

PSYCHOLOGICAL CHANGES IN EARLY ADOLESCENT MALES
INDUCED BY SYSTEMATIC EXERCISE

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We hereby recommend that the dissertation prepared under
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CHAPTER ONE

PROSPECTUS

In the past decade jogging has come to the forefront on the American scene. As the values of regular participation in this activity have become realized, especially the enhancement of the cardiovascular fitness of the individual, more and more people of all ages and both sexes are accepting and practicing it as an integral part of their lives. Jogging has the advantage of being a sustained, pleasant, non-competitive exercise that requires no unusual skills, since the proper running technique is relatively simple to learn. The sport requires no expensive equipment or special arrangements, may be performed at convenient times such as early mornings or late afternoons, and takes only about thirty minutes a day five times weekly.

Numerous studies showing the benefits of jogging on physiological variables have been conducted. Among other things research has shown that jogging will enhance cardiovascular fitness, increase muscle strength, and improve neuromuscular coordination. It was the purpose of this study to show that significant change will be made toward a better psychological adjustment as a result of participating in a six week jogging program.

Sixty adolescent males were used in the study. They were divided into two groups: thirty normals, obtained from a local school district and thirty institutionalized adolescents. These were obtained from a private psychiatric treatment center. Fifteen members of each group were randomly selected for the jogging program, and the remaining fifteen members served as a control. The participants ranged in age from thirteen to sixteen.

A one mile course was planned out, and each participant jogger jogged one mile a day, five days a week, for six weeks. The investigator kept track of how often the subjects ran, but no times were recorded and the distance did not exceed one mile.

Prior to entering the program, all of the joggers had medical clearance and participated in a one week conditioning program consisting of stretching exercises, calisthenics, and walking. All of the subjects took the Junior-Senior High School Personality Questionnaire. They were re-administered an alternate form of the questionnaire at the end of the six week program.

The Devereux Adolescent Behavior Rating Scale, which measured problem behaviors, was given to each of the institutionalized boy's teachers and recreational staff counselor. This scale was completed both prior to and at the completion

of the program. A two-by-two factorial analysis of covariance was run with the test scores, using the pre-test as the covariate.

CHAPTER TWO

REVIEW OF THE LITERATURE

Over the past two decades Americans have become extremely health conscious. Health centers where people exercise to lose weight and get fit have sprung up all over the country. Dieting has become an obsession of many in an effort to stay young and attractive. Layman (1960) has emphasized that physical fitness facilitates the development of a healthy personality, whereas poor physical condition renders an individual more susceptible to forces making for poor mental health. Even more recently, however, jogging has come to the forefront on the American scene. As the values of regular participation in this activity have become realized, especially the enhancement of the cardiovascular fitness of the individual, more and more people of all ages and both sexes are accepting and practicing it as an important aspect of their lives. The President's Council on Physical Fitness and Sports has long advocated jogging as one of several desirable activities for developing and maintaining circulation-respiratory fitness. Several national organizations have been formed, including the National Jogging Association and the American Medical Joggers Association.

Jogging is different from most popular physical fitness programs. Unlike weight lifting, calisthenics, and isometric exercises with their emphasis on muscle building, jogging works to improve the heart, lungs, and circulatory system. Other muscles of the body are exercised, but the greatest benefit comes from improving the way the heart and lungs work. Ismail and Trachtman (1973) assert that jogging has the advantage of being a sustained, pleasant, noncompetitive exercise that requires no unusual skills, since the proper running technique is relatively simple to learn. It requires no expensive equipment or special arrangements, may be performed at convenient times such as early mornings or late afternoons, and takes only about thirty minutes a day three or four times a week. Bowerman and Harris (1967) add that jogging is free. It is convenient and enjoyable. Jogging is safe. Moreover, the sport can benefit nearly everyone who is not ill or disabled. They define jogging as "a kind of running, generally a slow regular trot that has been described as the next step up from walking."

Roby and Davis (1970) claim that there is an inherent freedom in jogging which no doubt is an appealing factor. The jogger is liberated from the numerous rules which characterize most games and sports, thus enabling him to better release both mind and body during the activity. They

cite several interrelated factors behind the acceptance of jogging as a valued activity in our society.

1. Most of the medical professions now hold exercise to be an important form of preventive medicine.
2. The population of the United States recognizes that they are underexercised and need to improve their physical fitness.
3. Jogging, as an activity, holds superior credentials as a developer of circulator-respiratory endurance.
4. Jogging possesses unique advantages over all other forms of physical activity and is seemingly ideal for the overweight and unfit populations of highly industrialized societies. (p. 2)

Inter-Relationship Between Physical Fitness Variables and Physiological Variables

Numerous studies claiming that jogging has an influence on physiological variables have been conducted. Regular exercise has been shown to have beneficial physiological and biochemical effects (Katsch, Phillips, Carter, & Boyer, 1973). In general, the improvement in each bodily system is of the order of twenty-five percent or less, but when taken together all the effects may result in an improvement of total performance which may be as high as one hundred percent and occurs in both the magnitude and duration of the work which can be done (Broucha, 1974). In his 1974 review, Broucha lists the changes produced by training, including jogging, which have thus far been studied.

1. Increased strength of the muscles and improved neuromuscular coordination.
2. Greater mechanical efficiency as measured in terms of lower oxygen consumption for a given amount of work.
3. Greater maximum oxygen consumption.
4. A higher cardiac output with less increase in pulse rate and blood pressure during submaximal exercise.
5. More economical ventilation during exertion, and a greater maximum pulmonary ventilation.
6. Lower blood lactate for a given amount of exercise, i.e. capacity to perform more work aerobically; and ability to push self to a higher blood lactate before exhaustion, i.e. capacity to perform more work anaerobically.
7. Quicker recovery in pulse rate and blood pressure after submaximal exercise.
8. Better heat dissipation during submaximal exercise. (p. 276)

Kraus and Raab (1961) developed the concept of "hypokinetic disease," which they defined as the "whole spectrum of inactivity--induced somatic and mental derangements." Relying on numerous sources, they indicated that coronary heart disease is twice as prevalent in the sedentary as in the active. Other diseases more frequent in the sedentary than in the active are diabetes, ulcers, and other internal conditions. Eighty percent of low back pain is due to lack of adequate physical activity; lack of physical exercise parallels emotional difficulties; the physically active show better adaptability to stress, less neuromuscular tension, and less fatigability; active persons age later, do not tend toward absolute and relative overweight, have

lower blood pressure, are stronger and more flexible, and have greater breathing capacity.

