1975

Variability of Personality Traits in College Cross Country Runners

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This research is a product of the graduate program in Physical Education at Eastern Illinois University. Find out more about the program.

VARIABILITY OF PERSONALITY TRAITS IN

COLLEGE CROSS COUNTRY RUNNERS

(TITLE)

BY

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THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

MASTER OF SCIENCE IN PHYSICAL EDUCATION

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1975

YEAR

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Chapter 1

INTRODUCTION

Since man began to pursue the realms of athletic
excellence he has stressed the idea of the four "S's."
From ancient Greece to the present day, skill, speed, stamina
and strength have been recognized as prerequisites for
success. These physical characteristics formed the needed
model for a coach to pursue. Each was important to the
development of potential and each has had numerous docu-
mented studies in its regard. Without a doubt, these four
necessary items had to be included in a coach's repertoire.

Recent times have shown an additional "S" arising
in today's coaching circles. The term being referred to is
that of spirit, a building block in athletic development
which can neither be ignored nor emphasized enough. Some
feel it may overshadow the before mentioned physical areas.

The coach can record the development of skill, speed,
stamina and strength by various mechanical means. A problem
arises from the fact that it is difficult to determine a
measurable effect of spirit. The only tool available was
his keen insight into the mental make-up of the individual
which was developed through experience. The coach had to be
a psychologist as well as a physiologist.

Recent times have brought about the creation of personality type tests which examine the degree of a particular trait one possesses. These tests have been used in ever increasing frequency in the area of athletics. The coach can now be informed as to what type of individual he will be associated with and will be able to make the necessary adjustments to handle certain situations.

NEED FOR THE STUDY

Coaches seem most concerned with their athletes from the physiological standpoint. Unknown quantities such as oxygen consumption, heart-rates and workloads can be discovered through laboratory tests and formulae. Recent work in muscle biopsies has been done by our leading physiologists. The trend toward laboratory oriented discoveries to aid the advancement of sport has been on the upsurge. Ideas on optimum training systems abound, and the human body is being tested to its limits for peak performance.

The coach, as teacher, forgets that two ingredients lead to the success of the distance runner. Along with an arduous physical training must come a tremendous mental discipline. The runner not only has to expose his body to hours of running in the rain, heat, snow and cold but must come to the realization that this must be a day to day, year to year procedure in order to achieve success. Various

psychological problems may occur as a result of such a regime of training. Neglect of this mental side of the athlete can result in dire consequences. Certain situations may result which an ill-prepared coach may not be able to handle. By ignoring certain psychological tendencies which may exist in his athletes the coach is inviting the advent of problems to the team or the individual.

Many so called "closed doors" have resulted between coach and team members, be it from petty differences to full-scale misunderstandings. This lack of communication occurs because one side fails to understand the other. At the base of it all someone is to blame. All the training knowledge in the world is of little use if communication has broken down to a point where neither coach nor player has confidence in each other. It is up to the coach to have enough foresight to not allow such a thing to happen. He must know his players' needs and wants both physically and mentally. He must be psychologist enough to understand each player.

One approach to studying the psychology of athletes has been through the trait theory. First proposed by Allport[1] and carried on with some modifications by Cattell,[2]

[1]Gordon W. Allport, Personality and Social Encounter (Boston: Beacon Press, 1960), p. 131.

[2]Robert M. Liebert and Michael D. Spiegler, Personality, An Introduction to Theory and Research (Homewood, Illinois: Dorsey Press, 1970), p. 127.

the theory basis the trait as the unit of personality. The theory was picked up by sports psychologists such as Morgan,[3] Johnson,[4] Ogilive and Tutko[5] and others who sought to examine the personality of different athletic sub-groups. Though many studies have been done, the area of personality testing is not extensive and is still considered a new area of research. The contributions these researchers have made has much to do with the application of techniques in regards to today's athlete.

The old saying of "you can't tell the players without a scorecard," can be of use to the coach of today. His scorecard would be a list of the personality traits which make up his players. Certain crisis situations, when they arose, could be handled more tactfully by the coach with fewer problems as the end result. Players could be dealt with according to the level which they possess a certain trait. An example might be if the best runner seemed bored with workouts and his performance level dropped off. His personality might find him to be the adventurous type, "Item H on Cattell's Sixteen Personality Factor

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[3]William P. Morgan, "Personality Characteristics of Wrestlers Participating in the World Championships," Journal of Sports Medicine and Physical Fitness, 8:212-216, December, 1968.

[4]Warren R. Johnson, "Personality Traits of Some Champion Athletes as Measured by Two Projective Tests: Rorshach and H-T-P," Research Quarterly, 6:484-85, December, 1954.

[5]Bruce Ogilvie and Thomas A. Tutko, Problem Athletes and How to Handle Them (London: Pelham Books LTD., 1966), p. 10.

Test."[6] A change in the workout environment or type may stimulate his adventurous nature leading to increased enthusiasm. This is one of many examples which could be cited. The coach should realize that by knowing his players psychologically, he can better apply physiological principles.

Ogilvie and Tutko stated that "if the psychological needs of the athlete can be read objectively, an ideal method exists for bringing out effective performance."[7] If this mental side of the individual can be measured, then coaches have turned one variable to a constant, and the application of their physiological methods should become easier to administer. Forms of negative behavior can be met with and positive results may be the outcome. The possibility that true athletic potential will result is much greater if training systems are put to use on the basis of good psychological knowledge.

It is a mistaken notion that athletes all possess the same character traits. Morgan,[8] Husman[9] and numerous

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[6]Raymond B. Cattell, Manual for the 16 PF (Champaign, Illinois: The Institute for Personality and Ability Testing, 1972), p. 32.

[7]Ogilvie and Tutko, loc. cit.

[8]Morgan, op. cit.

[9]B. F. Husman, "Aggression in Boxers and Wrestlers as Measured by Projective Techniques," Research Quarterly, 26:421-425, 1955.

others have found certain differences in athletic sub-
groups. The track coach who treats his sprinters with much
the same psychology as his distance runners makes a mistake
which is not uncommon today. Each athletic group or athlete
himself has a uniqueness which each coach must be sensitive
to. This uniqueness may be small or it may be large, yet it
contributes in every way to how a coach will handle
problems, training and the individual.

Tutko and Ogilvie, the pioneers in solving problems
between coach and athlete, have said that "the social
interaction of the coach and athlete should lead to the
enrichment of both their lives."[10] In other words, the two,
coach and player, must work together as one unit for not
only the athlete's success but for any personal satis-
factions to be gained by the coach. Understanding each
other is imperative.

A study dealing with an examination of the runner's
personality traits should greatly aid the coach in under-
standing the athlete psychologically. As Tutko and Richards
so aptly put it:

> The coach must know the different personality
> types of the athletes with whom he will be working
> during a season, so he may effectively use the varied
> approaches available to him. Means and forms of
> communication, motivational techniques, and teaching

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[10]Ogilvie and Tutko, loc. cit.

procedures will vary in accordance with the degree to
which the individual athletes and the team manifest
different personality traits.[11]

PURPOSE OF THE STUDY

The purpose of the study was to examine the vari-
ability of personality traits concerning college cross
country runners based on the results of two tests, the
Adjective Check List and the Cattell Sixteen Personality
Factor Inventory.

NULL HYPOTHESIS

The cross country runner shows no difference in
regards to personality traits when compared to athletic and
non-athletic groups.

LIMITATIONS

The study was limited to one hundred male subjects
selected from ten major universities throughout the midwest.
All subjects were experienced distance runners with at least
five years of training.

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[11]Jack W. Richards and Thomas A. Tutko, _Psychology
of Coaching_ (Boston: Allyn and Bacon, Inc., 1971), p. 41.

DEFINITIONS

The following terms are defined for this study:

Distance Runner

A distance runner is an individual who participates on a college cross country team.

Personality

Personality is that which permits a prediction of what a person will do in a given situation.

Trait

A trait is regarded as the natural unit in the description of personality. It is any distinguishable enduring way in which an individual differs from others.

Chapter 2

REVIEW OF RELATED LITERATURE

Although much has been written in the area of
personality testing concerning different athletic sub-
groups, very little research has been done in regards to
cross country runners. Many magazine articles and coaching
texts acknowledge the fact that distance runners have
different mental characteristics than other athletes, but
very little research is cited that supports these statements
or investigates any variance in great detail. The review
of related literature in this chapter will be subdivided
into two parts: 1) those sources that discuss personality
trait studies regarding different athletic sub-groups and
2) those studies that have been done which center on the
personality testing of cross country runners.

PERSONALITY TRAIT STUDIES IN REGARDS TO DIFFERENT ATHLETIC SUB-GROUPS

Personality testing of different college type
athletes has been discussed in many psychological journals
and texts. The fact that different trait characteristics
exist between athletes and non-athletes has been reported by
several researchers.

Werner and Gottheil[1] found that cadet athletes varied significantly from non-participants on seven of the sixteen PF scales.

In a similar study using the Minnesota Multi-phasic Inventory (MMPI), Morgan and Johnson[2] studies the profiles of freshman athletes and non-athletes at the University of Wisconsin. The athletes were found to differ from the non-athletes on various MMPI scales in each class.

Sperling[3] adds support in that he found an athletic group to be superior to a non-athletic group in the personality traits of ascendance and extroversion.

Not only has it been established that different character traits exist between athlete and non-athlete but between a variety of athletic sub-groups themselves.

This fact has been reported by many researchers including Sperling[4] who noted that personality differences,

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[1]Edward Gottheil and Alfred C. Werner, "Personality Development and Participation in College Athletics," Research Quarterly, 37:126-131, March, 1966.

[2]W. R. Johnson and William P. Morgan, "Discrimination Between Successful and Unsuccessful Athletes: A Longitudinal Replication in Thirteen Sports," (in preparation).

[3]A. P. Sperling, "The Relationship Between Personality Adjustment and Achievement in Physical Education Activities," Research Quarterly, 13:351-363, 1942.

[4]Ibid.

on a group basis, exist among participants in various

sports.

Kroll[5] lent support in an address at a Symposium on

Psychology of Motor Learning as he stated:

> A basic premise of almost quasi-mystical potency
> for personality research in athletics is that athletes
> possess unique and definable personality attributes
> different from non-athletes. It is also commonly held,
> moreover, that in addition to differentiation from non-
> athletes, athletes in one sport can be distinguished
> from athletes in another sport.

Morgan[6] reviewed personality trait literature and

reported that athletes from different athletic sub-groups

tended to vary on a variety of personality traits.

This point of view has been reinforced further by

the work of Morgan and Johnson.[7] They tested college

freshmen using the MMPI and found consistent differences in

the personalities of certain athletic groups. The variances

were generally repeated across the five classes.

Other writers have demonstrated this particular

point and their works support the sources just cited.[8]

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[5]Walter Kroll, "Personality Assessments of Athletes,"
Psychology of Motor Learning, ed. L. E. Smith (Chicago:
Athletic Institute, 1970), p. 351.

[6]William P. Morgan, "Sport Psychology," The
Psychomotor Domain, ed. R. N. Singer (Philadelphia: Lea and
Febiger, 1972), pp. 193-222.

[7]Johnson and Morgan, loc. cit.

[8]L. Cooper, "Athletics, Activity, and Personality:
A Review of the Literature," Research Quarterly, 40:17-22,
March, 1969; C. N. Cofer and W. R. Johnson, "Personality
Dynamics in Relation to Exercise and Sports," Science and
Medicine of Exercise and Sport, ed. W. R. Johnson (New York:
Harper, 1960), pp. 525-529.

Studies have been conducted on participants in baseball, football, karate, swimming, tennis, weightlifting and wrestling. Marathon runners and cross country participants have been examined and will be reviewed later in the chapter.

LaPlace's[9] study, which examined the personality of minor and major league baseball players using the MMPI, is classic. Big league ball players were found to possess a strong ability to exercise self-discipline which was missing in the minor leaguers.

A related investigation by Singer,[10] who tested college baseball players using the Edwards Personal Preference Schedule (EPPS), showed that group scored significantly higher than the norm group in the aggression factor. Other important discrepancies from the norm occurred in the abasement factor in which the ball players scored higher and the intraception and autonomy variables where they scored lower than normal.

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[9]John P. LaPlace, "Personality and its Relationship to Success in Professional Baseball," Research Quarterly, 25:313, October, 1954.

[10]R. N. Singer, "Personality Differences Between and Within Baseball and Tennis Players," Research Quarterly, 40:582-588, October, 1969.

Football players have been investigated by many researchers including Kroll and Peterson.[11] They administered the sixteen PF to players from five different colleges which had discriminating records. Factors B (intelligence), H (shy versus bold), O (confident versus worrying), and Q^3 (casual versus controlled) contributed the highest to differing the football players from each other and the norm.

Straub and Davis[12] tested 246 football players from 4 colleges with a different idea in mind. Their purpose was to determine if there were significant differences in team personality profiles. The Big Ten team varied significantly from the other three teams.

Kroll and Carlson[13] administered the sixteen PF to karate participants. No personality trait differences were found between the karate groups of novice, intermediate, or advanced. The subjects showed no variance in regards to the normal population.

The sport of swimming has been popular in regards to personality testing.

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[11]Walter Kroll and Kay H. Petersen, "Personality Factor of Collegiate Football Teams," Research Quarterly, 36:432-441, December, 1965.

[12]S. W. Davis and W. F. Straub, "Personality Traits of College Football Players who Participated in Different Levels of Competition," Medicine and Science in Sports, 3:39-43, 1971.

[13]Robert B. Carlson and Walter Kroll, "Discriminant Function and Hierarchial Grouping Analysis of Karate Participants' Personality Profiles," Research Quarterly, 38:405-411, 1967.

Behrman[14] found that college swimmers and non-swimmers differed significantly in many areas. The swimming ability group showed less restrained temperament, greater ascendance and sociability, and less friendliness. The non-swimmers were more emotionally unstable, hypersensitive, and self-centered.

Whiting and Stembridge[15] studied the swimmer and the persistent non-swimmer in regards to eleven and twelve year old boys. The non-swimmers were more introverted and neurotic than swimmers of the same population.

Parsons[16] administered the sixteen PF to members of the Canadian National Swim team and found them to differ from the normal population on fifteen of the sixteen factors. It should be pointed out that those team members selected for the squad did not differ from those swimmers who were not selected.

In a recent study, Rushall[17] tested 338 swimmers from 2 Olympic Swim Clinics; swim clubs from California,

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[14]Robert M. Behrman, "Personality Differences between Nonswimmers and Swimmers," Research Quarterly, 38:163-171, May, 1967.

[15]D. E. Stembridge and H. T. Whiting, "Personality and the Persistent Non-swimmer," Research Quarterly, 36:348-356, October, 1965.

[16]David R. Parsons, "Personality Traits of National Representative Swimmers - Canada, 1962" (unpublished Master's thesis, University of British Columbia, 1963).

[17]B. S. Rushall, "An Investigation of the Relationship between Personality Variables and Performance Categories in Swimmers," International Journal of Sport Psychology, 1:93-104, 1970.

Indiana, and New Jersey; and five college and university team; using the sixteen PF. He concluded that personality appeared to have no relation to success in swimming.

A study by Newman[18] is in agreement that success in swimming is not due to certain personality traits. The Thurestone temperament schedule was administered to twenty-one high school swimmers. The faster swimmers ranked high in dominance yet no set of personality traits could be used to identify the better swimmers.

