL LAST

ADDRESS _____
(OR OCCUPATION OR AS INSTRUCTED)

SEX _____ AGE _____ DATE _____
(WRITE IN OR F) (NEAREST YEAR)

OTHER _____
(AS INSTRUCTED)

Do not write here



Factor SCORE
Raw Std.

MD
(Experimental)

1 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	18 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	35 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	52 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	69 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	86 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	103 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c
2 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	19 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	36 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	53 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	70 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	87 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	104 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c
3 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	20 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	37 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	54 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	71 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	88 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	105 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c
4 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	21 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	38 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	55 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	72 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	89 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
5 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	22 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	39 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	56 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	73 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	90 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
6 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	23 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	40 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	57 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	74 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	91 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
7 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	24 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	41 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	58 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	75 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	92 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
8 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	25 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	42 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	59 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	76 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	93 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
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11 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	28 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	45 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	62 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	79 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	96 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
12 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	29 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	46 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	63 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	80 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	97 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
13 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	30 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	47 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	64 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	81 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	98 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
14 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	31 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	48 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	65 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	82 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	99 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
15 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	32 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	49 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	66 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	83 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	100 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
16 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	33 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	50 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	67 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	84 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	101 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	
17 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	34 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	51 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	68 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	85 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	102 <input type="checkbox"/> a <input type="checkbox"/> b <input type="checkbox"/> c	

A _____
B _____
C _____
E _____
F _____
G _____
H _____
I _____
L _____
M _____
N _____
O _____
Q₁ _____
Q₂ _____
Q₃ _____
Q₄ _____

(Use only for 1969 edition of these tests.)

SOCIO-CULTURAL QUESTIONNAIRE

DATE: _____ 1980

SEX: MALE _____ FEMALE _____ PROFESSION: Lawyer _____
 Doctor _____
 Athlete _____

AGE: _____

PLEASE INDICATE YOUR ANSWER WITH A CHECK MARK (✓). IF THE QUESTIONS DO NOT APPLY TO YOU PLEASE INDICATE WITH N.A.

1. In what country were you born:
 CANADA _____ UNITED STATES _____ EUROPE (specify country) _____
 OTHER (specify) _____
2. How many brothers and/or sisters do you have:
 BROTHERS _____ SISTERS _____
3. Indicate the birth order of YOURSELF, your BROTHERS and your SISTERS:
 first born: _____
 second born: _____
 third born: _____
 fourth born: _____
 fifth born: _____
 others (specify): _____

4. What type of school did you attend:
 A. Public School NAME: _____
 GRADES ATTENDED: _____
 B. Private School NAME: _____
 GRADES ATTENDED: _____

5. A. Have you or are you attending University: YES___NO___
- B. If yes, where was or is this University located:
- CANADA (specify province)_____
- UNITED STATES (specify state)_____
- OTHER (specify country)_____
- C. Where did you take your professional training or your athletic training:
- CANADA (specify province)_____
- UNITED STATES (specify state)_____
- OTHER (specify country)_____
6. Who interested you initially in your profession or your sports:
- MOTHER___FATHER___BROTHER___SISTER___GRANDMOTHER___
- GRANDFATHER___OTHER (specify)___
7. A. Did you participate in a sports program within your elementary school: YES___NO___
- B. If yes, identify these activities:_____
- C. Did you participate in an organized sports club or program outside the school program (i.e. minor league baseball, private clubs, etc.) YES___NO___
- D. If yes, identify these activities:_____
8. A. Did you participate in a sports program within your high school: YES___NO___
- B. If yes, identify these activities:_____
- C. Did you participate in an organized sports club or program outside of the high school program (i.e. minor league hockey, private tennis, etc.) YES___NO___
- D. If yes, identify these activities:_____
9. A. Did you participate in a sports program at your University: YES___NO___
- B. If yes, identify these activities:_____

- C. Did you participate in an organized sports club or program outside of the university program (i.e. private tennis club, volleyball, etc.) YES___NO___
- D. If yes, identify these activities:_____
10. What is the highest level of sport competition that you have participated at:
- INTERNATIONAL___NATIONAL___PROVINCIAL (STATE)___
- UNIVERSITY___HIGH SCHOOL___ELEMENTARY___CLUB___
- RECREATIONAL___OTHER (specify)_____
11. Are you still active in any athletic or sport activity: (i.e. curling, tennis, swimming, jogging, volleyball, etc.) YES___NO___
- If yes, identify these activities:_____
13. A. Do you work past your regular business hours or practise your sport past regular practice hours: YES___NO___
- B. Number of hours per week you work past your regular business hours or practice hours:
- 1-4___4-7___7-10___10-13___13-16___16-20___more than 20___
14. A. Do you feel that you are in competition with others in your profession or with others in your sport: YES___NO___
- B. If yes, in what way do you feel that you are in competition with others in your profession or your sport (i.e. status, playing position, playing time)
- _____
- _____
15. How would you describe your overall health:
- EXCELLENT___GOOD___AVERAGE___BELOW AVERAGE___POOR___
16. In what country was your mother born:
- CANADA___UNITED STATES___EUROPE (specify country)_____
- OTHER (specify country)_____
17. In what country was your father born:
- CANADA___UNITED STATES___EUROPE (specify country)_____
- OTHER (specify country)_____