Other studies reviewed (Katsch, et al., 1973; Cooper, 1968; Hammer & Wilmore, 1973) support an inverse relationship between the amount of physical activity in which adults engage and the incidence of coronary heart disease. Regular physical activity does not necessarily prevent a heart attack but makes its occurrence less likely; also in the event of an attack, it tends to be less severe and the likelihood of survival is greater.

Ismail and Young (1977) show that with appropriate intensity and dosage of exercise over a sufficient period of time, the following results have been achieved: reduction in serum cholesterol and triglyceride levels; development of collateral circulation around coronary artery restrictions; improvement in myocardial vascularization; increases in red blood cells and blood volume; improved fibrinolytic capability; and reduction of blood pressure.

Perhaps the largest volume of work has been conducted under the auspices of Dr. Kenneth H. Cooper. His program, called aerobics, refers to a variety of exercises that stimulate the heart and lung activity for a time period sufficiently long to produce beneficial changes in the body. Running, cycling, swimming, and jogging are typical aerobic

exercises. What Cooper (1968) calls the training effect is the whole goal of the endurance exercise.

The training effect increases the efficiency of the lungs, conditioning them to process more air with less effort. The training effect increases the efficiency of the heart in several ways. It grows stronger and pumps more blood with each stroke, reducing the number of strokes necessary. The training effect increases the number and size of the blood vessels that carry the blood to the body tissue, saturating the tissue throughout the body with energy-producing oxygen. The training effect increases the total blood volume, again providing more means for delivering more oxygen to the body tissue. The training effect improves the tone of the muscles and blood vessels, changing them from weak and flabby tissue to strong and firm tissue, often reducing blood pressure in the process. The training effect changes fat weight to lean weight, often toughening up the body without actual weight loss. The training effect increases maximal oxygen consumption by increasing the efficiency of the means of supply and delivery. In the very act of doing so, it is improving the overall condition of the body, especially its most important parts, the lungs, the heart, the blood vessels and the body tissue, building a bulwark against many forms of illness and disease. (p. 12-13)

Thus, the findings cited definitely do point to an interrelationship between physical fitness and various physiological variables. It can then be concluded that the more physically fit a person, the more efficient his heart and blood vessels, the lower his blood pressure and the greater his breathing capacity. In all probability the physically fit individual will be less prone to heart

attacks, ulcers, and diabetes, and will show increased strength in his muscles and improved neuromuscular coordination.

Inter-Relationship Between Physical Fitness Variables, Body Image, and Self-Concept

A considerable portion of the research on the psychological effects of exercise completed prior to 1960 was concerned with vague and poorly defined concepts like "mental health" and "social adjustment." In contrast to this situation is the present tendency to focus on some one construct or related constellation of constructs recognized as being of central importance for adequate functioning. One such construct is that of the self-concept.

The "self" has been of interest to psychologists and social scientists since 1890, when William James wrote of the self as an object of knowledge and mental construction (James, 1890). Present day interest in physical activity in relation to self-concept, however, stems from two sources: (a) research on the body image phenomenon as a correlate of neurological and psychiatric status (Fisher & Cleveland, 1958; Schilder, 1950); and (b) Carl Rogers' psychotherapeutically derived theory of neurosis and mental health centering around the concepts of the phenomenal self and the ideal self (Butler & Haigh, 1954).

In the literature on the self and its evaluation, it is usual to distinguish among body concept, self-concept, self-concept body cathexis, self-cathexis, and ideal self. Layman (1974b) states that the body concept or body image usually refers to the conscious concept of different parts and processes of the body in terms of their potency; body cathexis refers to degree of satisfaction with these parts and processes. The self-concept or self-description describes the self in terms of characteristics such as relationships with others, movement characteristics, grooming, achievement, and expressiveness, with self-cathexis referring to self-esteem or attitude toward the self. Johnson (1962) views the self-concept as referring to the way in which people perceive, evaluate, and esteem themselves generally. Ideal self refers to the self that one would like to be.

The way an individual characteristically perceives his body has long been held as an important factor in forming his image of himself and his general integration. The term "body image" (Kane, 1972) is used in psychology to indicate the attitudinal framework defining the individual's concept of his body and his characteristic way of perceiving it. The concept of body image is a dynamic one, to be considered not merely as the sum of a number of visual, tactile,

and kinesthetic sensations but as a responsive and changing organization of the physical elements by which our perceptual schema of our body is constantly affected by new experiences and activities. Concerning the way in which body image is considered to be connected with personality, Fisher (1965) writes:

With increasing study of the body image, we have learned that the normal individual's attitude towards his body may mirror important aspects of his identity. An individual's feeling that his body is big or small, attractive or unattractive, strong or weak may tell us a good deal about his self concept or his typical manner of relating to other people. There is evidence that the individual has a unique way of perceiving his own body as contrasted to non-self objects. As such, this body image or body concept frequently serves as a screen or target upon which he projects significant personal feelings, anxieties and values. (p. 381)

The child's conception of his body becomes differentiated as he grows through an interplay of the forces that shape his personality. Witkin (1950) has suggested that achievement of a differentiated body concept is a manifestation of the child's general progress towards greater psychological complexity. It is proposed that at an early age, the child experiences himself and his body as a "continuous body field matrix." As he grows and develops, the differences between his body and the non-self world are formed and later he becomes aware of the differentiation between parts of the body

and their interrelatedness, so that his body concept and perception become less global and more articulated in terms of the body parts and body boundaries.