Thune[19] experimented with the Nelson Questionnaire and Henry's Attitude and Interest Inventory in regards to weightlifters. He found that the lifters differed from the norm in present health, self-confidence, and the trait of being manly-individualistic.

Rasch and Hunt[20] tested fourteen wrestling candidates from the Olympic team with the Berdie Scale, which measures masculinity-femininity. These athletes were quite similar to previously established norms for college males. Their profile was not found to be unique.

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[18]E. N. Newman, "Personality Traits of Faster and Slower Competitive Swimmers," Research Quarterly, 39:1049-1053, December, 1968.

[19]J. B. Thune, "Personality of Weightlifters," Research Quarterly, 20:296-306, October, 1949.

[20]M. B. Hunt and P. J. Rasch, "Some Personality Attributes of Champion Amateur Wrestlers," Journal of the Association of Physical and Mental Rehabilitation, 14:163-164, 1960.

Kroll[21] administered the sixteen PF to ninety-four amateur, collegiate wrestlers. No personality trait differences between high and low skilled performers was discovered. A departure from the norm on factor I (toughmindedness) was reported as the only trait significantly different.

A conflicting study is reported by Morgan[22] in his research of wrestlers. He administered the Eysenck Personality Inventory (EPI) to participants in the 1966 world tournament. The more successful wrestlers were found to have high extroversion scores. The less successful wrestlers had significantly lower scores in the extroversion dimension.

Twelve national champion athletes, four footballers, two lacrosse players, two wrestlers, two boxers, one track performer, and one rifle marksman were tested by Johnson, Hutton, and Johnson.[23] The instruments used for measuring were the Rorschach and the House-Tree-Person test. These

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[21]Walter Kroll, "Sixteen Personality Factor Profiles of Collegiate Wrestlers," Research Quarterly, 38:48-57, March, 1967.

[22]William P. Morgan, "Personality Characteristics of Wrestlers Participating in the World Championships," Journal of Sports Medicine and Physical Fitness, 8:212-216, 1968.

[23]D. C. Hutton, G. B. Johnson, and W. R. Johnson, "Personality Traits of Some Champion Athletes as Measured by Two Projective Tests: The Rorschach and H-T-P," Research Quarterly, 25:484-485, December, 1954.

outstanding athletes were found to possess several
distinguishing characteristics. These traits included
"extreme aggressiveness, a freedom from great emotional
inhibition, high and generalized anxiety, high level of
intellectual aspiration, and feelings of exceptional self-
assurance."

PERSONALITY TRAIT STUDIES IN REGARDS TO THE TESTING OF DISTANCE RUNNERS

While the personality characteristics of a great
variety of athletic sub-groups have been investigated, an
apparent lack of information exists in regards to the
psychological traits of college cross country runners.
Related studies have been completed by certain researchers
in the area of distance running yet only two published
articles deal with the cross country runner as such.

Studies such as those by Henry[24] deal indirectly
with the subject in point. He tested college men and found
a high correlation between ascendance and a physical
situation with sustained physical exertion.

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[24]F. M. Henry, "The Relations between Motor
Performance and Certain Psychological Measures in College
Men" (paper read at the Annual Meeting of American
Association of Health, Physical Education, and Recreation,
April, 1947, Seattle, Washington).

In another indirectly related study, Kane[25] used the sixteen PF to describe athletes in terms of their basic traits. He presented test profiles from populations of young athletes, men athletes, men swimmers, women swimmers, footballers, and women athletes. It was reported that all champion athletes were high in factor F (surgency). When middle distance runners were compared to these groups, they scored well below them in this particular factor.

More closely related was Morgan and Costill's[26] study. Nine United States marathon runners were tested with a battery of psychological tests including the Eysenck Personality Inventory (EPI), the IPAT 8-Parallel Form anxiety Battery, and the Depression Adjective Check List (DACL). The runners fell within the normal limits on three of the four levels tested, introversion-extroversion, neuroticism-stabiltiy, and depression. They scored lower than the norm group on anxiety. None of the psychological variables was correlated significantly with performance in the marathon.

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[25]John E. Kane, "Personality and Physical Ability," Proceedings of the International Congress of Sports Sciences, ed. L. E. Smith (Tokyo: The Athletic Institute, 1964), pp. 349-66.

[26]David L. Costill and William P. Morgan, "Psychological Characteristics of the Marathon Runner," Journal of Sports Medicine and Physical Fitness, 12:42-46, March, 1972.

Burdick and Zloty[27] tested sixteen male distance runners, from the ages of nineteen to thirty-two, mean age twenty-four, using a battery of personality type tests including the sixteen PF. The mean number of years they had been running was five. He found the distance runners to score high on only one factor, B (more intelligent). Two factors, F (surgency) and N (forthrightness), were found to be lower than the Kane[28] study in regards to his men athletes.

An examination of college cross country runners was done by Husman[29] using the Rosenweig Picture Frustration Study, Murray's Thematic Apperception Test, and a twenty-sentence completion type test. The purpose was to research the aggressive nature of various groups of college athletes and non-athletes. Among the sports tested were boxing, wrestling, and cross country. The runners were tested under pre-season, pre-contest, post-contest, and post season conditions and found to be extrapunitive (tended to aggress

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[27]Alan J. Burkick and Richard B. Zloty, "Wakeful Heart-Rate, Personality, and Performance," _Journal of Sports Medicine and Physical Fitness_, 13:17-25, March, 1973.

[28]Kane, loc. sit.

[29]B. F. Husman, "Aggression in Boxers and Wrestlers as Measured by Projective Techniques," _Research Quarterly_, 26:421-425, December, 1955.

more outwardly) and differed significantly (P<.01) from
the boxers on this variable. The cross country runners were
also found to aggress against persons and objects in the
environment more than the control group.

Morgan[30] administered the Eysenck Personality
Inventory (EPI) to selected athletic sub-groups at the
University of Missouri. He tested individuals from the
sports of basketball, tennis, swimming, wrestling, and
cross country. The runners were found to be more intro-
verted than the other groups of athletes tested.

SUMMARY

The review of related literature reveals consider-
able agreement among researchers that athletes in different
sub-groups differ from non-athletes and possess varying
personality traits. Studies have shown that athletes, as
a whole, tend to be more extroverted with the major excep-
tion being the distance runner. Traits such as surgency,
forthrightness, and anxiety have been reported as lower than
normal for the runner while one case has shown a high
tendency to aggress outwardly. Studies conducted on par-
ticipants in different sports revealed dimensions which the
coach of today needs to be aware of to keep abreast in his
field.

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[30]William P. Morgan, "Extroversion--Neuroticism and
Athletic Performance" (paper read at the Fifteenth Annual
Meeting, American College of Sports Medicine, 1968,
University Park, Pennsylvania).

Chapter 3

METHODOLOGY

The study was designed to examine the personality traits of college cross country runners based on the results of two tests, the Adjective Check List and the Sixteen Personality Factor Inventory. The description of subjects, the experimental instruments used, and an explanation of testing procedures are included in this chapter.

SUBJECTS

One hundred male cross country runners from ten major midwest colleges and universities were chosen as subjects for the study. Each institution was selected because of its high degree of success in past inter-collegiate competition and the experimenter's familiarity with the coaches of the respective teams tested. Subjects were representative of the top ten individual scorers on each cross country team.

EXPERIMENTAL INSTRUMENTS

Two personality type tests were used to measure the traits of the runners. Each standardized test was chosen because of the shortness of length, ease in scoring, and availability.

Adjective Check List (ACL)

The first test administered was the ACL, developed by Harrison G. Gough, Ph.D., from the University of California at Berkeley. It consisted of 300 adjectives commonly used to describe attributes of a person. The purpose of administration was to secure a convenient method of recording and tabulating personality traits of the individual cross country runners. The check list approach offered the idea that words and ideas common to everyday life could be used in a systematic and standardized format. Subjects were to blacken the space below the word which was felt to be self-descriptive. Completion time was usually between ten to fifteen minutes with little anxiety or resistance.[1]

The psychometric properties of validity and reliability have been examined by Gough and Heilburn in the Adjective Check List Manual. Reliability values were found to be satisfactory and indicated that the ACL could be used by trained observers to describe others with adequate consistency. Certain studies which examined the

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[1]Harrison G. Gough and Alfred B. Heilburn, The Adjective Check List Manual (Palo Alto: Consulting Psychologists Press, 1965), p. 1.

validity of the Adjective Check List found significant

correlations.[2]

An explanation of the ACL scales is presented in

the appendix.

Sixteen Personality Factor Questionnaire (16 PF)

The second test administered was the 16 PF,

developed by Raymond B. Cattell from the University of

Illinois, Champaign. The instrument was devised by research

in psychology to be scored objectively and to give the most

complete coverage of personality possible in a short amount

of time. The basic premise behind the 16 PF as stated by

Cattell[3] was that:

> Personality rests upon the measurement of
> sixteen functionally independent and psychologically
> meaningful dimensions isolated and replicated in more
> than thirty years of factor-analytic research on normal
> and clinical groups.

Three alternative answers were provided and

followed each question. The subjects were to respond by

marking the corresponding letter of the correct answer on

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[2]D. P. Crowne, R. Kelly, and M. W. Stephens, "The Validity and Equivalence of Tests of Self-acceptance," Journal of Psychology, 51:101-112, 1961; A. B. Heilburn, "Validation of a Need Scaling Technique for the Adjective Check List," Journal of Consulting Psychology, 23:347-351, 1959; and A. B. Heilburn, "Social Desirability and the Relative Validities of Achievement Scales," Journal of Consulting Psychology, 26:383-386, 1962.

[3]Raymond B. Cattell, Manual for the 16 PF (Champaign: The Institute for Personality and Ability Testing, 1972), p. 5.

an answer sheet. Form A of the test was used which
generally required from 45 to 60 minutes to complete the
187 questions.

The two psychometric properties of reliability and
validity in regards to the 16 PF have been examined by
Cattell and others.[4] Reliability was found to be quite good,
even over a four year interval. Validity coefficients were
found to be exceptionally high.

An explanation of the 16 PF trait factors is
presented in the appendix.

TESTING PROCEDURE

Nine test packets were sent out from Eastern Illinois
University on Tuesday, October 22, 1974. Their destinations
were Augustana College, Rock Island; Ball State University;
South Dakota State University; Southwest Missouri State
University; University of Illinois, Champaign; University
of Northern Iowa; University of Wisconsin, Madison; Western
Illinois University; and Wichita State University. Eastern

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[4]L. Cay and A. E. Phillip, "The Reliability and
Utility of a Clinical Rating of Personality," British
Journal of Medical Psychology, 44:85-89, 1971; Raymond B.
Cattell, "Validity and Reliability: A Proposed More Basic
Set of Concepts," Journal of Educational Psychology, 55:1-22,
1964.

Illinois University received a packet to bring the total to
ten schools involved in the study.

Included in each test packet were ten identical sets
of testing materials. Following permission of their
respective coaches, the top ten individuals of each team
were asked to complete one set of testing materials and
return them.

Each cross country runner received an information
sheet which asked school name, present team position, years
of running experience, best times, and where the test was
taken. Following this sheet, in respective order, were the
ACL instructions, the ACL test, the 16 PF instructions,
and the 16 PF test.

Subjects were asked to take the tests in privacy or
in their cars on team trips. Coaches administering the
tests were asked to sign a validation card which consisted
of the following three items: first, no talking occurred
while the test was in progress; second, the test was taken
in a serious manner befitting its purpose; third, the test
was completed without any assistance.

Following completion of the tests, each individual
returned the materials to his respective coach. The tests
were then sent by return, self-addressed, stamped envelope
to Eastern Illinois University. Upon receiving the ten
packets, the results were analyzed.

Chapter 4

ANALYSIS OF THE DATA

The investigation was designed to provide a description of the personality make-up of college cross country runners as measured by two tests, the Adjective Checklist (ACL) and the Sixteen Personality Factor Inventory (16 PF) and to determine the relationship between personality and performance. One hundred members from ten midwest cross country teams were chosen as subjects for the study. Participants took the same two personality tests and filled out an information sheet which consisted of items listed in Chapter 3. Examination of the data return, analysis of the information sheet, examination of the validation cards, scoring of the ACL and the 16 PF, statistical treatment, a presentation of findings, and a summary and discussion of the data are included in this chapter.

EXAMINATION OF THE INFORMATION RETURN

The data were received between the dates of Friday, October 25, 1974, and Tuesday, February 4, 1975. Nine of the ten schools which were selected for participation in the study did cooperate with 65 out of the possible 100 male runners completing the necessary information and tests.

ANALYSIS OF THE INFORMATION SHEET

Sixty-five information sheets were examined. A
summary of participating teams and individuals are listed in
Table 1. Means and ranges of time, team position, and years
running (experience) were calculated and are presented in
Table 2. The average runner for the study is depicted as
having a time of twenty-five minutes and twenty seconds for
his best five mile cross country time. His best two mile
time on a track was nine minutes and twenty-seven seconds.
His team position was fifth man, on the average, and his
total years running was just over five and one-half years,
5.623. The class year of the runners was fairly evenly
distributed across four categories (freshman, sophomore,
junior, and senior). The number in each category is shown
in Table 3. The differences in test settings were minimal.
Primary settings were in dormitory rooms or in cars on team
trips.

EXAMINATION OF THE VALIDATION CARDS

Validation cards, fully described in Chapter 3,
were signed by each coach and returned. The cards were used
to insure that standardized conditions were met during
testing. One card was received from each of the schools
involved in the study and was returned with the testing
materials.

Table 1

Summary of Teams and Individuals
Participating in the Study

School	Number of Participants
Augustana College	6
Ball State University	4
Eastern Illinois University	9
South Dakota State University	10
Southwest Missouri State University	9
University of Illinois	4
University of Northern Iowa	9
University of Wisconsin	9
Western Illinois University	5
Wichita State University	0
TOTAL	65

Table 2

Means and Ranges of Times, Team
Position, and Years Running

	Mean	Maximum	Minimum	Range
Five Mile Cross Country Time	25:20	28:58	23:35	5:23
Two Mile Track Time	9:27	10:32	8:39	1:53
Team Position	5.3	11	1	10
Years Running	5.623	13	2	11

Table 3

Year in School Distribution of Participating
College Cross Country Runners

Year in School	Number
Freshman	18
Sophomore	17
Junior	14
Senior	16
TOTAL	65

SCORING OF THE 16 PF AND THE ACL TESTS

The 16 PF tests were handscored by personnel in the Eastern Illinois University Counseling and Testing Center. Raw scores were converted to sten scores and both were manually key-punched into cards.

The ACL tests were scored utilizing a locally written program for computer scoring of this instrument. The computer print-out included a raw score and standard score for each scale of the ACL. These scores were also manually key-punched into cards by Counseling and Testing Center personnel.

STATISTICAL TREATMENT

Means and standard deviations for each of the 16 PF factor scores and ACL scale scores were computed using the Simple Data Description program from the UCLA Biomedical Computer Programs. This program was used also in computing means and ranges of times, team position, and years running.