18. Did either of your parents attend university:

MOTHER: Yes ___ No ___ FATHER: Yes ___ No ___

19. What was/is your mother's occupation: LAWYER ___ DOCTOR ___

TEACHER ___ SALES PERSON ___ ENGINEER ___ HOUSEWIFE ___

OTHER (specify) _____

20. What was/is your father's occupation: LAWYER ___ DOCTOR ___

TEACHER ___ SALES PERSON ___ ENGINEER ___ ACCOUNTANT ___

OTHER (specify) _____

21. A. Did your mother ever participate in an athletic or sport activity: YES ___ NO ___

B. If yes, identify these activities: _____

C. At what levels did your mother participate:

INTERNATIONAL ___ NATIONAL ___ PROVINCIAL ___ UNIVERSITY ___

HIGH SCHOOL ___ ELEMENTARY ___ CLUB ___ RECREATIONAL ___

OTHER (specify) _____

22. A. Did your father ever participate in an athletic or sport activity: YES ___ NO ___

B. If yes, identify these activities: _____

C. At what levels did your father participate:

INTERNATIONAL ___ NATIONAL ___ PROVINCIAL ___ UNIVERSITY ___

HIGH SCHOOL ___ ELEMENTARY ___ CLUB ___ RECREATIONAL ___

OTHER (specify) _____

23. A. Do either of your parents still participate in an athletic or sport activity: MOTHER: Yes ___ No ___
FATHER: Yes ___ No ___

B. If yes, identify these activities:

MOTHER: _____

FATHER: _____

TALLY SHEET

SUBJECT: ATHLETE F M / LAWYER F M / DOCTOR F M

SUBJECT NUMBER: _____ SPORT: _____ AGE: _____

FACTOR: C _____ E _____ G _____ I _____ O _____ Q₂ _____

CULTURE: (QUESTIONS 1,16,17)

SUBJECT: CANADIAN/AMERICAN/OTHER _____

MOTHER: CANADIAN/AMERICAN/OTHER _____

FATHER: CANADIAN/AMERICAN/OTHER _____

FAMILY SIZE: (QUESTION 2) (NUMBER OF CHILDREN) 1 2 3 4 5 6
7 8 9 10BIRTH ORDER: (QUESTION 3) 1st born _____ 2nd _____ 3rd _____ 4th _____
5th _____ 6th _____ 7th _____ 8th _____ 9th _____ 10th _____

EDUCATION: (QUESTIONS 4,5,6,18) JUNIOR: PUBLIC _____ PRIVATE _____

SENIOR: PUBLIC _____ PRIVATE _____

UNIVERSITY: ATTENDING: Yes _____ No _____

ATTENDED: Yes _____ No _____

PROFESSIONAL OR ATHLETIC

TRAINING: PROV. _____

COUNTRY _____

INITIAL INTEREST _____

ATHLETIC EXPERIENCE: (QUESTION 7,8,9,10,11)

ELEMENTARY SCHOOL: YES _____ NO _____

ACTIVITIES: _____

OUTSIDE CLUB: YES _____ NO _____

ACTIVITIES: _____

HIGH SCHOOL: YES _____ NO _____

ACTIVITIES: _____

OUTSIDE CLUB: YES _____ NO _____

ACTIVITIES: _____

UNIVERSITY: YES ☐ NO ☐

ACTIVITIES: _____

OUTSIDE CLUB: YES ☐ NO ☐

ACTIVITIES: _____

HIGHEST LEVEL OF COMPETITION: INTERNATIONAL ☐ NATIONAL ☐

PROVINCIAL ☐ UNIVERSITY ☐ HIGH SCHOOL ☐ ELEMENTARY ☐

CLUB ☐ OTHER ☐

STILL ACTIVE: YES ☐ NO ☐

ACTIVITIES: _____

PARENT'S ATHLETIC EXPERIENCE: (QUESTIONS 21, 22, 23)