Research in the clinical context has generally pointed to the validity of the following generalizations (Layman, 1974b): (1) there is a positive relation between body concept and self-concept, as well as between body cathexis and self-cathexis; (2) mental health and social adjustment are associated with a feeling of self-worth or positive self-attitude; (3) a reduction in the difference between self-concept and ideal self is associated with improvement in adjustment (Butler & Haigh, 1954). Based on these generalizations, physical education researchers have hypothesized (1) that programs for the development of physical fitness will result in enhancement of body concept, body cathexis, self-concept, and self-cathexis, as well as decrease in the self-ideal discrepancy; and (2) that acquisition of skill in sports will have similar effects.

Johnson (1962) in his Children's Physical Developmental Clinic at the University of Maryland believes that as a child sees himself become more able to do things that are meaningful to him, more able to direct and control his body, and more able to deal with his peers, he gains a new respect for himself. The picture which the child has of himself

undergoes change for the better--not through self-deception or mere verbal assurances but through objective data of his own performance. As he progresses to increasingly difficult activities, he begins to see himself as one who can deal more adequately and confidently with his life.

Early research on physical activity and self-concept more often than not used a correlational design which did not lend itself to interpretations concerning cause and effect. However, in recent years, an increasing number of pre-post test studies have been published, making it easier to isolate the effects of particular programs. As pointed out by Hellison (1970) some of these studies are methodologically weak, for example, subjects are not selected at random, controls often are not equated with the experimental group on the basis of pretest scores, and sometimes pre-post test differences are not statistically compared. Additionally, there is frequently no attempt to control for the Hawthorne effect. Nevertheless, despite these facts, there are now enough well-designed studies to make it possible to draw conclusions with some degree of confidence.

Several studies have examined the relation of physical fitness and self-concept, and some have studied changes in

self-concept resulting from physical developmental progress.

McClenney (1969) compared a group of physically fit college men with a group of unfit men, using Bills' Index of Adjustment and Values to measure self-concept and found no significant differences between the groups. A study by Vincent and Dorsey (1972) which investigated the relationships between three measures of body image and two measures of physiological performance in college men supported McClenney's findings. The latter researchers concluded that a general relationship does not seem to exist between the measures of body image and physiological performance utilized in the study.

In comparison of "normal," physically handicapped, and socially handicapped high school students, Lewis (1971) found no significant differences in body image or self concept as assessed by the Rosen and Ross body image scale and Gough's self-concept adjective check list. She attributed the unexpected results in part to inadequate sampling and possibly to inappropriate instrumentation.

Schultz (1961) found statistically significant superiority in the body image of high school girls of high physical fitness as compared with those of low fitness, using a semantic differential test and the draw-a-person test for evaluating body image.

Neale, Sonstroem, and Metz (1969) compared adolescent boys of high and low fitness on measures of general self-esteem and self-estimates of physical ability. They found that high-fit boys were significantly higher than low-fit boys in self-estimates of physical ability but not in general esteem, as measured by a scale constructed by Rosenberg.

Johnson, Fretz, and Johnson (1968) administered three measures of self-concept to children referred to a physical developmental clinic before and after a six-week clinic program involving prescribed physical activities. A comparison of preclinic and post-clinic scores showed a significant decrease in the discrepancy between self-concept and ideal self. The measures of self-concept and ideal self were developed especially for use in the clinic program. Since these measures have not been standardized, the results obtained must be considered as only tentative. Layman (1974b) criticizes the study claiming that it would probably have been strengthened by the use of a control group and some means of controlling for the Hawthorne effect.

Bonniwell (1962) obtained measures of the body image and self-concept for sixteen muscularly disorganized children before and after eight one-hour sessions of an individualized physical development program extending over eight weeks. These subjects and a group of matched controls

were administered the draw-a-person test, a semantic differential test, and a projective type personality test. The results showed significant improvement in self-concept and body image after the developmental program, and superiority over a group of matched controls. However, due to the shortness of the program, being only eight hours, it would seem that the improvement was probably a reflection of the Hawthorne effect.

In a doctoral dissertation, Hellison (1969) studied the short-term effect of physical conditioning of male college students on affective attitudes toward the self, the body, and physical fitness. Three groups of subjects consisted of twenty-seven subjects in a four-day week experimental group, twenty-two subjects in a two-day per week experimental group, and forty-eight controls. Attitudes toward self and the body were measured by Rosenberg's Guttman scale of self-esteem, two open-ended questions designed to assess self-attitude, and post-test comparisons showed that both experimental groups improved in fitness variables but only the four-day experimental group improved in attitudes toward self and the body. The author concluded that improvement in attitudes toward the self, the body, and physical activity is a function of the intensity and frequency of a physical conditioning experience rather than specific physical changes.

While the studies done by Johnson et al. (1968), Bonniwell (1962), and Hellison (1969) reported improvement in self-concept or body image, several other studies involving tests of self-concept before and after a physical developmental program reported no significant change.

Belzer (1962) studied developmental clinic children, using some of the same subjects as those included in Bonniwell's (1962) study. The children were tested for body image before and after the same eight-week program consisting of an hour of exercise a week, using an aniseikonic technique as a measure of body image. This involves having the subject answer "yes" or "no" to questions of whether or not he sees distortion in his body or selective parts of it when wearing special glasses. There were no significant changes in body image as measured by this technique in either the experimental group or controls. The author indicates that requiring children to be naked when tested may have increased the anxiety-producing tendencies of their bodies and so invalidated the results.

Smith and Figetakis (1970) evaluated the effect of an isometric exercise program on body image of a group of chronic schizophrenics, using a figure-drawing test to assess body image. Eleven of seventeen experimental subjects showed improvement in comparison with five to ten controls.