Pearson product-moment correlations between individuals' best five mile cross country time and their 16 PF factor scores and ACL scale scores were computed using a program from the Statistical Package for the Social Sciences (SPSS), published by McGraw-Hill. Correlations between individuals' best two mile time on a track and their 16 PF factor scores and ACL scale scores were also computed with this SPSS program.

Chi-squares to test the independence between individuals' cross country team position and their 16 PF factor scores and ACL scale scores were also computed using a program from SPSS.

PRESENTATION OF THE FINDINGS

The presentation of the findings has been divided into three parts. A presentation of selected profiles, the relationship of time to personality trait scores, and the relationship of team position to personality trait scores are included in this section.

Presentation of Selected Profiles

The 16 PF. The mean sten scores and standard deviations for male college cross country runners are shown in Table 4. It should be noted that the 16 PF standard ten score (sten) scale was derived with a mean of 5.5. The cross country runners as a group appear to be: 1) somewhat more astute, polished, and socially aware (Factor N); 2) resourceful, preferring to make their own decisions (Factor Q_2); and 3) shy, timid, and threat-sensitive (Factor H).

A 16 PF profile comparing the mean sten scores of male Olympic champion athletes[1] (N=41) and male college cross

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[1]Thomas Cureton, "Profiles of Olympic Champions" (unpublished data, University of Illinois).

Table 4

16 PF Sten Score Means and Standard Deviations
Of the Total Group Tested (N= 65)

Factor	Description	Mean	S.D.
A	Reserved vs. Outgoing	4.95	1.89
B	Less Intelligent vs. More Intelligent	5.89	1.76
C	Affected by Feelings vs. Emotionally Stable	5.51	2.07
E	Humble vs. Assertive	5.15	1.73
F	Sober vs. Happy-go-lucky	4.78	2.09
G	Expedient vs. Conscientious	5.82	2.00
H	Shy vs. Venturesome	4.66	1.93
I	Tough-minded vs. Tender-minded	5.66	1.73
L	Trusting vs. Suspicious	5.45	2.09
M	Practical vs. Imaginative	4.94	2.08
N	Forthright vs. Shrewd	6.51	2.00
O	Placid vs. Apprehensive	6.02	1.63
Q_1	Conservative vs. Experimenting	4.77	2.08
Q_2	Group-dependent vs. Self-sufficient	6.34	1.90
Q_3	Undisciplined Self-conflict vs. Controlled	5.62	1.71
Q_4	Relaxed vs. Tense	5.78	2.26
	STEN SCORE	5.50	-----

country runners (N=65) is given in Figure 1. The profile
of scores for the Olympic athletes shows high Intelligence
(Factor B), high Ego Strength (Factor C), high Dominance
(Factor E), a strong tendency to disregard rules (Factor G),
and an adventurous temperament (Factor H). The low prone-
ness to guilt feelings and high degree of security (Factor
O) seem to fit with this type of person who has achieved
great success. The cross country runner tends to differ
significantly from the Olympic champion having low scores in
Intellegence (Factor B), Ego Strength (Factor C), Dominance
(Factor E), Surgency (Factor F), and Shyness (Factor H).
Runners were significantly higher than the Olympians in
Conscientiousness (Factor G), Shrewdness (Factor N),
Insecurity (Factor O), and Self-sufficiency (Factor Q_2).

A 16 PF profile comparing college male football
players[2] (N=67) and male college cross country runners
(N=65) is presented in Figure 2. Football players were more
Assertive (Factor E), Happy-go-lucky (Factor F), Venturesome
(Factor H), and Suspicious (Factor L). The runners were
more Shrewd (Factor N) and Self-sufficient (Factor Q_2) than
the football players.

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[2]B. S. Rushall, "Analysis of the Relationship
between Personality and Success in Football Teams"
(unpublished paper, July, 1968).

Figure 1

16 PF Profiles Comparing the Mean Sten Scores of Male Athletes[3] (Olympic Champions) (N=41) and Male College Cross Country Runners (N=65)

MA (oc)= _____
CC=- - - - - - - - - -

Emotionality, Intelligence, Ego Strength, Dominance, Surgency, Character, Responsiveness, Sensitivity, Projection, Subjectivity, Shrewdness, Insecurity, Radicalism, Self-sufficiency, Control, Tension

S T E N S

7, 6, 5, 4
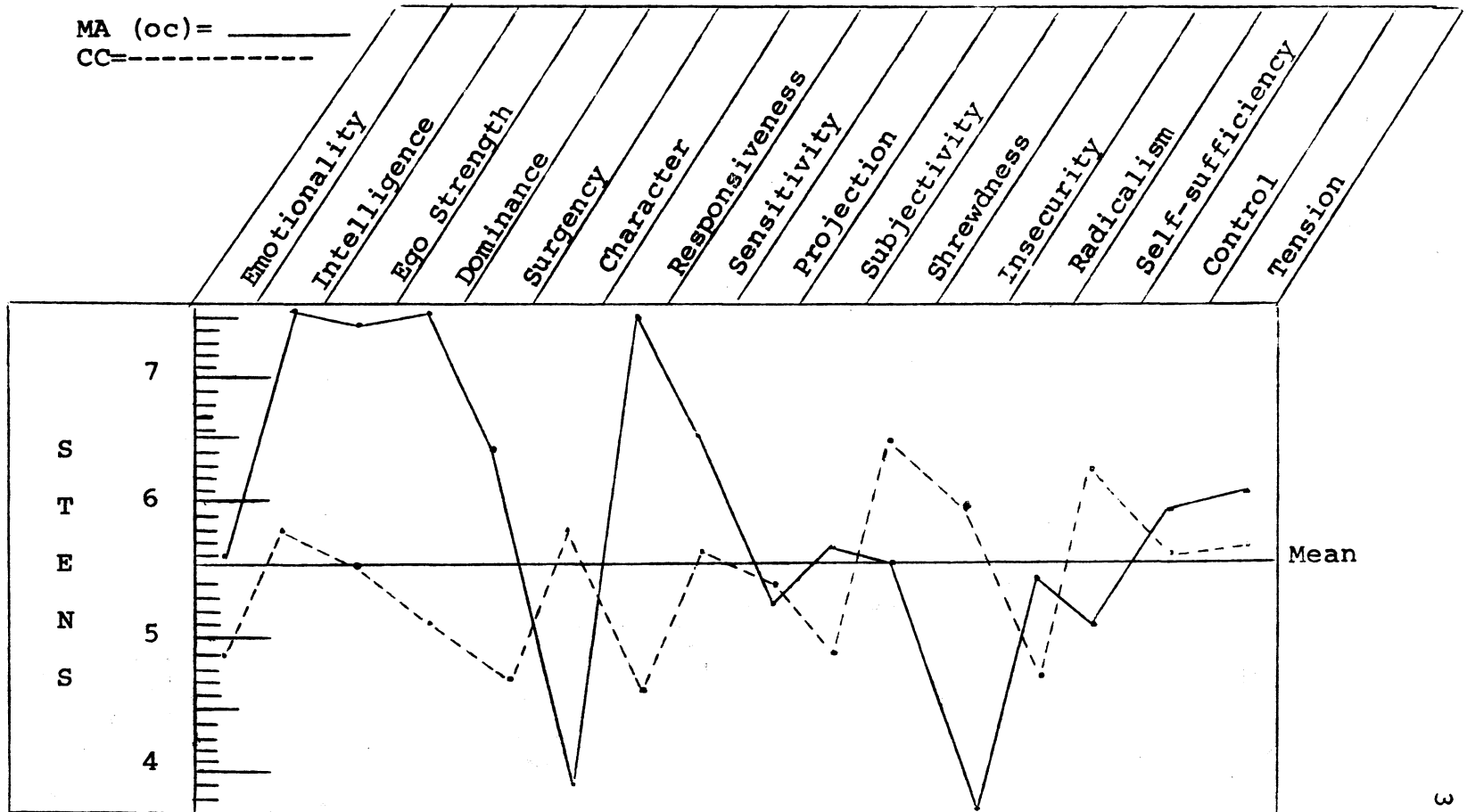
Mean

[3]Thomas Cureton, "Profiles of Olympic Champions" (unpublished data, University of Illinois).

Figure 2

16 PF Profiles Comparing the Mean Sten Scores of Male Football Players[4] (N=67) and Male College Cross Country Runners (N=65)
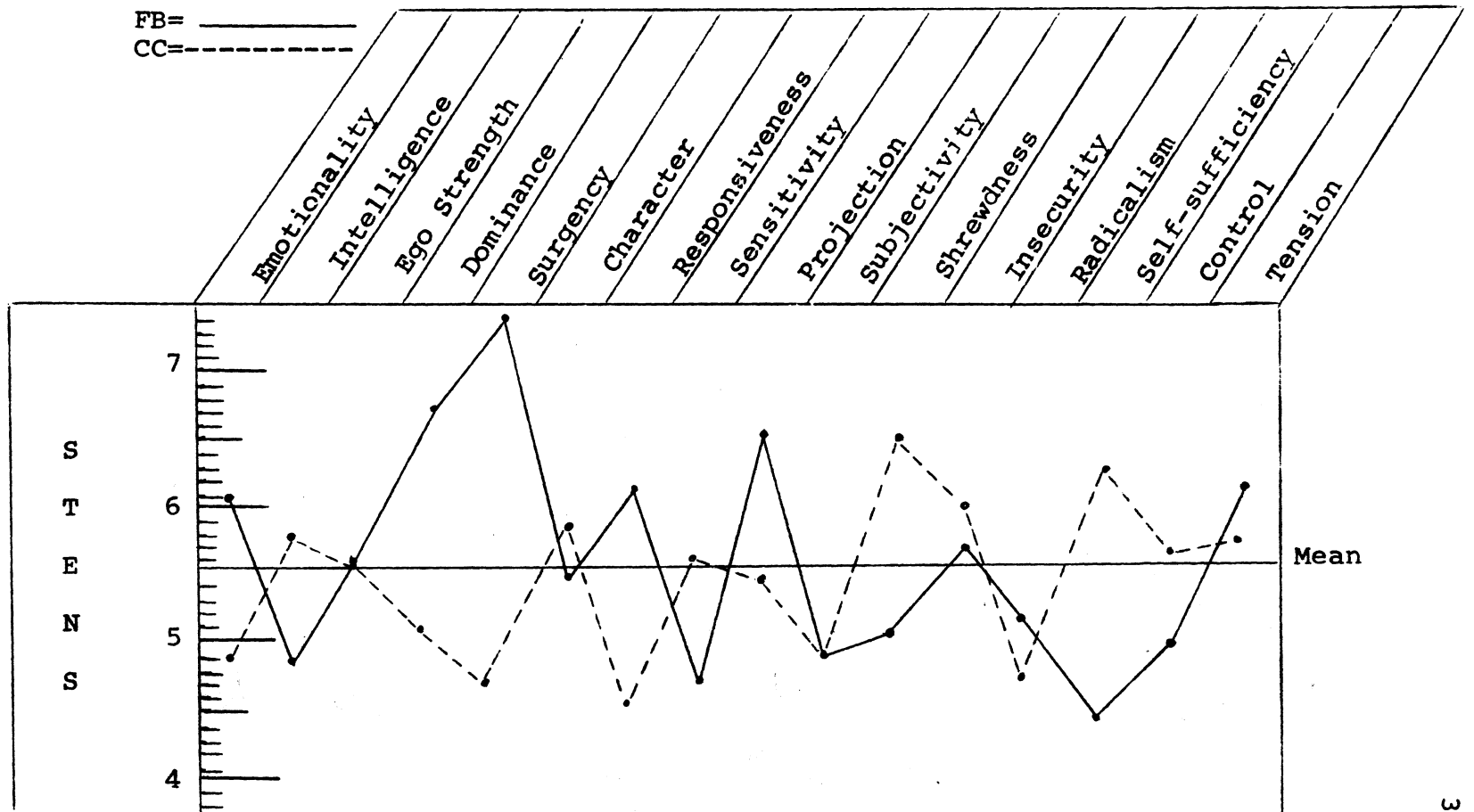
[4]B. S. Rushall, "Analysis of the Relationship between Personality and Success in Football Teams" (unpublished paper, July, 1968).

The 16 PF mean sten scores of college male swimmers[5] (N=57) and male college cross country runners (N=65) are shown in Figure 3. The profiles of mean scores of these two groups of athletes tend toward greater similarity than any of the other comparison groups. A few differences were apparent but none were extreme. The swimmers tended to be a little more Dominant (Factor E), Happy-go-lucky (Factor F), and Imaginative (Factor M). They also tended to be less calm and mature (Factor C) and less polished (Factor N).

Profiles of the 16 PF mean sten scores of college female swimmers[6] (N=42) and male college cross country runners (N=65) are shown in Figure 4. The differences in these profile patterns may be sex-related as well as sports linked. The female swimmers tended to be more Dominant (Factor E), Happy-go-lucky (Factor F), and Venturesome (Factor H). They also are shown to be more Realistic (Factor I) and Group-dependent (Factor Q_2).

The ACL. The mean standard scores and standard deviations for male college cross country runners (N=65) are shown in Table 5. The ACL standard score scale was derived with a mean of fifty and standard deviation of ten. The standard score means of the group of cross country runners

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[5]B. S. Rushall, "Preliminary Personality Work with Swimmers" (unpublished paper, Indiana University, March 20, 1967).

[6]B. S. Rushall, loc. cit.

Figure 3

16 PF Profiles Comparing the Mean Sten Scores of Male Swimmers[7] (N=57)
And Male College Cross Country Runners (N=65)
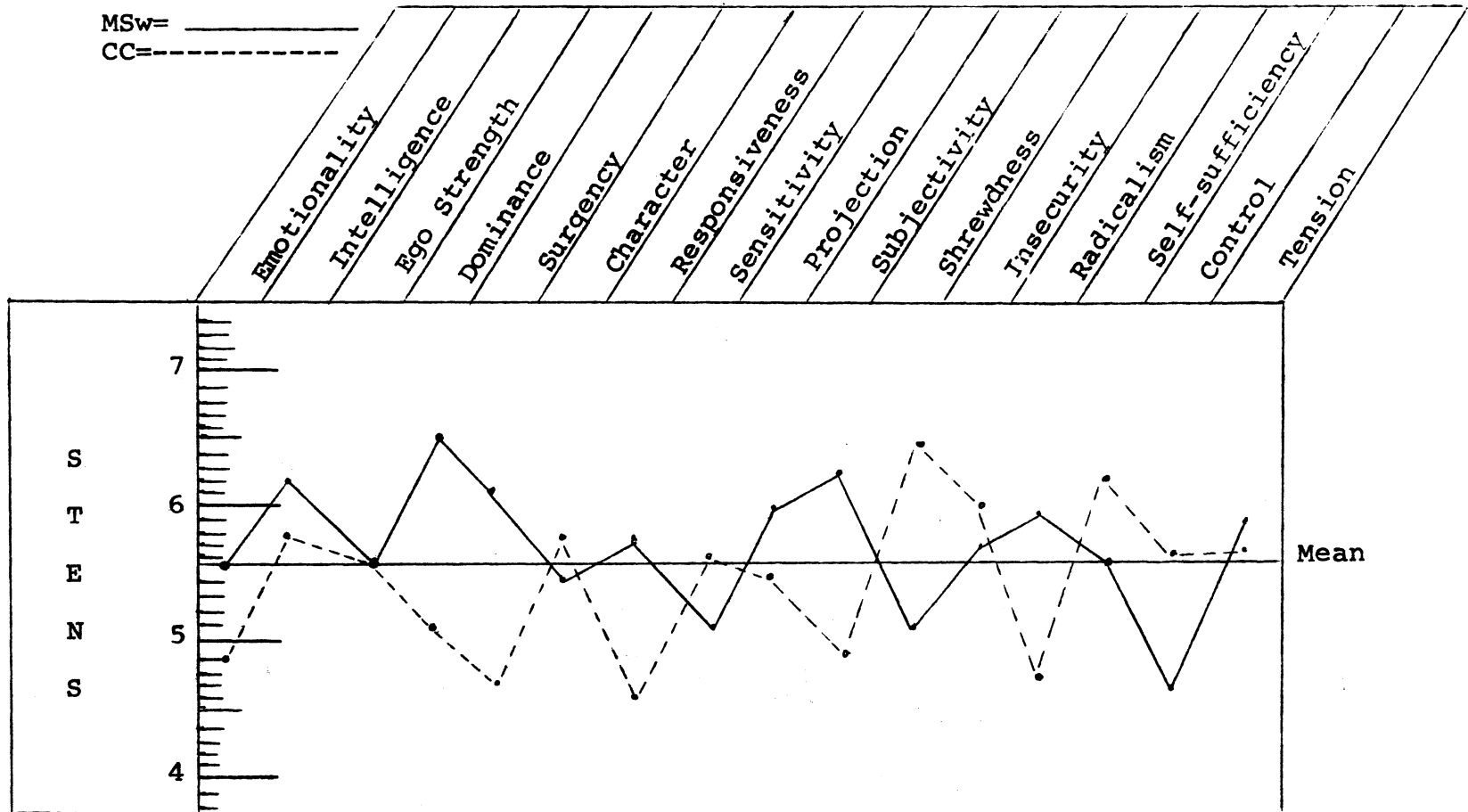
[7]B. S. Rushall, "Preliminary Personality Work with Swimmers" (unpublished paper, Indiana University, March 20, 1967).