MOTHER: YES ☐ NO ☐

ACTIVITIES: _____

LEVEL: INTERNATIONAL ☐ NATIONAL ☐ PROVINCIAL ☐

UNIVERSITY ☐ HIGH SCHOOL ☐ ELEMENTARY ☐ CLUB ☐

RECREATIONAL ☐ OTHER ☐

FATHER: YES ☐ NO ☐

ACTIVITIES: _____

LEVEL: INTERNATIONAL ☐ NATIONAL ☐ PROVINCIAL ☐

UNIVERSITY ☐ HIGH SCHOOL ☐ ELEMENTARY ☐ CLUB ☐

RECREATIONAL ☐ OTHER ☐

DO THEY STILL PARTICIPATE OR COMPETE: FATHER YES ☐ NO ☐

ACTIVITIES: _____

MOTHER YES ☐ NO ☐

ACTIVITIES: _____

INDIVIDUAL DATA (QUESTIONS 12, 13, 14, 15)

OVERALL HEALTH: EXCELLENT ☐ GOOD ☐ AVERAGE ☐ BELOW ☐ POOR ☐

COMPETITION: SUBJECT FEELS IN COMPETITION: YES ☐ NO ☐

HOW: _____

WORK OR PRACTISE PAST REGULAR HOURS: YES ☐ NO ☐

NO. OF HOURS: 1-4 ☐ 4-7 ☐ 7-10 ☐ 10-13 ☐ 13-16 ☐ 16-20 ☐ 20 ☐

HOLD ADMINISTRATIVE POSITION: YES ☐ NO ☐

IF YES, IDENTIFY _____

PARENT'S DATA: OCCUPATION (QUESTIONS 19, 20)

MOTHER'S: HOUSEWIFE___SALES PERSON___ENGINEER___LAWYER___
DOCTOR___TEACHER___OTHER_____

FATHER'S: LAWYER___DOCTOR___MECHANIC___TEACHER___
SALES PERSON___ENGINEER___ACCOUNTANT___OTHER_____

DID YOUR PARENTS ATTEND UNIVERSITY

MOTHER: YES___NO___ FATHER: YES___NO___

16 PF TEST PROFILE

Sten Score	FACTOR	Raw Score			Standard Score	LOW SCORE DESCRIPTION	STANDARD TEN SCORE (STEN)										HIGH SCORE DESCRIPTION
		Form A/C/E	Form B/D	Total			1	2	3	4	5	6	7	8	9	10	
FB	A					RESERVED, DETACHED, CRITICAL, ALOOF, STIFF (Sizothymia)	1	2	3	4	5	6	7	8	9	10	OUTGOING, WARMHEARTED, EASY-GOING, PARTICIPATING (Affectothymia)
FD	B					LESS INTELLIGENT, CONCRETE-THINKING (Lower scholastic mental capacity)					B						MORE INTELLIGENT, ABSTRACT-THINKING, BRIGHT (Higher scholastic mental capacity)
	C					AFFECTED BY FEELINGS, EMOTIONALLY LESS STABLE, EASILY UPSET, CHANGEABLE (Lower ego strength)					C						EMOTIONALLY STABLE, MATURE, FACES REALITY, CALM (Higher ego strength)
	E					HUMBLE, MILD, EASILY LED, DOCILE, ACCOMMODATING (Submissiveness)					E						ASSERTIVE, AGGRESSIVE, STUBBORN, COMPETITIVE (Dominance)
	F					SOBER, TACITURN, SERIOUS (Desurgency)					F						HAPPY-GO-LUCKY, ENTHUSIASTIC (Surgency)
	G					EXPEDIENT, DISREGARDS RULES (Weaker superego strength)					G						CONSCIENTIOUS, PERSISTENT, MORALISTIC, STAID (Stronger superego strength)
	H					SHY, TIMID, THREAT-SENSITIVE (Threctia)					H						VENTURESOME, UNINHIBITED, SOCIALLY BOLD (Parnia)
	I					TOUGH-MINDED, SELF-RELIANT, REALISTIC (Harria)					I						TENDER-MINDED, SENSITIVE, CLINGING, OVERPROTECTED (Premia)
	L					TRUSTING, ACCEPTING CONDITIONS (Alaxia)					L						SUSPICIOUS, HARD TO FOOL (Protension)
	M					PRACTICAL, "DOWN-TO-EARTH" CONCERNS (Proxemia)					M						IMAGINATIVE, BOHEMIAN, ABSENT-MINDED (Autia)
	N					FORTHRIGHT, UNPRETENTIOUS, GENUINE BUT SOCIALLY CLUMSY (Artlessness)					N						ASTUTE, POLISHED, SOCIALLY AWARE (Shrewdness)
	O					SELF-ASSURED, PLACID, SECURE, COMPLACENT, SERENE (Untroubled adequacy)					O						APPREHENSIVE, SELF-REPROACHING, INSECURE, WORRYING, TROUBLED (Guilt proneness)
	Q ₁					CONSERVATIVE, RESPECTING TRADITIONAL IDEAS (Conservatism of temperament)					Q ₁						EXPERIMENTING, LIBERAL, FREE-THINKING (Radicalism)
	Q ₂					GROUP-DEPENDENT, A "JOINER" AND SOUND FOLLOWER (Group adherence)					Q ₂						SELF-SUFFICIENT, RESOURCEFUL, PREFERS OWN DECISIONS (Self-sufficiency)
	Q ₃					UNDISCIPLINED SELF-CONFLICT, LAX, FOLLOWS OWN URGES, CARELESS OF SOCIAL RULES (Low integration)					Q ₃						CONTROLLED, EXACTING WILL, POWER, SOCIALLY PRECISE, COMPULSIVE (High strength of self-sentiment)
	Q ₄					RELAXED, TRANQUIL, UNFRUSTRATED, COMPOSED (Low ergic tension)					Q ₄						TENSE, FRUSTRATED, DRIVEN, OVERWROUGHT (High ergic tension)