Although the differences were not statistically significant, the authors felt that the results were suggestive of the possibility that this kind of physical exercise may produce psychological changes of therapeutic value in psychiatric patients. With no control for Hawthorne effect and with the control group being so small, possibly even this tentative conclusion may be questioned on the basis of the data.

Based on the data available, it appears that changes in self-concept, self-cathexis, and self-ideal self discrepancy are most likely to occur as a result of physical education programs designed to meet individual needs. With teachers, Hellison (1970) noted that physical conditioning programs seem to have a potential for improving self-concept, although the fact that many studies report no significant improvement and only with selected groups have positive results been reported suggest that (1) improvement in some cases may be a function of the student-teacher relation and the individual attention involved in the program (Hawthorne effect) rather than being a function of physical fitness, and that (2) improved physical fitness itself would be expected to result in improved self-concept only when the lack of fitness has been a basis for devaluation of the self.

Inter-Relationship Between Physical Fitness Variables and Other Psychological Variables

Although for many years the value of participation in a physical fitness program has been recognized for its physiological and biochemical influences (Katsch, Phillips, Carter, & Boyer, 1973) only recently has it been found to have correlative psychological effects. These more recent data findings (Ismail & Young, 1973; 1976) were obtained by the application of the factor-analytic technique to data collected on middle-aged men before and after participation in a fitness program. The data suggest that "desirable" psychological effects, particularly in the area of emotional stability, may result from participation in an exercise program (Ismail & Young, 1973).

A number of investigations have been conducted concerning the relationship between physical fitness variables and specific psychological variables. Betz (1953) used the Sixteen Personality Factor Questionnaire to investigate just such a relationship. The subjects were normal adult men. He found a significant positive correlation between Cattell's factor "C" (Emotional versus Mature) and the Harvard Five-Minute Step Test. A similar relationship was found with factor "N" (Simple versus Sophisticated). He also obtained a negative correlation between strength per pound of body

weight and factor "N." In this study, eight of the personality variables correlated significantly with performance on a treadmill run to exhaustion. This pointed to the conclusion that some psychological influence was involved in the performance of an all-out treadmill run. Betz also showed that for his group of adult men the personality and the physical fitness profiles were essentially normal. In a study completed in 1958, Wells correlated a number of psychological measures from the Sixteen Personality Factor Questionnaire with certain fitness scores. He found no significant correlations between subcutaneous body fat and any of the psychological variables. However, he did obtain significant positive correlations between hand grip strength and Cattell's factor "M" (Practical versus Imaginative); between back strength and factor "M" and factor "O" (Self-Assured versus Apprehensive); between leg strength and factor "O;" and between total body strength and factor "O." He also obtained significant negative correlations between leg strength and factor "B" (Less intelligent versus More intelligent); and between total body strength and factor "B."

Ismail and Young (1973) ran a four month physical fitness program with 56 middle-aged men. After factor analyzing data they concluded that physical fitness was associated with emotional stability and composure, that physical fitness

was associated with youthfulness, group dependency and confidence, and finally that physical fitness was associated with sophistication and being socially polished. The above findings demonstrated the close relationships between physical fitness and personality traits before and after the physical fitness program.

Young and Ismail (1976) investigated personality differences among high-fit, young; high-fit, old; low-fit, young; and low-fit, old groups before and after a physical fitness program consisting of jogging, calisthenics, and recreational activities. They used the Cattell Sixteen Personality Factor Questionnaire, the Introversion/Extraversion, Neuroticism/Stability, and Conformity scales of the Eysenck Personality Inventory, and the "In General" form of the anxiety scale of the Multiple Affect Adjective Check List, to measure personality differences. The most pronounced personality differences between high fit and low-fit individuals were on factors dealing with emotional stability and security (Factors C, Emotional versus Mature; M, Practical versus Imaginative; O, Self-assured versus Apprehensive; Q₄, Relaxed versus Tense; and NEUR). While the personality differences between fitness groups are quite distinct, the ability of exercise to induce a change in personality make-up of low-fit individuals during a

four-month period is less clear. The only psychological effect of the program was on personality factors measuring social precision, persistence, and control; all groups increased on these dimensions between test periods.

Weber (1953) investigated the relationship between physical fitness and personality variables. The fitness measurements were derived from the Iowa Physical Efficiency Profile. The Minnesota Multiphasic Personality Inventory supplied the psychological data. Using a sample of 246 college men, he found no statistically significant relationships between physical fitness and personality. All correlations were negative, indicating that a high score on the physical fitness measures should result in a low score on the personality measures.

Collingwood (1972) used male rehabilitation clients between the ages of 18 and 26 and compared them to a matched control group and demonstrated the facilitative potentials of physical training. His experimental subjects showed greater significant increases not only in physical fitness performance, but in body attitude, positive self-attitude, self-acceptance and positive physical, intellectual, and emotional-interpersonal behaviors.

In a study of college women, Harris (1957) correlated both the Taylor Manifest Anxiety Scale, and the Sixteen

Personality Factor Questionnaire with the Kraus-Weber test, the Well's-Dillon Sit and Reach test, and the Scott Fitness Battery. She reported that little relationship existed between the state of fitness and the personality traits of an individual. This lack of relationship was substantiated by Keogh (1959). He used the Larson Test of Motor Ability and the California Psychological Inventory. He classified the 167 subjects as non-athletes, intra-mural athletes, or varsity athletes. The correlation matrix showed no statistically significant relationships between either Motor Ability or athletic participation, and the 18 individual scales of the California Psychological Inventory.

Brunner (1969) administered the Adjective Checklist to 30 adult males who exercised regularly and 30 sedentary adult males. The regular exercise group differed significantly from the sedentary group. The results showed that the eight scales of the Adjective Checklist revealed more extroverted traits among the participants and more introverted traits among the non-participants when intergroup comparisons were made.

On the topic of depressions, Morgan, Roberts, Brand, and Feinerman (1970) summarized their studies on depression by generalizing that depressed adult males could experience a significant reduction in depression following a period

of exercise and that non-depressed males reported that they felt better following a like period of exercise. The researchers also noted that 85% of their subjects stated that they felt better as a result of the exercise program and volunteered to participate in subsequent exercise studies.