Figure 4

16 PF Profiles Comparing the Mean Sten Scores of Female Swimmers[8] (N=42) And Male College Cross Country Runners (N=65)
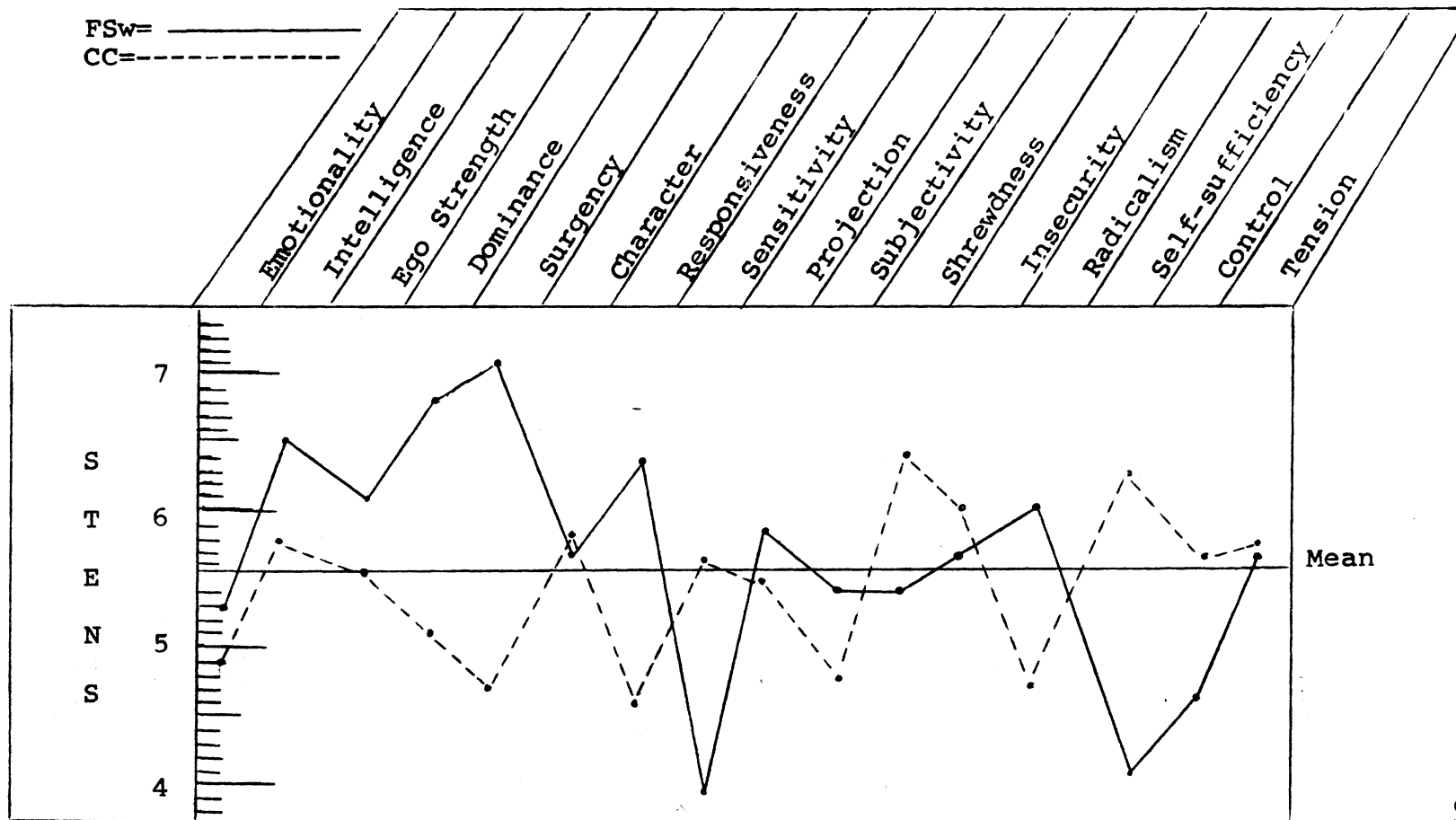
[8] B. S. Rushall, op. cit.

Table 5

ACL Standard Score Means and Standard Deviations for
Male College Cross Country Runners (N=65)

Factor	Description	Mean	S.D.
No. Ckd	Total adjectives checked	49.3	10.09
Df	Defensiveness	52.0	9.09
Fav	Favorable adjectives checked	47.6	10.16
Unfav	Unfavorable adjectives checked	50.2	7.68
S-Cfd	Self-confidence	45.6	8.88
S-Cn	Self-control	49.4	9.29
Lab	Lability	49.5	9.57
Per Adj	Personal adjustment	49.1	9.58
Ach	Achievement	51.2	9.06
Dom	Dominance	49.2	9.48
End	Endurance	53.3	9.42
Ord	Order	53.5	9.59
Int	Intraception	50.3	12.93
Nur	Nurturance	50.4	10.30
Aff	Affiliation	50.7	10.03
Het	Heterosexuality	50.2	10.80
Exh	Exhibition	48.7	10.99
Aut	Autonomy	48.3	8.41
Agg	Aggression	47.5	9.43
Cha	Change	49.1	10.22
Suc	Succorance	49.3	9.14
Aba	Abasement	51.3	8.52
Def	Deference	50.5	9.13
Crs	Counseling Readiness	50.5	10.99
	STANDARD SCORE	50.0	10.00

deviated less than one-half a standard deviation from the mean of fifty on each of the scales. The runners tended to check fewer favorable adjectives (Fav) and expressed slightly less self-confidence (S-Cfd). Endurance (End) and Order (Ord) were both slightly above average for this group of runners.

A profile of ACL mean standard scores for male college cross country runners (N=65) is shown in Figure 5. No profiles of any other athletic sub-groups were available for comparison. A table of ACL item counts for the cross country runners is included in the appendix to facilitate the use of these data in further research. The two adjectives most frequently endorsed as being self-descriptive by the cross country runners were the following: 1) active, 88 percent; 2) healthy, 90 percent. Interestingly, more of the adjectives were considered not to be descriptive by the runners. One hundred percent of the group avoided the adjectives, cowardly and slipshod. Ninety-nine percent refused to endorse blustery, infantile, irresponsible, queer, snobbish, thankless, unexcitable, unintelligent, and unrealistic.

Relationship between Times and Personality Trait Scores

The 16 PF. The correlations between traits measured by the 16 PF and best five mile cross country time are presented in Table 6. The correlations are generally very

Figure 5

ACL Standard Score Means for Male College
Cross Country Runners (N=65)
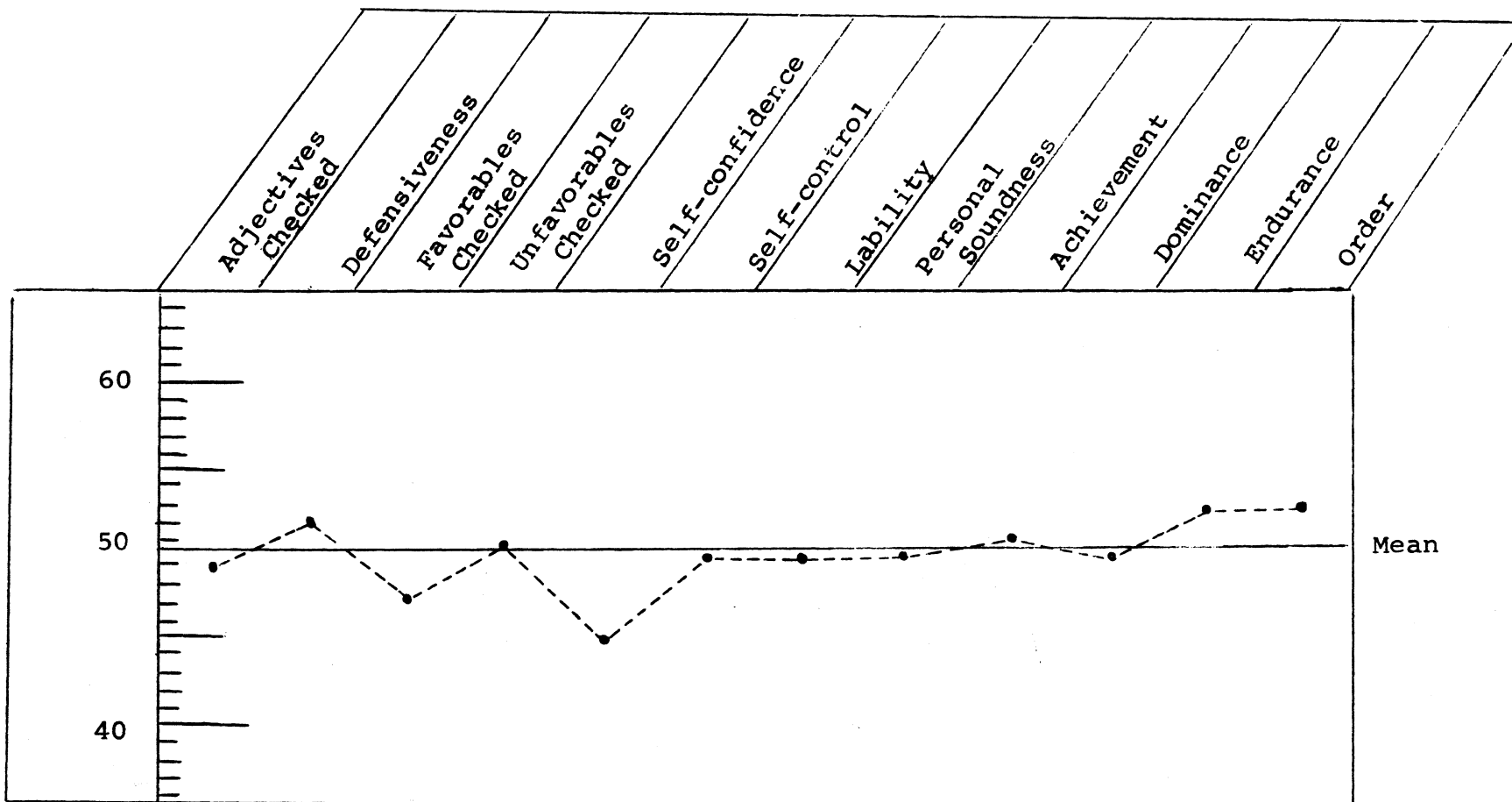
Figure 5 (cont.)

ACL Standard Score Means for Male College Cross
Country Runners (N=65)

Table 6

Correlations between Factors Measured by the 16 PF and
Best Five Mile Cross Country Times for
College Cross Country Runners (N=65)

Factor	Description	Correlation
A	Reserved vs. Outgoing	.06
B	Less Intelligent vs. More Intelligent	.24
C	Affected by Feeling vs. Emotionally Stable	-.17
E	Humble vs. Assertive	-.06
F	Sober vs. Happy-go-lucky	-.01
G	Expedient vs. Conscientious	.01
H	Shy vs. Venturesome	-.01
I	Tough-minded vs. Tender-minded	-.04
L	Trusting vs. Suspicious	.22
M	Practical vs. Imaginative	-.20
N	Forthright vs. Shrewd	-.03
O	Placid vs. Apprehensive	-.14
Q_1	Conservative vs. Experimenting	.12
Q_2	Group-dependent vs. Self-sufficient	-.11
Q_3	Undisciplined Self-conflict vs. Controlled	-.11
Q_4	Relaxed vs. Tense	.32

low, but positive relationships were found between cross country time and Intelligence (Factor B), .24; Projection (Factor L), .22; and Tension (Factor Q4), .32. The degree of correlation between these three 16 PF factors and cross country times is displayed graphically in scatter diagrams.

The scatter diagram in Figure 6 illustrates the relationship between cross country time and intelligence. Lower intelligence as measured on the 16 PF (Factor B) tends to be associated with faster cross country time.

The association between best five mile cross country time and Projection (Factor L) is pictured in the scatter diagram in Figure 7. Trusting and accepting of conditions tended to be related to faster cross country time.

A narrower ellipitical field is seen in the scatter diagram, Figure 8, and illustrates the highest degree of relationship between any of the 16 PF factors and cross country time. A low score on Factor Q_4, indicating a relaxed, tranquid, unfrustrated, and composed individual, tended to be positively associated with a faster cross country time.