Name:

Comments:

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A sten of 1 2 3 4 5 6 7 8 9 10 is obtained by about 2.2% 4.4% 9.2% 15.0% 19.1% 19.1% 15.0% 9.2% 4.4% 2.2% of adults

APPENDIX C

Non-Significant Anova Tables and Chi Square Tables

1. Anova Table for Emotional Stability
2. Anova Table for Assertiveness
3. Anova Table for Conscientiousness
4. Anova Table for Tough Mindedness
5. Anova Table for Assurance
6. Anova Table for Self-Sufficiency
7. Chi-Square Table for Birth Order
8. Chi-Square Table for Family Size
9. Chi-Square Table for Culture

TABLE A
ANOVA TABLE FOR 16 PF Variable C

Variable: C

EMOTIONAL STABILITY

Analysis of Variance

F-ratio	Source F-prob.	D.f.	Sum of Squares	Mean Squares
	Between Groups	3	395.3715	131.7905
1.928	0.1312			
	Within Groups	85	5811.2812	68.3680
	Total	88	6206.6526	

TABLE B
ANOVA TABLE FOR 16 PF VARIABLE E

Variable: E		ASSERTIVENESS		
		Analysis of Variance		
F-ratio	Source F-prob.	D.f.	Sum of Squares	Mean Squares
	Between Groups	3	38.4196	12.8065
2.240	0.0895			
	Within Groups	85	485.9849	5.7175
	Total	88	524.4045	

TABLE C
ANOVA TABLE FOR 16 PF VARIABLE G

Variable: G

CONSCIENTIOUSNESS

Analysis of Variance

F-ratio	Source F-Prob.	D.f.	Sum of Squares	Mean Squares
	Between Groups	3	10.8375	3.6125
0.684	0.5643			
	Within Groups	85	448.9627	5.2819
	Total	88	459.8002	

TABLE D
ANOVA TABLE FOR 16 PF VARIABLE I

Variable: I		TOUGH-MINDED		
		Analysis of Variance		
F-ratio	Source F-Prob.	D.f.	Sum of Squares	Mean Squares
	Between Groups	3	30.2990	10.0997
2.297	0.0834			
	Within Groups	85	373.6617	4.3960
	Total	88	403.9606	

TABLE E
ANOVA TABLE FOR 16 PF VARIABLE O

Variable: O		ASSURANCE		
		Analysis of Variance		
F-ratio	Source F-prob.	D.f.	Sum of Squares	Mean Squares
	Between Groups	3	48.2199	16.0733
2.550	0.0611			
	Within Groups	85	535.8485	6.3041
	Total	88	584.0684	

TABLE F
ANOVA TABLE FOR 16 PF VARIABLE Q_2

Variable: Q ₂		SELF-SUFFICIENCY		
Analysis of Variance				
F-ratio	Source F-prob.	D.f.	Sum of Squares	Mean Squares
	Between Groups	3	44.3347	14.7782
2.375	0.0758			
	Within Groups	85	528.9655	6.2231
	Total	88	573.3002	