Gary and Guthrie (1972) set up a jogging program for hospitalized alcoholics which ran for a period of 20 days. All of the subjects were administered the Gough Adjective Check List, the Jourard Body-Cathexis and Self-Cathexis Scales, and the Schneider Physical Test before and after training. The effect of jogging on self-concept showed a marked increase in the predicted direction while the Self-Cathexis and Body-Cathexis Scales showed significantly that self-evaluation would improve with increased physical fitness.

Breen (1959) investigated the relationship between anxiety and cardiovascular measures. Using Taylor's Manifest Anxiety Scale and Cattell's "O" (Self-assured versus Apprehension) and "Q₄" (Relaxed versus Tense) factors, he found positive relationships between high anxiety and the following variables: systolic blood pressure, pulse rate and systolic and diastolic pulse wave amplitudes. Cady, as cited by Cattell (1960) stressed the importance of the "O"

and "Q₄" factors for physical fitness. Cady obtained correlations of +0.30 to +0.40 between deteriorated coronary condition and personality factors "L" (Trusting versus Suspicious), "O," and "Q₄." These factors are the principle components in anxiety, and indicate a relationship between poor cardiovascular condition and high anxiety.

Tillman (1965) employed a battery of three personality tests (Allport's A-S reaction study, Cattell's Sixteen Personality Factor Questionnaire, and the Kuder preference record, Form C), to yield a total of 28 personality-trait measurements. An experimental group of 26 high school boys participated in a strenuous physical fitness program over a period of nine months, while the control group of 24 engaged in only the regular physical-education class. The physical fitness of the experimental group improved significantly more than did the fitness of the control group: 21.7 percentiles gain in fitness as contrasted with only 3.9. An analysis of the results of the pre- and post-psychological testing yielded strikingly negative findings: the experimental group changed significantly on only one of the 28 psychological factors measured. The factor showing significant change was the clerical score of the Kuder preference record. Tillman (1965) concluded that psychological factors of the personality-trait type do not show significant change as physical fitness improves.

Thus, although the findings are variable, there is evidence of some inter-relationships between physical fitness and psychological variables.

Psychological Value of Exercise for Normal Men

Another area to come under study has been the psychological effects of exercise on the normal individual. It has been claimed for many years that exercise and play result in an improved sense of well-being.

In 1952, Cureton reported the subjective comments of one middle-aged subject who engaged in a six month training program. The man found that he tired less quickly, either physically or mentally, and that the entire system seemed to be toned up. In his research, Cureton (1952) cited 13 studies reporting the effects of training and exercise on adult men. None of these studies made reference to the psychological effects of exercise. Menninger (1948) stressed the importance of regular activity when he stated that, mentally healthy people should participate in some form of voluntary activity to supplement their required daily work. The satisfaction garnered from these activities meets deep-seated psychological demands, quite beyond the superficial rationalization of enjoyment. A study by Michael (1957) reported that the euphoria or sense of well-being following exercise may be emotional in nature. If this is

so, then exercise may prove to be important in man's adjustment to stress. Michael (1957) reviewed research studies concerning the effects of exercise upon the adrenal glands and the autonomic nervous system. The existing evidence supported the theory that repeated exercise "conditions" the stress adaptation mechanism. The studies showed that the adenocortical activity, along with the autonomic nervous system, was involved in adjusting to stress. The ability to adjust to stress was aided by an increased sensitivity of the adrenal glands. Thus, less adjustment was necessary because of a more efficient mechanism resulting from an exercise program. A lack of activity was reported to reduce the ability to withstand stress. In a further series of investigations, Michael (1957) found that regular exercise markedly increases an individual's sense of well-being, and definitely boosts his capacity for enduring nervous stress, disappointments, and frustrations.

Adams (1959) studied 14 college males who participated in a seven week endurance running program. He administered the Minnesota Multiphasic Personality Inventory to the experimental and control groups at the beginning and at the end of the program. At the end of seven weeks the experimental group was less depressed and less socially introverted. The control group, on the other hand, showed an increase

in social introversion. This study lends some support to the belief that a person does gain some measure of self-confidence by participating in an exercise program, concurring with the findings of Gary and Guthrie (1972). Generally, the exercise group was more secure, self-confident, poised and had tendencies toward better adaptation to their environment. Adams (1959) also reported the subjective feelings of his experimental group. The subjects reported that they felt better on less sleep; felt more confident, self-reliant and optimistic; and felt better the next morning after a day of hard exercise. Cureton (1963) found that low gear exercises for adult men (golf, bowling) may result in some change in mental attitudes. He further stated that there was a loss of "mental-physical integration" in many adults who have lost their physical fitness. Cattell (1960) emphasized that further research must be undertaken to differentiate between the effects of exercise on the relatively permanent personality traits and the temporary and fluctuating states. Research evidence supports Cattell and shows that more information is needed with respect to special groups. Moreover, data should be sought as to changes in mood states after single workouts, and as to changes in personality traits after an intensive training program.

In confirming what exercise enthusiasts have claimed for thousands of years, that physical activity can change the state of one's mind, Ismail and Trachtman (1973) have established a fact that may even be more important than the value of exercise. They claim that if something as tangible, direct, and accessible as a physical-exercise program can cause such distinct and rapid changes in the personalities of middle-aged men, there are probably other experiences that can change supposedly crystallized personalities. The ramifications of this statement can be far-reaching and hopefully will stimulate further research in the area of personality development.

Hypothesis

The primary concern of this study was the influence which a jogging program had on early adolescent males. It was hypothesized that such a program would bring about significant psychological changes in this population as measured by the Junior-Senior High School Personality Questionnaire and the Devereux Adolescent Behavior Rating Scale. Specifically, changes were anticipated that would show less hyperactivity, better emotional control, less bizarre and antisocial behavior as well as more obedience, assertiveness, self-sufficiency, and more overall emotional stability. The instruments were administered prior to the

institution of a six week jogging program, during which time the boys ran one mile, five days a week. Following the termination of the program, an alternate form of the Junior-Senior High School Personality Questionnaire was administered and the same form of the Devereux Adolescent Behavior Rating Scale was completed by teachers and the recreational staff counselor.