The correlations between traits measured by the 16 PF and best two mile time on a track are presented in Table 7. The correlations were very low, the highest being a correlation of .27 between Shrewdness (Factor N) and two mile track time. This relationship is graphically represented in a scatter diagram, Figure 9. A lower score on
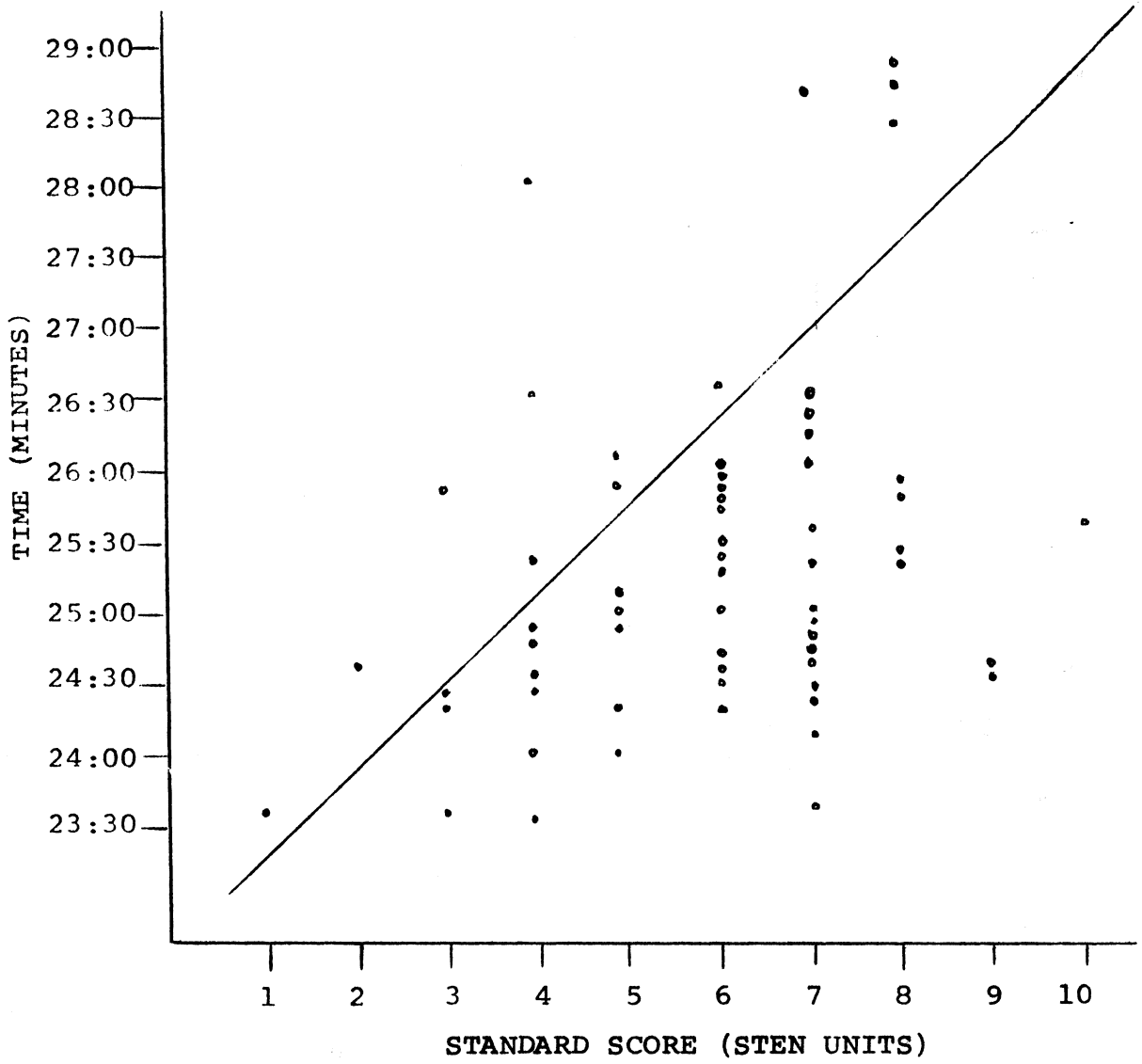
Figure 6

Relationship between Best Five Mile Cross Country
Time and Intelligence (Factor B)

r=.21806
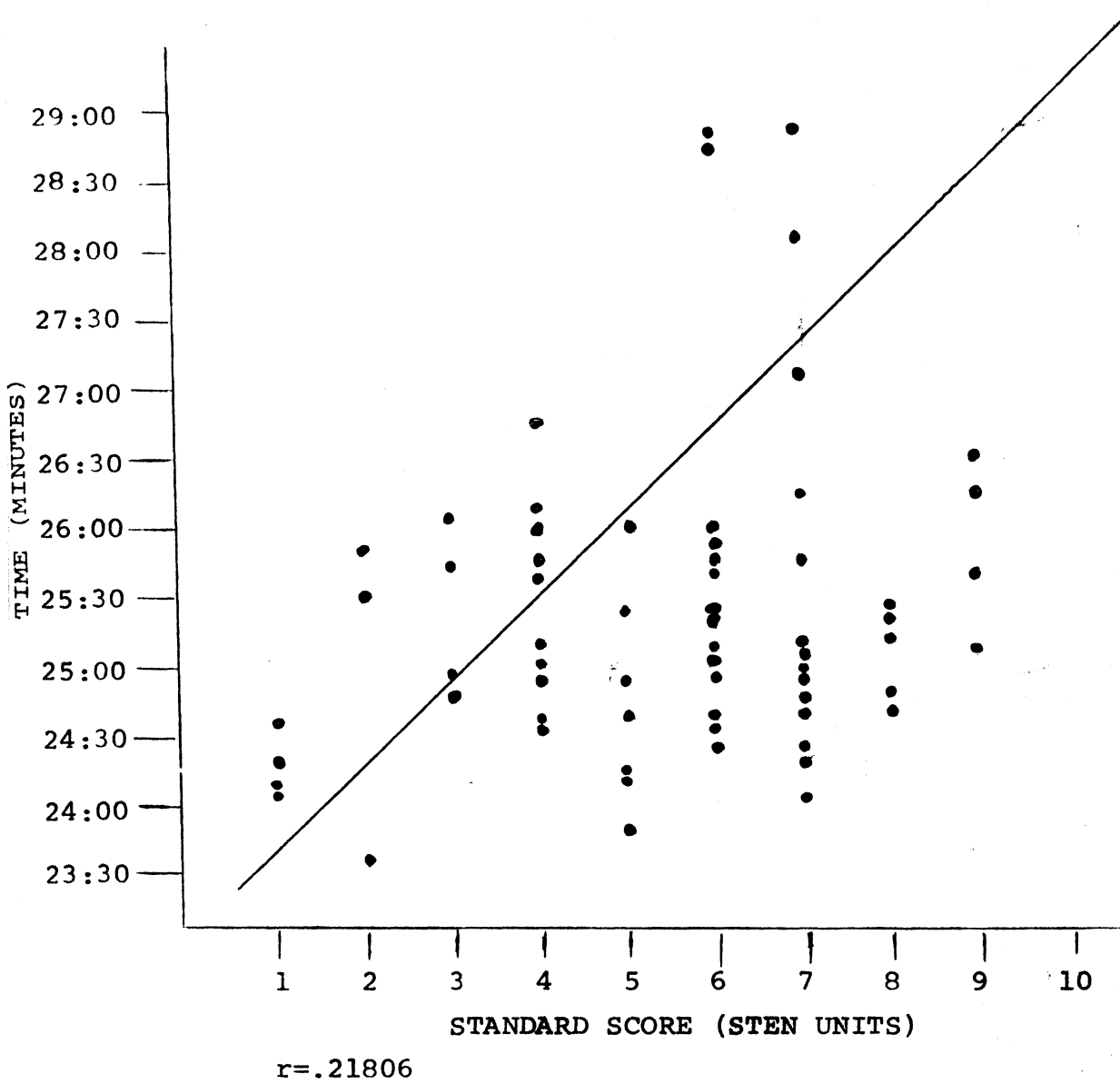
Figure 7

Relationship between Best Five Mile Cross Country
Time and Projection (Factor L)
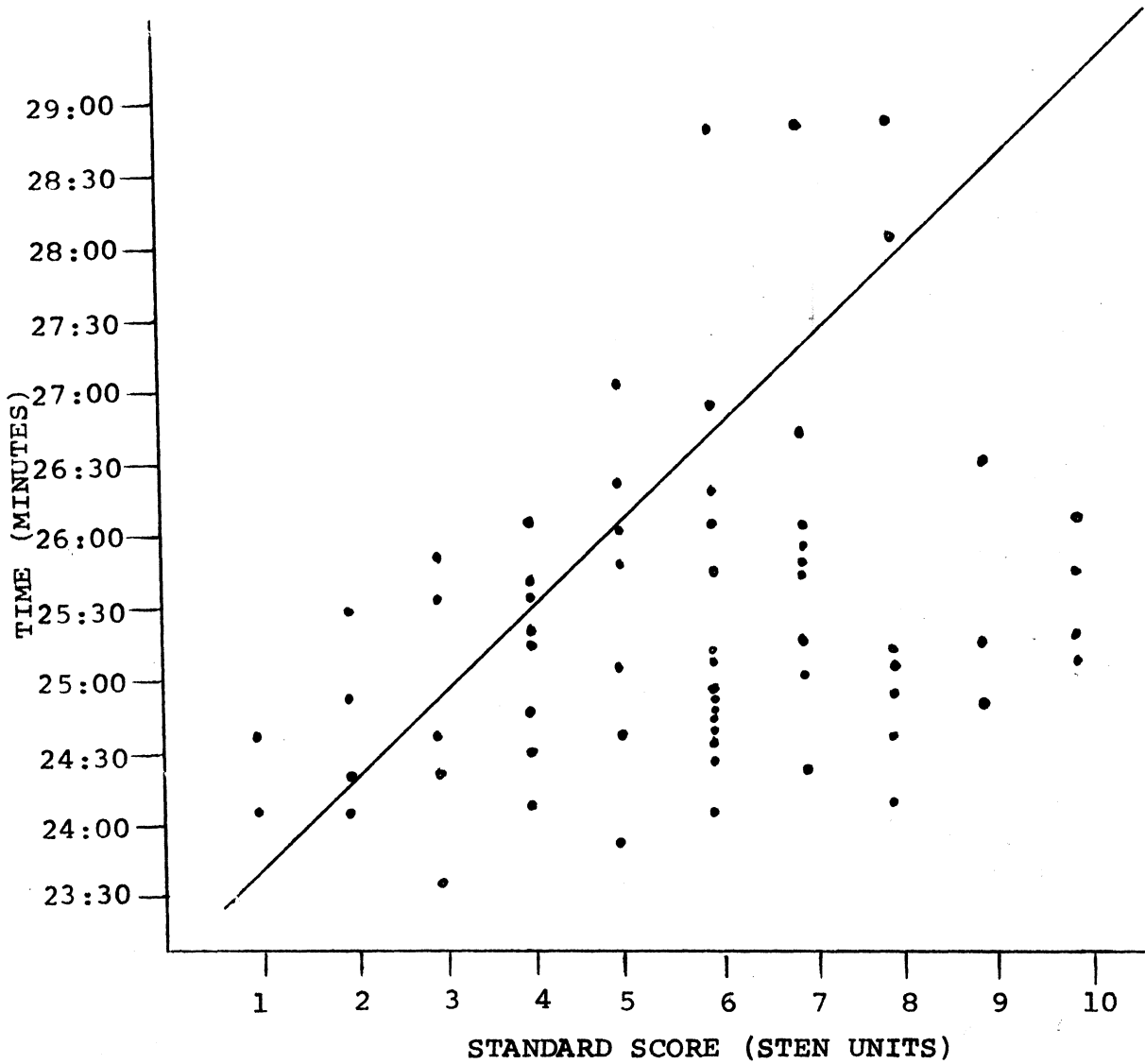
r=.31560

Figure 8

Relationship between Best Five Mile Cross Country
Time and Tension (Factor Q_4)

Table 7

Correlations between Traits Covered by the 16 PF and Best
Two Mile Track Time for College Cross
Country Runners (N=65)

Factor	Description	Correlation
A	Reserved vs. Outgoing	.09
B	Less Intelligent vs. More Intelligent	-.11
C	Affected by Feelings vs. Emotionally Stable	-.13
E	Humble vs. Assertive	-.04
F	Sober vs. Happy-go-lucky	.01
G	Expedient vs. Conscientious	.18
H	Shy vs. Venturesome	-.02
I	Tough-minded vs. Tender-minded	.07
L	Trusting vs. Suspicious	-.06
M	Practical vs. Imaginative	.10
N	Forthright vs. Shrewd	.27
O	Placid vs. Apprehensive	.03
Q_1	Conservative vs. Experimenting	-.03
Q_2	Group-dependent vs. Self-sufficient	.13
Q_3	Undisciplined Self-conflict vs. Controlled	.02
Q_4	Relaxed vs. Tense	-.02
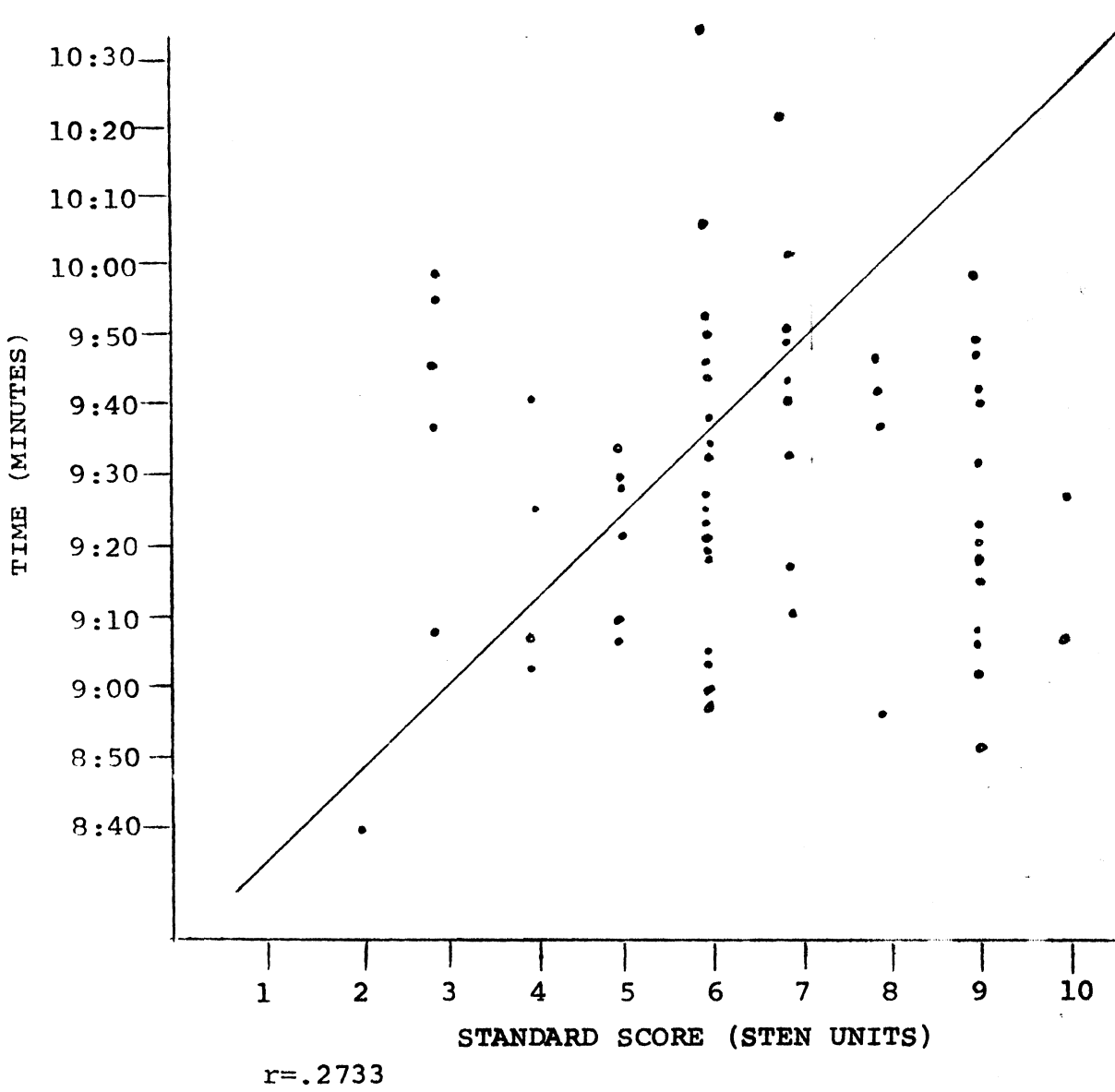
Figure 9

Relationship between Best Two Mile Track
Time and Shrewdness (Factor N)

Factor N, indicating forthrightness, unpretentiousness, and genuineness tended to be associated with faster two mile track times.