TABLE G
A CHI SQUARE STATISTIC FOR
THE SOCIO-CULTURAL FACTOR BIRTH ORDER

Count :									
Row% :									
Row :									
Col% :									
Total									
Total % :	1st	2nd	3rd	4th	5th	6th	7th	8th	
(Birth Order)									
MALE ATHLETES	6	6	7	3	2	2	0	2	28
	21.4	21.4	25.0	10.7	7.1	7.1	0.0	7.1	31.5
	28.6	25.0	36.8	30.0	28.6	50.0	0.0	66.7	
	6.7	6.7	7.9	3.4	2.2	2.2	0.0	2.2	
FEMALE ATHLETES	3	8	11	1	2	2	1	1	29
	10.3	27.6	37.9	3.4	6.9	6.9	3.4	3.4	32.6
	14.3	33.3	57.9	10.0	28.6	50.0	100.0	33.3	
	3.4	9.0	12.4	1.1	2.2	2.2	1.1	1.1	
MALE PROFESSIONALS	6	6	0	5	3	0	0	0	20
	30.0	30.0	0.0	25.0	15.0	0.0	0.0	0.0	22.5
	28.6	25.0	0.0	50.0	42.9	0.0	0.0	0.0	
	6.7	6.7	0.0	5.6	3.4	0.0	0.0	0.0	
FEMALE PROFESSIONALS	6	4	1	1	0	0	0	0	12
	50.0	33.3	8.3	8.3	0.0	0.0	0.0	0.0	13.5
	28.6	16.7	5.3	10.0	0.0	0.0	0.0	0.0	
	6.7	4.5	1.1	1.1	0.0	0.0	0.0	0.0	
Column	21	24	19	10	7	4	1	3	89
Total	23.6	27.0	21.3	11.2	7.9	4.5	1.1	3.4	100.0

$$\chi^2_{21} = 29.71381, p \leq 0.0979$$

TABLE H
A CHI SQUARE STATISTIC FOR
THE SOCIO-CULTURAL FACTOR FAMILY SIZE

Count :										
Row% :										
Row :										
Col% :										
Total										
Total % :	1	2	3	4	5	6	7	8	9	
	(Family Size)									
	0	4	12	7	1	2	0	0	2	28
MALE	0.0	14.3	42.9	25.0	3.6	7.1	0.0	0.0	7.1	31.5
ATHLETES	0.0	25.0	34.3	38.9	20.0	33.3	0.0	0.0	66.7	
	0.0	4.5	13.5	7.9	1.1	2.2	0.0	0.0	2.2	
	0	6	13	7	2	0	0	1	0	29
FEMALE	0.0	20.7	44.8	24.1	6.9	0.0	0.0	3.4	0.0	32.6
ATHLETES	0.0	37.5	37.1	38.9	40.0	0.0	0.0	50.0	0.0	
	0.0	6.7	14.6	7.9	2.2	0.0	0.0	1.1	0.0	
	2	4	3	4	2	3	0	1	1	20
MALE	10.0	20.0	15.0	20.0	10.0	15.0	0.0	5.0	5.0	22.5
PROFESSIONALS	50.0	25.0	8.6	22.2	40.0	50.0	0.0	50.0	33.3	
	2.2	4.5	3.4	4.5	2.2	3.4	0.0	1.1	1.1	
	2	2	7	0	0	1	0	0	0	12
FEMALE	16.7	16.7	58.3	0.0	0.0	8.3	0.0	0.0	0.0	13.5
PROFESSIONALS	50.0	12.5	20.0	0.0	0.0	16.7	0.0	0.0	0.0	
	2.2	2.2	7.9	0.0	0.0	1.1	0.0	0.0	0.0	
Column	4	16	35	18	5	6	0	2	3	89
Total	4.5	18.0	39.3	20.2	5.6	6.7	0.0	2.2	3.4	100.0

$$\chi^2_{21} = 25.80316, p \leq 0.2141$$

TABLE 1
A CHI SQUARE STATISTIC FOR
THE SOCIO-CULTURAL FACTOR CULTURE

	Count	:			
	Row%	:	Canadian	American	Other
	Col%	:			
	Total	:			
MALE ATHLETES	26		0	2	28
	92.9		0.0	7.1	31.5
	34.7		0.0	15.4	
	29.2		0.0	2.2	
FEMALE ATHLETES	27		0	2	29
	93.1		0.0	6.9	32.6
	36.0		0.0	15.4	
	30.3		0.0	2.2	
MALE PROFESSIONALS	13		1	6	20
	65.0		5.0	30.0	22.5
	17.3		100.0	46.2	
	14.6		1.1	6.7	
FEMALE PROFESSIONALS	9		0	3	12
	75.0		0.0	25.0	13.5
	12.0		0.0	23.1	
	10.1		0.0	3.4	
Column	75		1	13	89
Total	84.3		1.1	14.6	100.0

$$\chi^2_6 = 11.34721, p \leq 0.0782$$

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