CHAPTER THREE

METHOD

Subjects

Sixty adolescent males were used in the study. They ranged in age from 13 to 16. They were divided into two groups: 30 normals, who were randomly selected from a physical education class at a local high school, and 30 residential adolescents selected from the various cottages at a private psychiatric treatment center. Fifteen members of each group were randomly selected for the jogging program, and the remaining 15 members served as a control group.

The residential joggers ranged in age from 14 years, 4 months to 16 years, 0 months with an average age of 15 years, 2 months. The control group of residential adolescents ranged in age from 13 years, 11 months to 16 years, 1 month with an average age of 14 years, 11 months. For the normal high school joggers, the ages ranged from 14 years, 4 months to 16 years, 4 months with an average age of 15 years, 3 months. The control group ranged from 14 years, 3 months to 16 years, 1 month with a mean age of 15 years, 1 month. No significant difference was found between the mean ages of the different groups.

Should any subject withdraw from the program during the first week, another participant would be selected. After that time, however, there would be no replacements for dropouts. Two of the residential joggers did drop out during the first week and were subsequently replaced.

Jogging Program

A one mile course was planned out, and each participant jogger jogged one mile a day, five days a week, for six weeks. Attendance was recorded at each session throughout the six week period. Prior to participating in the program, each subject had the program explained to him and along with his parents or guardian signed a letter of consent to act as a subject for research and investigation (Appendix F). If at any time a subject wished to withdraw from the program, he could do so with no further questions asked.

Personality Factors

Cattell's (1969) Junior-Senior High School Personality Questionnaire--Forms A and B (HSPQ) were used to obtain the personality data during the first and final weeks of the program (Appendix G). This is a self-report measure which was administered to all four groups. The same subjects were re-tested using a different form of the test. The 14 personality traits with their technical and popular titles as published were as follows:

Trait or factor designation	Technical title (Popular title in parenthesis)
1. A	Sizothymia - versus - Affectothymia (Reserved, Detached - versus - Warm- hearted, Outgoing)
2. B	Low Intelligence - versus - High Intelligence (Dull - versus - Bright)
3. C	Lower Ego Strength - versus - Higher Ego Strength (Affected by Feelings - versus - Emotionally Stable)
4. D	Phlegmatic Temperament - versus - Excitability (Undemonstrative - versus - Excitable)
5. E	Submissiveness - versus - Dominance (Obedient, Mild - versus - Assertive, Aggressive)
6. F	Desurgency - versus - Surgency (Sober, Taciturn - versus - Enthusiastic)
7. G	Weaker Superego Strength - versus - Stronger Superego Strength (Disregards Rules - versus - Conscien- tious)
8. H	Threctia - versus - Parmia (Shy, Timid - versus - Adventurous)
9. I	Harria - versus - Premsia (Tough-Minded - versus - Tender-Minded)
10. J	Zeppia - versus - Coasthenia (Zestful, Liking Group Action - versus - Circumspect Individualism)
11. O	Untroubled Adequacy - versus - Guilt Proneness (Self-Assured - versus - Apprehensive)

- | | | |
|-----|-------|---|
| 12. | Q_2 | Group Dependency - versus - Self-Sufficiency
(Socially Group Dependent - versus - Self-Sufficiency) |
| 13. | Q_3 | Low Self-Sentiment Integration - versus - High Strength of Self-Sentiment
(Uncontrolled, Lax - versus - Controlled, Exacting Will Power) |
| 14. | Q_4 | Low Ergic Tension - versus - High Ergic Tension
(Relaxed, Tranquil - versus - Tense, Driven) |

The Devereux Adolescent Behavior Rating Scale (DABS, Appendix H) was filled out both before and after the jogging program. For those residential adolescents, their teachers and recreational staff counselor were asked to fill out the scale. This rating scale was not given to those regular high school students.

The Devereux Adolescent Behavior Rating Scale yielded twelve factor scores of problem behaviors. These were: unethical behavior, defiant-resistive, domineering-sadistic, heterosexual interest, hyperactive-expansive, poor emotional control, need approval and dependency, emotional distance, physical inferiority-timidity, schizoid withdrawal, bizarre speech and cognition, and bizarre action.

"Unethical behavior" measured the degree to which the adolescent displayed an absence of internalized codes of ethical social conduct, or an alienation from "middle class standards." The normative sample had a mean of 5.5 on this

factor. The items comprising the "defiant-resistive" factor encompassed behaviors indicating active resistance to adult intervention, and negation of adult wishes. The normal group had a mean of 10.6 on this factor. "Domineering-sadistic" measured the degree to which an adolescent aggressively dominates peers in a belittling or sadistic fashion. The mean for the normal group was 7.4. The degree to which an adolescent exhibited interest in peers of the opposite sex was measured by the "heterosexual interest factor." The mean for the normal group was 13.3. "Hyperactive expansive" measured the general pace of motoric activity and related mood. For this factor, the mean normal score was 15.7. A readiness or proneness to emotional upset or poorly controlled emotional response was measured by the "poor emotional control" factor. On this factor, the normal group obtained a mean of 11.8. "Need approval and dependency" tapped the extent to which the adolescent moved toward and sought out adults for support, approval, or some type of dependent relationship. The mean obtained here was 9.6. The extent to which an adolescent exhibited a lack of interpersonal emotional response was measured by the "emotional distance" factor. Here normals scored a mean of 8.8. The factor "physical inferiority-timidity" measured the degree to which the adolescent was

physically inferior and exhibited a related social reticence, if not fear. The normal group scored a mean of 8.8 on this factor. "Schizoid withdrawal" measured the degree to which the adolescent was oblivious of, (if not confused by) the world around him, and apparently preoccupied with his inner thoughts or fantasies. On this factor, the normal sample scored a mean of 8.0. Each item in the "bizarre speech and cognition" factor tapped some facet or facets of clearly aberrant speech and/or thinking. The mean for the normal group was 8.4. Finally, the "bizarre action" factor measured the extent to which the adolescent carried out strange and/or aberrant acts. The mean for the normal group was 6.8 on this factor (Spivak, Spotts, and Haimes, 1964).