The ACL. Correlations between traits measured by the ACL and best five mile cross country time are presented in Table 8. Very little relationship was found to exist between personality variables from the ACL and five mile cross country time. There was also little relationship between personality variables from the ACL and two mile track time. These correlations are given in Table 9.

Relationship between Team Position and Personality Trait Scores

The 16 PF. Means of sten scores on the factors of the 16 PF were computed for the runners in team positions one through ten and are shown in Table 10. No trends in the mean scores of the runners in the ten different positions were discernible. While no trends were observed, it is of interest to note that the mean sten score of number one runners exceeded the mean sten score of all other runners (positions two through ten) on Factor E--Dominance and on Factor L--Projection. Chi-square tests based on frequencies of scores in sten-intervals were with one exception non-significant. A relationship between position and Factor M--Subjectivity was significant at the .05 level of probability.
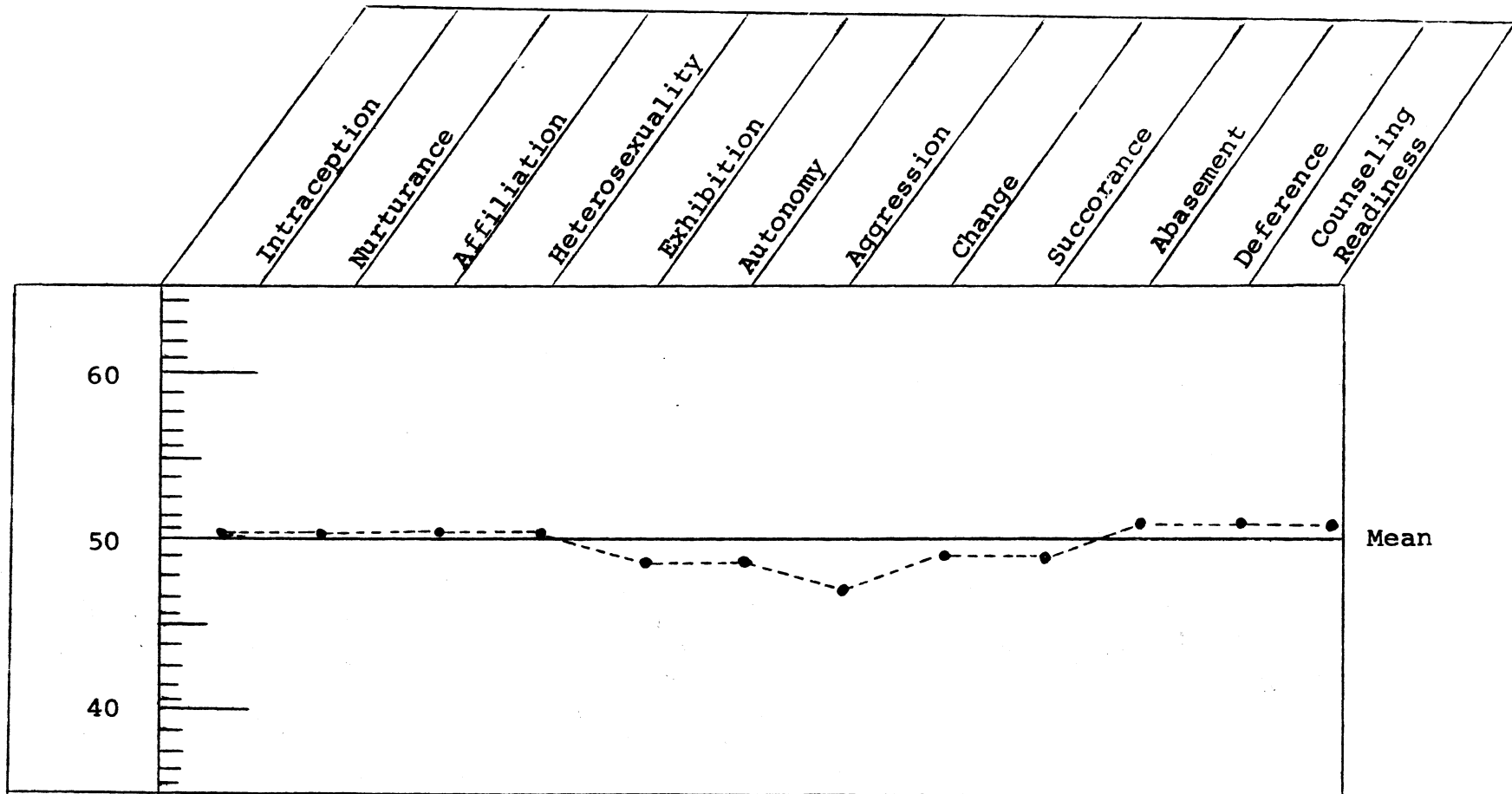
Table 8

Correlations between Traits Measured by the ACL and Best
Five Mile Cross Country Time for College
Cross Country Runners (N=65)

Factor	Description	Correlation
No. Ckd	Total adjectives checked	-.04
Df	Defensiveness	.00
Fav	Favorable adjectives checked	-.09
Unfav	Unfavorable adjectives checked	.09
S-Cfd	Self-confidence	-.13
S-Cn	Self-control	.00
Lab	Lability	.15
Per Adj	Personal Adjustment	-.14
Ach	Achievement	-.10
Dom	Dominance	-.07
End	Endurance	-.11
Ord	Order	-.09
Int	Intraception	-.14
Nur	Nurturance	-.15
Aff	Affiliation	-.16
Het	Heterosexuality	-.02
Exh	Exhibition	-.03
Aut	Autonomy	-.12
Agg	Aggression	.04
Cha	Change	.06
Suc	Succorance	-.02
Aba	Abasement	-.06
Daf	Deference	-.02
Crs	Counseling Readiness	.07

Table 9

Correlations between Traits Covered by the ACL and Best
Two Mile Track Time for College
Cross Country Runners (N=65)

Factor	Description	Correlation
No. Ckd	Total adjectives checked	-.10
Df	Defensiveness	.11
Fav	Favorable adjectives checked	.04
Unfav	Unfavorable adjectives checked	.07
S-Cfd	Self-confidence	.17
S-Cn	Self-control	-.01
Lab	Lability	-.15
Per Adj	Personal Adjustment	.05
Ach	Achievement	.10
Dom	Dominance	.14
End	Endurance	.06
Ord	Order	.09
Int	Intraception	.00
Nur	Nurturance	.06
Aff	Affiliation	.12
Het	Heterosexuality	-.09
Exh	Exhibition	-.02
Aut	Autonomy	.03
Agg	Aggression	-.03
Cha	Change	-.04
Suc	Succorance	-.03
Aba	Abasememt	.02
Def	Deference	-.04
Crs	Counseling Readiness	.04

Table 10

Relation between Runner's Position
And Factors on the 16 PF

Mean Sten Scores

Position

Factor	1	2	3	4	5	6	7	8	9	10	p
A	5.5	4.8	4.7	5.1	5.4	4.1	5.0	4.0	6.2	5.5	ns
B	5.5	5.0	5.3	5.9	6.3	6.6	6.0	5.3	7.0	6.5	ns
C	6.2	5.1	5.8	5.4	6.0	6.3	6.3	5.0	3.8	5.3	ns
E	6.3	4.2	5.0	4.1	4.6	5.6	5.3	5.7	5.8	5.8	ns
F	5.3	4.6	5.2	6.3	4.6	4.9	4.3	3.7	4.0	5.2	ns
G	5.2	5.7	4.8	6.1	6.7	6.1	5.8	5.6	7.0	5.3	ns
H	5.3	3.8	4.8	4.4	5.6	5.3	4.8	3.7	4.4	4.8	ns
I	6.2	4.8	5.8	5.4	6.9	5.3	6.5	4.6	6.8	5.5	ns
L	6.7	4.8	4.8	5.9	4.4	5.4	4.5	6.4	5.8	5.7	ns
M	5.3	5.0	4.8	5.1	5.1	5.9	4.5	4.0	5.0	4.2	$< .05*$
N	5.7	6.6	6.2	7.6	6.4	6.7	5.5	6.7	6.6	6.7	ns
O	6.2	6.6	5.2	6.1	5.6	6.3	5.5	5.9	6.8	5.8	ns
Q_1	5.2	3.6	4.2	4.1	4.9	4.9	4.5	5.7	5.0	6.3	ns
Q_2	6.7	6.0	6.2	5.4	6.9	6.0	6.5	6.9	6.0	5.7	ns
Q_3	5.5	5.3	6.3	5.1	6.3	5.9	5.8	5.3	5.6	5.3	ns
Q_4	5.7	5.2	5.0	6.6	5.0	5.6	5.0	6.9	6.2	6.7	ns

* Raw chi-square = 103.22; chi-square = .961; df = 80

Note: Chi-square tests were based on frequencies. The table shows mean sten scores on each factor for runners in each position.

The ACL. Means of scale scores on the factors of
the ACL were computed for the runners in team positions one
through ten and are shown in Table 11. No trends in the
mean scores of the runners in the ten different positions
were discernable. While no trends were observed, it is of
interest to note that the mean score of number one runners
exceeded the mean scale scores of all other runners
(positions two through ten) on scale S-Cfd--Self-Confidence;
Per Adf--Personal Adjustment; Het--Heterosexuality; and Exh--
Exhibition. The mean score of number one runners was lower
than the mean scale scores of all other runners in at least
one instance, Def--Deference. Chi-square tests based on
frequencies of scale scores were all non-significant at the
.05 level of probability.

SUMMARY AND DISCUSSION OF THE DATA

16 PF Profiles

The composite profile of college cross country
runners differs from the profiles of other athletic groups.

Some interesting differences were evident in the
comparison between Olympic champions and runners. The
Olympians showed traits which one would expect from a group
which has achieved such outstanding success. High Intelli-
gence (Factor B), high Ego Strength (Factor C), high
Dominance (Factor E), a strong tendency to disregard rules
(Factor G), an adventurous temperament (Factor H), and a low
proneness to guilt feelings with high degrees of security

Table 11

Relation between Runner's Position and Scales on
The Adjective Check List

Mean Standard Scores

					Position						
Scale	1	2	3	4	5	6	7	8	9	10	p
No. Ckd	51.2	48.9	45.5	47.9	49.1	54.4	47.8	46.7	51.6	52.7	ns
Df	51.0	51.9	53.5	52.3	59.4	48.1	53.0	47.3	58.8	47.8	ns
Fav	50.2	45.3	50.3	48.1	52.4	45.9	46.5	45.0	53.8	41.5	ns
Unfav	48.2	51.7	45.7	48.7	49.9	52.3	50.3	54.1	49.6	52.0	ns
S-Cfd	50.5	43.1	47.3	45.9	49.9	45.0	44.0	39.4	48.4	45.5	ns
S-Cn	46.5	45.9	52.0	50.3	49.4	50.9	52.0	49.0	55.2	46.0	ns
Lab	53.0	52.6	48.2	47.4	53.6	46.3	46.0	48.0	49.0	48.3	ns
Per Adj	56.0	46.7	50.2	49.6	51.6	47.4	49.3	46.9	54.0	42.3	ns
Ach	54.7	50.9	52.5	50.7	55.0	50.3	46.0	47.4	55.2	47.8	ns
Dom	52.2	49.4	50.8	49.3	53.0	46.6	46.3	44.3	51.4	49.0	ns
End	55.5	53.0	54.2	52.9	55.0	55.1	51.0	50.3	57.6	48.7	ns
Ord	54.8	51.9	52.5	50.7	55.0	54.9	57.5	56.4	58.4	46.2	ns
Int	52.8	47.6	54.7	48.3	58.3	47.4	52.8	46.1	52.4	46.0	ns
Nur	51.8	47.0	54.8	51.6	53.7	49.9	51.0	45.0	52.6	49.0	ns
Aff	53.7	49.3	53.8	51.0	59.1	47.1	49.5	48.4	53.0	45.8	ns
Het	60.8	49.0	51.0	47.4	51.3	48.1	42.8	47.0	54.0	52.8	ns
Exh	56.3	47.1	49.5	48.6	47.4	48.4	43.0	47.1	48.2	52.3	ns
Aut	50.3	52.3	47.3	44.9	49.1	46.6	48.3	48.7	48.0	46.7	ns
Agg	49.7	50.8	43.8	46.9	43.7	49.0	43.8	47.1	46.8	51.3	ns
Cha	52.5	50.4	46.5	49.0	53.4	45.9	46.3	48.4	47.8	48.0	ns
Suc	50.2	51.4	46.0	49.7	47.0	54.7	46.5	51.9	48.8	45.3	ns
Aba	49.3	52.3	50.7	52.9	51.1	54.3	49.0	52.1	51.4	47.8	ns
Def	44.8	51.1	51.7	51.3	50.7	51.4	52.3	52.3	50.4	48.7	ns
Crs	47.3	51.6	47.5	45.6	46.1	55.7	52.5	56.6	49.2	50.8	ns

Note: Chi-square tests were based on frequencies. The table
shows mean standard scores on each scale for runners
in each position.

(Factor O) seem to clearly define traits expected from a
group of championship athletes. The runners differed, being
lower in intelligence (**Factor B**), Ego Strength (**Factor C**),
Dominance (Factor E), Surgency (Factor F), and Shyness
(Factor H). Runners showed higher trait scores than the
Olympians in Conscientiousness (Factor G), Shrewdness
(Factor N), Insecurity (Factor O), and Self-sufficiency
(Factor Q_2).

The college football players' and cross country
runners' 16 PF profiles were less extreme with some interes-
ting differences being evident. The football players were
more Assertive (Factor E), Happy-go-lucky (Factor F),
Venturesome (Factor H), and Suspicious (Factor L). Runners
tended to score higher in Shrewdness (Factor N) and Self-
sufficiency (Factor Q_2).

The profiles of male swimmers and college cross
country runners exhibited the same general personality
pattern. Few differences were apparent and none were ex-
treme. Swimmers tended to be a little more Dominant (Factor
E), Happy-go-lucky (Factor F), and Imaginative (**Factor M**).
They also tended to be less Calm (Factor C) and less Polished
(Factor N). The high degree of resemblance between the
profiles of swimmers and runners may be due to the
similarity between the basic nature of competitive swimming
and cross country running. Both activities require a high
degree of cardio-vascular fitness and mental discipline of
participants.

A 16 PF profile of female swimmers was also compared to that of the college cross country runners. The female swimmers tended to be more Dominant (Factor E), Happy-go-lucky (Factor F), and Venturesome (Factor H). Swimmers were also shown to be more Realistic (Factor I) and Group-dependent (Factor Q_2). The major difference between the two groups may be sex-linked. Cattell[9] has demonstrated differences in personality factor scores that are sex related.