Statistical Procedures

Factorial analyses of covariance were employed using the pre-test as the covariate on both sets of data. This technique was utilized because of its added power over other techniques. Should significance not have been found, all the scores would have been pooled together and a multivariate analysis of variance would have been performed. The objective of pre- and post-training tests was to use the variance of the scores as an objective basis for the interpretation of changes in attitudes or personality. Correlations were run between the two groups of raters to

see how similar to each other the ratings were. Newman-Keuls procedures were used in making pairwise comparisons among the revised cell means.

Significance of the Research

It is a well documented fact that adolescence is an extremely stressful period of development. During these years, both males and females undergo significant physical and emotional changes. Particularly disturbing during this period is coping with these changes. By instituting a jogging program for males, both emotionally disturbed and normal, it was hoped that those participants in the program would show significant psychological changes in the direction of positive mental health. Thus, it was hoped that such a program could possibly lessen the trauma experienced by adolescents during these years. Should such an hypothesis prove tenable, its ramifications in treating the emotionally disturbed and in helping normals adjust to adolescence would be far-reaching.

CHAPTER FOUR

RESULTS

The general hypothesis of the study was that a jogging program would bring about significant psychological changes in early adolescent males, both those in regular high schools and those in residential psychiatric treatment. The occurrence of changes in the residential students was tapped from several perspectives: their own, their recreational staff member's, and their teachers'. The students themselves filled out a form of the Junior-Senior High School Personality Questionnaire before and after the jogging program. Recreational staff and teachers filled out the Devereux Adolescent Behavior Rating Scale before and after the program. Changes in the high school students were assessed from their perspective only, using pre- and post-administrations of the Junior-Senior High School Personality Questionnaire.

Plan for Presentation of Results

The results pertaining to the Devereux Adolescent Behavior Rating Scale (DABS) will be presented first. Since both the teachers and the recreational staff rated the residential students at pre-test and post-test, the first

order of business will be to look at the agreement between these raters and their consistency over time as evidenced by the correlations. Next, basic statistics on the pre-test and post-test DABS scores will be presented and discussed. Then, the results of the analysis that will test the effectiveness of the jogging program will be set forth. One way analyses of covariance on the DABS post-test scores, with the pre-test on the same scale used as covariate, will be employed to test whether any DABS dimensions responded to the jogging program. The analysis of covariance will remove the extraneous variation in the post-test levels that can be attributed to the pre-test levels, thereby allowing a determination of the impact of the jogging program itself. In other words, to the degree that the post-test scores are predictable from the pre-test scores, that effect of the pre-test as covariate will be removed from the post-test scores before the relationship of the adjusted post-test scores to the treatment is assessed. Any significant treatment effect obtained will mean that jogging had a systematic effect on the students according to that particular rating group's assessment and in that particular DABS domain.

Altogether there will be 24 analyses of covariance summarized for the DABS data, since the instrument has 12

rating scales and since the teachers' ratings and the recreational staff member's ratings will be analyzed separately. Because the DABS data were collected for the students in residential psychiatric treatment and not for the regular high school students, the results on the DABS will pertain just to the residential subjects and can only be generalized to similarly disturbed adolescents.

After all the DABS results are presented and discussed, the results based on the High School Personality Questionnaire will be introduced. First, basic statistics for the pre-test and post-test HSPQ scores will be presented. Second, the results of the analysis carried out on the HSPQ data will be set forth and discussed.

While the DABS analysis will be based only on data concerning the residential students, the HSPQ analysis will be based on data from both the residential and regular high school students. The analysis designed to test the influence of the jogging program on HSPQ dimensions of personality functioning will, therefore, be somewhat more complex than the DABS analysis. For the HSPQ data, a two-way analysis of covariance will be employed, with two factors to be examined: the jogging program factor and the student status factor (regular high school or residential). Once again, the pre-test on the same scale will serve as

covariate. The analysis of covariance will adjust for the pre-test HSPQ levels preliminary to looking simultaneously at the effects of the jogging program and of residential/high school student status. As the HSPQ data were obtained directly from the students themselves, no inter-rater reliability can be involved. Also, since there were not two sets of raters as there were for the DABS, there will be no duplicate analyses. Altogether, for the HSPQ data, there will be 14 two-way analyses of covariance summarized, one on each of the 14 HSPQ factors.

Inter-rater Reliabilities and Pre-test to Post-test Consistency for the DABS Ratings

Each of the 30 residential students was rated on the DABS by two different types of raters, teachers and a recreation staff member, at two different times, before and after the jogging program. There are thus four scores on the DABS for each individual. The correlations between pairs of these scores can be used to determine: 1) the degree of inter-rater reliability between the teachers and recreation staff member, and 2) the degree of pre-test to post-test consistency in the scores.

Tables 1 and 2 present the correlations needed to examine inter-rater reliability. Table 1 presents the correlations between the teachers' and recreation staff

member's ratings of the students before the jogging program; Table 2 presents the correlations of the corresponding ratings made after the jogging program. The diagonal of each table contains the correlations of interest. For most of the DABS dimensions, at both pre-test and post-test, the ratings made by the teachers correlate significantly ($p < .05$) with the ratings made by the recreational staff member. These significant positive correlations indicate reasonably parallel responses to the DABS by the teachers and the recreation staff member in rating the students, and are consistent with previous studies evidencing inter-rater reliability for the instrument (Spivak, Spotts, & Haimes, 1964). Three scales were exceptions. On "emotional distance" and "bizarre action," there was no significant relationship between teachers' and recreational staff member's ratings at pre-test or at post-test. On the third, "bizarre speech and cognition" there was not a significant correlation at pre-test, although there was at post-test. Possibly these behaviors differentially manifest themselves in the two environments of school and dormitory, or perhaps the items on these scales have different meanings to the two groups of raters. Whatever the explanation, the lack of inter-rater consensus on these dimensions will have a bearing on interpreting any results to do with these dimensions.