ACL Profile

ACL profiles of athletic and non-athletic groups were not available. The mean scale scores of the cross country runners, when plotted, constituted a flat profile very close to a standard score of fifty. The runners as individuals, however, differed over a wide range on the trait scales. When scores were pooled together, the individual extremes tended to cancel each other out. The result being that the cross country runners as a group fell close to the mean on each trait.

The coach faces a situation similar to that just described. A group of athletes in a particular sport might exhibit some common personality characteristic that differentiate them from a group of athletes in another sport,

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[9]Cattell, op. cit., p. 68.

but individual differences will still be extant. It is important that the coach recognizes and deals effectively with those individual differences.

From the results of the two personality tests, 16 PF and ACL, the average male college cross country runner appears to be shrewd, self-sufficient, conservative, sober, and lacking in self-confidence. He also was shown to possess high degrees of both endurance and order. These characteristics tend to fit the stereotype of the successful athlete in any type of sport.

The correlation between a low tension score and faster five mile cross country time was again low and positive. It is likely then, that the faster runners would tend to evidence more composure and be more relaxed. The ability to maintain composure tends to fit the stereotype of the successful athlete.

Very little relationship was found to exist between best two mile track time and traits measured by the 16 PF. Low positive correlations were obtained, the highest being between Shrewdness (Factor N) and best two mile track time.

A low shrewdness (forthrightness) score might indicate that the faster runners in a two mile track time were more often genuine, of simple tastes, having blind trust in human nature, and content with what comes. These traits are found in most successful athletes in any sport.

Relationship of Time to **Personality**
   Traits

the most valid **measure of** cross country performance available was time.

The 16 PF. Very little relationship was found to exist between best five mile cross country time and traits measured by the 16 PF. Low positive correlations were obtained between time and the following factors: Intelligence (Factor B); Projection (Factor L); and Tension (Factor Q_4). Those runners with a faster cross country time show a slight tendency toward being less intelligent, relaxed, composed, and trustful.

The correlation between a lower intelligence score and faster five mile cross country time was a low positive one. Runners with lower intelligence scores tended to have faster times. The basis for success in cross country running rests with physical rather than mental prowess, thus those not blessed with a high intellect are still able to succeed. The success gained through running might in fact be the only chance for recognition that is readily available to them.

The correlation between a low projection score and faster five mile cross country time was also low and positive. The faster runner had a tendency to accept conditions as they were, was ready to forget difficulties, and was composed.

The ACL. Very little relationship was found to
exist between best five mile cross country time and ACL
personality scores for college cross country runners.
Extremely low correlations were obtained in all cases.
Performance, as measured by best five mile cross country
time, appeared to have no relation to personality as
measured by the ACL.

Little relationship was found to exist between best
two mile time on a track and ACL personality scores for
college cross country runners. Again, extremely low
correlations were obtained in all cases. Performance, as
measured by best two mile track time, appeared also to have
no relation to personality as defined by the ACL scales.

Relationship between Team Position and Personality Scores

16 PF. Very little relationship was found to exist
between team position and 16 PF personality scores for col-
lege cross country runners. This may be due to the fact
that team position is a crude measure of performance.
Position is a relative thing; a runner who is tenth man on
one team might be the first man on another team. Yet, the
only two objective and valid measures to determine per-
formance were team position and time.

No trends in the mean scores of the runners in the
various positions were discernable. While no trends were
observed, the mean sten scores of number one runners

exceeded the mean sten scores of all other runners (positions two through ten) on Dominance (Factor E) and Projection (Factor L). It would seem likely that the best athlete in a group would be more dominant and suspicious. The suspicion might be due to concern over holding the number one position and thoughts of someday losing that place.

Researchers have debated about how an individual, particularly an athlete, acquires certain personality traits. One school of thought argues that it is the situation (team position) that does in fact develop certain traits in athletes. Others disagree pointing toward the idea that the individual or athlete had the trait all along and the situation (team position) was thus easier to attain.

Chi-square tests based on frequencies of scores in sten-intervals were with one exception non-significant. Subjectivity (Factor M) was found to be related to team position, being significant at the .05 level of probability.

The outcome of the chi-square test indicates dependence or a relationship between the variates, in this case runner's team position and Subjectivity (Factor M). The magnitude of the chi-square indicates neither the nature nor the degree of this relationship. It simply tells us that the runner's position can be better predicted from a knowledge of Subjectivity (Factor M) than without that knowledge.

ACL. Little relationship was found to exist between means of ACL scale scores and team position. No trends in the mean scores of the runners in the ten different positions were observed. The mean scores of number one runners exceeded the mean scale scores of all others (positions two through ten) on Self-Confidence (S-Cfd), Personal Adjustment (Per Adj), Heterosexuality (Het), and Exhibition (Exh). These traits would all be included in a stereotype of the best player or runner on a team.

The mean scale score of the number one runners was lower than the mean scale score of all others (positions two through ten) in one case, Deference (Def). Strong independence, high energy, and ambition seem to fit the model of the best player or runner on the team.

Chi-square tests based on frequencies of scale scores were all non-significant at the .05 level of probability.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

The investigation was designed to describe the personality of college cross country runners as measured by two tests, the Adjective Checklist (ACL) and the Sixteen Personality Factor Inventory (16 PF). The relation of time and team position to personality was also studied.

Sixty-five members from nine colleges and universities throughout the midwest were subjects in the study. Subjects were representative of the top ten individual scorers on each cross country team.

Each runner was asked to complete an information sheet and two personality tests, the ACL and the 16 PF. Coaches administering the tests were asked to sign a validation card signifying that certain test conditions were met. Materials were returned to Eastern Illinois University upon completion.

Means and standard deviations for each of the 16 PF factor scores and ACL scale scores were computed. Mean scores were then compared with selected athletic and non-athletic profiles.

Pearson product-moment correlations between both best five mile cross country time and best two mile track time and 16 PF factor scores and ACL scale scores were computed.

Chi-square was used to test the independence between individuals' cross country team position and their 16 PF factor and ACL scale scores.

CONCLUSIONS

1. The "personality profile of college cross country runners differs from the profiles of athletes in other sports, Olympic champions, male college football players, male and female swimmers.

2. The relationship between performance as measured by time and personality traits as measured by the 16 PF and ACL is very low.

3. The relationship between performance as measured by team position and personality traits as measured by the 16 PF and the ACL is exceedingly low.

4. The pattern of scores of number one runners appears, in some instances, to differ when compared to the pattern of scores of runners in the other positions. This suggests that certain traits do predominate in the number one runners. No precise tests of these relationships were made, however, and we can infer no cause-effect relationship.

RECOMMENDATIONS

The following recommendations are made based on the findings of the study:

1. A similar study should be made to describe the personality of high school and post-college cross country runners.

2. A similar investigation should be conducted to determine the personality traits of the female cross country runners.

3. To understand better the contributions of and the interaction between physiological and psychological attributes and cross country performance, a research design should include both variables.

4. Further research efforts should be directed toward determining the cause-effect relationship between personality traits and performance. Does the good performance cause development of certain personality characteristics, or do certain personality characteristics contribute to better performance?

5. Further research should utilize, if feasible, other personality instruments such as the Minnesota Multiphasic Personality Inventory (MMPI) and the California Psychological Inventory (CPI).

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APPENDIXES

APPENDIX 1

Description of the Scales Used
In the 16 PF

(Low Score Direction)   FACTOR A   (High Score Direction)
Reserved, Detached, Cool   vs. Warm-hearted, Easy-going

The person who scores low
(sten of 1 to 3) on Factor
A tends to be stiff, cool,
skeptical, and aloof. He
likes things rather than
people, working alone, and
avoiding compromises of
viewpoints.

The person who scores high
(sten of 8 to 10) on Factor A
tends to be goodnatured, easy-
going, ready to cooperate,
attentive to people, soft-
hearted, and adaptable. He
readily forms active groups
and likes personal relations.

FACTOR B

Less Intelligent   vs.   More Intelligent

The person scoring low on
Factor B tends to be slow
to learn and grasp, dull,
given to concrete and
leteral interpretations.

The person who scores high
on Factor B tends to be quick
to grasp ideas, a fast learner,
intelligent.

FACTOR C

Affected by Feelings   vs.   Emotionally Stable

The person who scores low on
Factor C tends to be low in
frustration tolerance for
unsatisfactory conditions,
changeable, fretful, and
easily emotionally annoyed.

The person who scores high on
Factor C tends to be emotion-
ally mature, stable, realistic
about life, and better able to
maintain solid group morale.

FACTOR E

Humble, Conforming   vs.   Assertive, Stubborn

The person who scores low
on Factor E tends to give
way to others, to be docile,
and to conform.

The person who scores high on
Factor E is assertive, self-
assured, and independent-
minded. He tends to be
austere, a low to himself,
and disregards authority.

Sober, Serious   FACTOR F   Happy-go-lucky, Lively
                                  vs.

The person who scores low   The person who scores high on
on Factor F tends to be   this trait tends to be cheer-
restrained, reticent,   ful, active, frank, expressive,
introspective. He tends   and carefree. He is frequently
to be a sober, dependable   chosen as an elected leader.
person.

FACTOR G
Expedient, Evades Rules   vs.   Conscientious, Rule-bound

The person who scores low on   The person who scores high on
Factor G tends to be unsteady   Factor G tends to be exacting
in purpose. He is often   in character, dominated by
casual and lacking in effort   sense of duty, persevering,
for group undertakings and   responsible, planful, "fills
cultural demands.   the unforgiving minute."

FACTOR H
                              vs.
Shy, Restrained   Venturesome, Uninhibited

The person who scores low on   The person who scores high on
this trait tends to be shy,   Factor H is sociable, bold,
withdrawing, cautious, re-   ready to try new things,
tiring, a "wallflower." He   spontaneous, and abundant in
usually has inferiority feel-   emotional response. His "thick-
ings.   skinnedness" enables him to
                                   face wear and tear in dealing
                                   with people and grueling em-
                                   otional situations without
                                   fatigue.

FACTOR I
Tough-minded, Self-reliant vs.   Tender-minded, Dependent

The person who scores low on   The person who scores high on
Factor I tends to be   Factor I tends to be tender-
practical, realistic, mascu-   minded, daydreaming, artistic,
line, independent, and res-   feminine. He is sometimes
ponsible. He is sometimes   demanding of attention and
unmoved, hard, smug.   help, impatient, and impracti-
                                   cal.

FACTOR L

Trusting, Adaptable   vs.   Suspicious, Hard to Fool

The person who scores low on Factor L tends to be free of jealous tendencies, adaptable, cheerful, uncompetitive, concerned about other people, a good team worker.

The person who scores high on Factor L tends to be mistrusting and doubtful. He is often involved in his own ego, is self-opinionated, and interested in internal, mental life.

FACTOR M

Practical, Careful   vs.   Imaginative, Absent-minded

The person who scores low on Factor M tends to be anxious to do the right things, attentive to practical matters, and subject to the dictation of what is obviously possible.

The person who scores high on Factor M tends to be unconventional, unconcerned over everyday matters, self-motivated, concerned with "essential," and oblivious of particular people and physical realities.

FACTOR N

Forthright, Natural, Artless vs.   Shrewd, Calculating, Worldly

The person who scores low on Factor N tends to be unsophisticated, sentimental, and simple. He is sometimes crude and simple

The person who scores high on Factor N tends to be polished, experienced, worldly, and shrewd. He is often hardheaded and analytical.

FACTOR O

Placid, Self-assured   vs.   Apprehensive, Worrying

The person who scores low on Factor O tends to be placid with unshakable nerve. He has mature, unanxious confidence in himself and his capacity to deal with things.

The person who scores high on Factor O tends to be depressed, moody, a worrier, full of foreboding, and brooding. He has a child-like tendency to anxiety in difficulties.

FACTOR Q_1
Conservative, Traditional vs. Experimenting, Liberal

The person who scores low on Factor Q_1 is confident in what he has been taught to believe, and accepts the "tried and true," despite inconsistencies, when something else might be better.

The person who scores high on Factor Q_1 tends to be interested in intellectual matters and has doubts on fundamental issues. He is skeptical and inquiring regarding old ideas or new ones.

FACTOR Q_2
Group-dependent vs. Self-sufficient, Resourceful

The person who scores low on Factor Q_2 prefers to work and make decisions with other people, likes and depends on social approval and admiration.

The person who scores high on Factor Q_2 is temperamentially independent, accustomed to going his own way, making decisions and taking action on his own.

FACTOR Q_3
Undisciplined Self-conflict vs. Controlled

The person who scores low on Factor Q_3 will not be bothered with will control and regard for social demands.

The person who scores high on Factor Q_3 tends to have a strong control of his emotions and general behavior, is inclined to be socially aware and careful, and evidences what is commonly called "self-respect."

FACTOR Q_4
Relaxed, Tranquil vs. Tense, Driven

The person who scores low on Factor Q_4 tends to be sedate, relaxed, composed, and satisfied.

The person who scores high on Factor Q_4 tends to be tense, excitable, restless, fretful, and impatient.

APPENDIX 2

Description of Scales Used in ACL

1. Total Number of Adjectives Checked: No. Ckd

   The tendency to check more or fewer words reflects
   certain personality dispositions. Checking many
   adjectives seems to reflect a happy-go-lucky attitude
   and drive and an absence of repressive tendencies. The
   tendency to not check as many tends to show a person
   more quiet and reserved, more tentative and cautious
   in approach to problems.

2. Defensiveness: Df

   The higher scoring person is apt to be self-controlled
   and resolute in both attitude and behavior, insistent
   and even stubborn in seeking his objectives. The
   persistance is more admirable than attractive. The
   lower-scoring subject tends to be anxious and appre-
   hensive, critical of himself and others, and given to
   complaints about his circumstances.

3. Number of Favorable Adjectives Checked: Fav

   The individual who checks many favorable words appears
   to be motivated by a strong desire to do well and im-
   press others, but always by virtue of hard work and
   conventional endeavor. The low-scorer is much more of
   an individualist--more often seen as clever, sharp-
   witted, headstrong, pleasure-seeking, and original in
   thought and behavior. He more often experiences anxiety,
   self-doubts, and perplexities.

4. Number of Unfavorable Adjectives Checked: Unfav

   The individual who tends to check many unfavorables
   strikes others as rebellious, arrogant, careless,
   conceited, and cynical. He tends to be a disbeliever,
   a skeptic, and a threat to the complacent beliefs and
   attitudes of his peers. The low scorer is more placid,
   more tactful, and probably less intelligent.

5. Self-Confidence: S-Cfd

The high-scorer is assertive, affiliative, outgoing, persistent, and an actionist. He wants to get things done, and is impatient with people or things standing in his way. He is concerned about creating a good impression, and is not above cutting a few corners to achieve this objective. The low-scoring person is a much less effective person in the everyday sense of the word—he has difficulty in mobilizing himself and taking action, preferring inaction and contemplation. Others see him as unassuming, forgetful, mild, pre-occupied, reserved, and retiring.

6. Self-Control: S-Cn

High scorers tend to be serious, sober individuals, interested in and responsive to their obligation. They are seen as diligent, practical, and loyal workers. At the other end of the scale one seems to find the inadequately socialized person, headstrong, irresponsible, complaining, disorderly, narcissistic, and impulsive. The low-scoring subject tends to be described in unflattering terms, even including such words as obnoxious, autocratic, and thankless.

7. Lability: Lab

The high scorer is seen favorably as spontanious, but unfavorably as excitable, temperamental, restless, nervous, and high-strung. The low scorer is more routinized, planful, and conventional. He is described by observers as thorough, organized, steady, and unemotional.

8. Personal Adjustment: Per Adj

The high scoring person is seen as dependable, peaceable, trusting, friendly, practical, loyal, and wholesome. He fits in well, asks for little, treats others with courtesy, and works enterprisingly toward his own goals. The subject low on the personal adjustment scale sees himself as at odds with other people and as moody and dissatisfied.

9. Acievement: Ach

Definition: To strive to be outstanding in pursuits of socially recognized significance.
The high-scorer is usually seen as intelligent and hard-working, but also as involved in his intellectual and other endeavors. He is determined to do well and usually

succeeds. The low-scorer is more skeptical, more dubious about the rewards which come from effort and involvement, and uncertain about risking his labors.

10. Dominance: Dom

   Definition: To seek and sustain leadership roles in groups or be influential and controlling in individual relationships.
   The high-scorer on this scale is a forceful, strong-willed, and persevering individual. The low-scorer is unsure of himself, and indifferent to both the demands and the challenges of inter-personal life.

11. Endurance: End

   Definition: Tp persist in any task undertaken.
   The subject high on End is typically self-controlled and responsible, but also idealistic and concerned about truth and justice. The low-scorer is erratic and impatient, intolerant of prolonged effort or attention, and apt to change in an abrupt manner.

12. Order: Ord

   Definition: To place special emphasis on neatness, organization, and planning in one's activities.
   High-scorers are usually sincere and dependable, but at the cost of individuality. Low-scorers are quicker in temperament and reaction, and might often by called impulsive.

13. Intraception: Int

   Definition: To engage in attempts to understand one's own behavior or the behavior or others.
   The high scorer is reflective and serious, he is capable, conscientious, and knowledgeable. His intellectual talents are excellent and he derives pleasure from their exercise. The low-scorer may also have talent, but he tends toward intemperateness in its use. He is a doer not a thinker.

14. Nurturance: Nur

   Definition: To engage in behaviors which extend material or emotional benefits to others.
   The subject high on this scale is of helpful, nurturant disposition, but sometimes too bland and self-disciplined. The subject scoring low is the opposite: skeptical, clever, and acute, but too self-centered and too little attentive to the feelings and wishes of others.

15. Affiliation: Aff

   Definition: To seek and sustain numerous personal
      friendships.
   The high-scorer is adaptable and anxious to please.
   The low-scorer is more individualistic and strong-
   willed. He tends to be less trusting, more pessimistic
   about life, and restless in any situation which inten-
   sifies or prolongs his contacts with others.

16. Heterosexuality: Het

   Definition: To seek the company of and derive
      emotional satisfactions from interactions with
      opposite-sexed peers.
   The high scorer is interested in the opposite sex as
   he is interested in life, experience, and most things
   around him in a healthy, direct, and outgoing manner.
   The low scorer thinks too much and dampens his vitality;
   he tends to be disspirited, inhibited, shrewd and
   calculating in his interpersonal relationships.

17. Exhibition: Exh

   Definition: To behave in such a way as to elicit the
      immediate attention of others.
   Persons who are high on this scale tend to be self-
   centered and even narcissistic. They are poised and
   able to meet situations adequately, but at the same
   time they are quick-tempered and irritable. Persons
   who score low tend toward apathy, self-doubt, and
   undue inhibition of impulse. They lack confidence in
   themselves.

18. Autonomy: Aut

   Definition: To act independently of others or of
      social values and expectations.
   The high-scorer is independent and autonomous, but
   also assertive and self-willed. He tends to be in-
   different to the feelings of others. The low-scorer
   is of moderate and even subdued disposition. He
   hesitates to take the initiative, preferring to wait
   and follow the dictates of others.

19. Aggression: Agg

   Definition: To engage in behaviors which attack or
      hurt others.
   The individual high on this scale is both competitive
   and aggressive. He seeks to win, to vanquish, and
   views others as rivals. His impulses are strong. The

individual who is low on aggression is much more of a conformist, but not necessarily lacking in courage or tenacity. He tends to be patiently dilligent, and sincere in his relationships with others.

20. Change: Cha

Definition: To seek novelty of experience and avoid routine.
Persons high on Cha tend to be perceptive, alert, and individuals who comprehend problems and situations rapidly and who take pleasure in change and variety. The lower-scorer seeks stability and continuity in his environment, is apprehensive of ill-defined and risk-involving situations.

21. Succorance: Suc

Definition: To solicit sympathy, affection, or emotional support from others.
High-scorers on the Suc appear to depict a personality which is trusting, guileless, and even naive in its faith in the integrity and benevolence of others. He is dependent on others, seeks support and expects to find it. The low-scorer is independent, resourceful, and self-sufficient, but at the same time prudent and circumspect. He has a sort of quiet confidence in his own worth and capability.

22. Abasement: Aba

Definition: To express feelings of inferiority through self-criticism, guilt, or social impotence.
High-scorers on Aba are not only submissive and self-effacing, but also appear to have problems of self-acceptance. They see themselves as weak and undeserving, and face the world with anxiety. The low-scorer is optimistic, poised, productive, and decisive. Not fearing others, he is alert and responsive to others. His tempo is brisk, his manner confident, and his behavior effective.

23. Deference: Def

Definition: To seek and sustain subordinate roles in relationship with others.
The individual scoring high on Def is typically conscientious, dependable, and persevering. He attends modestly to his affairs, seeking little, and yielding always to any reasonable claim by another. The individual with a low score is more energetic and independent; he likes attention, likes to supervise and direct others.

24. Counseling Readiness: **Crs**

The main function of this scale is to help identify counseling clients who are ready for help and who seem likely to profit from it. The high-scorer on Crs is predominantly worried about himself and ambivalent about his status. He feels out of it and unable to enjoy like to the full. The low-scorer is more or less free of these concerns. He is self-confident, poised, sure of himself and outgoing.

APPENDIX 3

Number and Percent of the Total Group Marking Each
Adjective on the ACL as Self-Descriptive

ADJECTIVES	f	%	ADJECTIVES	f	%
1. Absent-minded	8	12	21. Bitter	4	6
2. Active	59	88	22. Blustery	1	1
3. Adaptable	56	84	23. Boastful	5	7
4. Adventurous	51	76	24. Bossy	10	15
5. Affected	12	18	25. Calm	46	69
6. Affectionate	40	60	26. Capable	50	75
7. Aggressive	32	48	27. Careless	4	6
8. Alert	52	78	28. Cautious	45	67
9. Aloof	4	6	29. Changeable	41	61
10. Ambitious	47	70	30. Charming	12	18
11. Anxious	37	55	31. Cheerful	44	66
12. Apathetic	11	16	32. Civilized	42	63
13. Appreciative	48	72	33. Clear-thinking	48	72
14. Argumentative	25	37	34. Clever	32	48
15. Arrogant	6	9	35. Coarse	3	4
16. Artistic	10	15	36. Cold	8	12
17. Assertive	11	16	37. Commonplace	18	27
18. Attractive	26	39	38. Complaining	19	28
19. Autocratic	3	4	39. Complicated	14	21
20. Awkward	6	9	40. Conceited	5	7

ADJECTIVES	f	%	ADJECTIVES	f	%
41. Confident	40	60	66. Disorderly	6	9
42. Confused	9	13	67. Dissatisfied	21	31
43. Conscientious	39	58	68. Distractible	15	22
44. Conservative	33	49	69. Distrustful	3	4
45. Considerate	48	72	70. Dominant	16	24
46. Contented	19	28	71. Dreamy	31	46
47. Conventional	10	15	72. Dull	5	7
48. Cool	29	43	73. Easy Going	52	78
49. Cooperative	52	78	74. Effeminate	0	0
50. Courageous	25	37	75. Efficient	45	67
51. Cowardly	0	0	76. Egotistical	10	15
52. Cruel	2	3	77. Emotional	42	63
53. Curious	53	79	78. Energetic	46	69
54. Cynical	8	12	79. Enterprising	19	28
55. Daring	25	37	80. Enthusiastic	42	63
56. Deceitful	4	6	81. Evasive	12	18
57. Defensive	37	55	82. Excitable	38	57
58. Deliberate	17	25	83. Fair-minded	42	63
59. Demanding	22	33	84. Fault-finding	19	28
60. Dependable	52	78	85. Fearful	10	15
61. Dependent	15	22	86. Feminine	0	0
62. Despondent	3	4	87. Fickle	3	4
63. Determined	44	66	88. Flirtatious	12	18
64. Dignified	21	31	89. Foolish	6	9
65. Discreet	12	18	90. Forceful	8	12

ADJECTIVE	f	%	ADJECTIVE	f	%
91. Foresighted	28	42	116. Hurried	17	25
92. Forgetful	12	18	117. Idealistic	21	31
93. Forgiving	44	66	118. Imaginative	32	48
94. Formal	7	10	119. Immature	3	4
95. Frank	22	33	120. Impatient	18	27
96. Friendly	51	76	121. Impulsive	22	33
97. Frivolous	3	4	122. Independent	40	60
98. Fussy	9	13	123. Indifferent	10	15
99. Generous	36	54	124. Individualistic	42	63
100. Gentle	39	58	125. Industrious	24	36
101. Gloomy	2	3	126. Infantile	1	1
102. Good-looking	31	46	127. Informal	35	52
103. Good-natured	48	72	128. Ingenious	10	15
104. Greedy	5	7	129. Inhibited	17	25
105. Handsome	18	27	130. Initiative	13	19
106. Hard-headed	11	16	131. Insightful	18	27
107. Hard-hearted	2	3	132. Intelligent	46	69
108. Hasty	6	9	133. Interests narrow	8	12
109. Headstrong	10	15	134. Interests wide	41	61
110. Healthy	60	90	135. Intolerant	6	9
111. Helpful	49	73	136. Inventive	13	19
112. High-strung	11	16	137. Irresponsible	1	1
113. Honest	55	82	138. Irritable	11	16
114. Hostile	4	6	139. Jolly	22	33
115. Humorous	41	61	140. Kind	47	70

ADJECTIVES	f	%	ADJECTIVES	f	%
141. Lazy	15	22	166. Original	15	22
142. Leisurely	30	45	167. Outgoing	24	36
143. Logical	45	67	168. Outspoken	16	24
144. Loud	12	18	169. Painstaking	14	21
145. Loyal	46	69	170. Patient	33	49
146. Mannerly	39	58	171. Peaceable	36	54
147. Masculine	24	36	172. Peculiar	5	7
148. Mature	44	66	173. Persevering	19	28
149. Meek	10	15	174. Persistent	30	45
150. Methodical	19	28	175. Pessimistic	12	18
151. Mild	21	31	176. Planful	27	40
152. Mischievous	23	34	177. Pleasant	34	51
153. Moderate	23	34	178. Pleasure-seeking	42	63
154. Modest	41	61	179. Poised	22	33
155. Moody	35	52	180. Polished	9	13
156. Nagging	4	6	181. Practical	41	61
157. Natural	30	45	182. Praising	23	34
158. Nervous	26	39	183. Precise	25	37
159. Noisy	11	16	184. Prejudiced	11	16
160. Obliging	26	39	185. Preoccupied	15	22
161. Obnoxious	5	7	186. Progressive	27	40
162. Opinionated	24	36	187. Prudish	4	6
163. Opportunistic	25	37	188. Quarrelsome	5	7
164. Optimistic	40	60	189. Queer	1	1
165. Organized	34	51	190. Quick	24	36

ADJECTIVES	f	%	ADJECTIVES	f	%
191. Quiet	37	55	216. Self-pitying	8	12
192. Quitting	4	6	217. Self-punishing	29	43
193. Rational	38	57	218. Self-seeking	17	25
194. Rattlebrained	3	4	219. Selfish	4	6
195. Realistic	45	67	220. Sensitive	35	52
196. Reasonable	50	75	221. Sentimental	29	43
197. Rebellious	11	16	222. Serious	42	63
198. Reckless	9	13	223. Severe	5	7
199. Reflexive	28	42	224. Sexy	15	22
200. Relaxed	39	58	225. Shallow	4	6
201. Reliable	51	76	226. Sharp-witted	19	28
202. Resentful	3	4	227. Shiftless	3	4
203. Reserved	36	54	228. Show-off	21	31
204. Resourceful	29	43	229. Shrewd	13	19
205. Responsible	49	73	230. Shy	33	49
206. Restless	26	39	231. Silent	27	40
207. Retiring	8	12	232. Simple	30	45
208. Rigid	5	7	233. Sincere	43	64
209. Robust	6	9	234. Slipshod	0	0
210. Rude	6	9	235. Slow	6	9
211. Sarcastic	13	19	236. Sly	12	18
212. Self-centered	16	24	237. Smug	3	4
213. Self-confident	43	64	238. Snobbish	1	1
214. Self-controlled	43	64	239. Sociable	27	40
215. Self-denying	13	19	240. Soft-hearted	31	46

ADJECTIVES	f	%	ADJECTIVES	f	%
241. Sophisticated	9	13	266. Thoughtful	36	54
242. Spendthrift	9	13	267. Thrifty	21	31
243. Spineless	7	10	268. Timid	17	25
244. Spontaneous	14	21	269. Tolerant ·	27	40
245. Spunky	14	21	270. Touchy	12	18
246. Stable	30	45	271. Tough	20	30
247. Steady	34	51	272. Trusting	34	51
248. Stern	9	13	273. Unaffected	7	10
249. Stingy	7	10	274. Unambitious	7	10
250. Stolid	4	6	275. Unassuming	7	10
251. Strong	23	34	276. Unconventional	10	15
252. Stubborn	24	36	277. Undependable	4	6
253. Submissive	12	18	278. Understanding	45	67
254. Suggestible	19	28	279. Unemotional	4	6
255. Sulky	5	7	280. Unexcitable	1	1
256. Superstitious	15	22	281. Unfriendly	5	7
257. Suspicious	16	24	282. Uninhibited	10	15
258. Sympathetic	35	52	283. Unintelligent	1	1
259. Tactful	27	40	284. Unkind	2	3
260. Tactless	5	7	285. Unrealistic	1	1
261. Talkative	26	39	286. Unscrupulous	2	3
262. Temperamental	20	30	287. Unselfish	18	27
263. Tense	15	22	288. Unstable	7	10
264. Thankless	1	1	289. Vindictive	6	9
265. Thorough	27	40	290. Versatile	41	61

ADJECTIVES	f	%	ADJECTIVES	f	%
291. Warm	37	55	296. Wise	28	42
292. Wary	11	16	297. Withdrawn	12	18
293. Weak	5	7	298. Witty	28	42
294. Whiny	3	4	299. Worrying	24	36
295. Wholesome	31	46	300. Zany	6	9

VITA

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The writer was born in Chicago, Illinois, on March
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I.H.S.A. State Cross Country Championship in 1969. The
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third in the nation on a small college basis and track teams
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freshman six mile run record which lasted for three years.

While at Eastern, he was a member of the physical
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The author graduated from Eastern in 1974 and
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