TABLE 1

Correlations of Teachers' and Recreational Staff Member's Pre-Test Ratings of Residential Students on the DABS (N=30)

Recreational Staff's DABS Ratings	Teachers' DABS Ratings											
	1	2	3	4	5	6	7	8	9	10	11	12
1 Unethical	.33	.15	.27	.23	-.03	.09	-.19	.29	.26	.04	.10	.04
2 Defiant-resistive	.37	.43	.41	.12	-.05	.16	-.44	.11	-.39	-.25	.07	-.18
3 Domineering-sadistic	.57	.44	.55	.43	.09	.24	-.27	.33	-.40	.00	.32	.14
4 Heterosexual interest	.51	.28	.67	.80	.34	.29	-.17	.34	-.41	.13	.43	.29
5 Hyperactive expansive	.60	.49	.56	.44	.47	.45	-.09	.19	-.25	-.08	.18	.08
6 Poor emotional control	.43	.29	.30	.21	-.01	.38	-.05	.27	-.02	.03	.00	.03
7 Need approval and dependency	-.03	-.12	-.49	-.37	-.19	.02	.55	.15	.73	.28	.04	.31
8 Emotional distance	-.18	-.06	-.07	-.19	-.05	.11	.14	.02	.10	.20	-.17	.03
9 Physical inferiority- timidity	-.22	-.21	-.38	-.42	-.13	.00	.43	.01	.49	.11	-.20	.13
10 Schizoid withdrawal	-.07	-.03	-.19	-.19	.02	.28	.37	.04	.20	.42	-.09	.06
11 Bizarre speech and cognition	.01	.18	-.05	-.17	-.09	.30	.19	.43	.26	.50	.02	.18
12 Bizarre action	.09	.11	-.08	-.14	.10	.33	.26	.03	.20	.34	.03	.06

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Cutoffs for one-tailed tests: .306 ($p < .05$), .423 ($p < .01$)

TABLE 2

Correlations of Teachers' and Recreational Staff Member's Post-Test Ratings of Residential Students on the DABS (N=30)

Recreational Staff's DABS Ratings	Teachers' DABS Ratings											
	1	2	3	4	5	6	7	8	9	10	11	12
1 Unethical	.6	.40	.49	.49	.21	.15	-.11	-.04	-.03	-.08	.39	.18
2 Defiant-resistive	.63	.68	.48	.39	.30	.52	-.13	.26	-.28	.21	.46	.34
3 Domineering-sadistic	.49	.56	.54	.40	.13	.23	-.31	.23	-.47	-.06	.46	.21
4 Heterosexual interest	.43	.29	.47	.68	.25	.20	-.06	.16	-.19	.09	.57	.46
5 Hyperactive expansive	.64	.44	.37	.37	.46	.28	-.11	-.35	-.36	-.30	.30	.09
6 Poor emotional control	.33	.44	.25	.08	.06	.36	-.14	.03	-.14	.00	.09	.08
7 Need approval and dependency	-.34	-.15	-.49	-.24	-.12	-.02	.51	.10	.56	.12	.01	.18
8 Emotional distance	.28	.24	.09	.01	.34	.44	.11	-.02	-.01	.18	-.04	.05
9 Physical inferiority-timidity	-.07	.05	-.28	-.19	.20	.36	.58	.00	.38	.37	-.08	.17
10 Schizoid Withdrawal	.28	.47	.07	.03	.22	.65	.16	.22	-.05	.40	.14	.20
11 Bizarre speech and cognition	.54	.53	.60	.55	.48	.65	-.03	.07	-.40	.24	.40	.34
12 Bizarre action	.37	.61	.20	.06	.36	.66	-.02	.20	-.13	.25	.16	.18

Cutoffs for one-tailed tests: .306 ($p < .05$), .423 ($p < .01$)

Another approach to assessing the reliability of the DABS dimensions is to look at the consistency of the ratings of the same persons by the same rater at two separate points in time. Table 3 shows the correlations of teachers' pre-test and post-test ratings of the residential students. Table 4 shows the same for the recreational staff member's ratings. Once again, the diagonals contain the correlations of interest. Ideally, test-retest reliabilities are done with a minimum of intervening activities or time being allowed since intervening events or natural growth could reduce the correlation between scores and lead to an underestimate of an instrument's reliability. In this case, all the correlations are quite likely underestimates because, for half the subjects, the jogging program was an intervening event which may have affected the score. Despite being underestimates the correlations are still quite strong, especially the correlations for the teachers' ratings, all of which are significant at $p < .01$. Even given the possible effects of the jogging program, teachers tended to rate high at post-test those whom they had rated high at pre-test and to rate low at post-test those whom they had rated low at pre-test. The consistency of the teachers' ratings over time supports an assertion of the test-retest reliability of the DABS dimensions (Spivak, Spotts, & Haimes, 1964).

TABLE 3

Correlations of Teachers' Pre-Test and Post-Test Ratings of Residential Students on the DABS (N= 30)

Teachers' Post-test DABS Ratings	Teachers' Pre-test DABS Ratings											
	1	2	3	4	5	6	7	8	9	10	11	12
1 Unethical	.86	.42	.58	.61	.47	.38	-.01	.10	-.41	-.21	.45	.31
2 Defiant-resistive	.75	.73	.61	.39	.45	.57	-.05	.28	-.33	.04	.42	.22
3 Domineering-sadistic	.53	.51	.91	.67	.53	.47	-.19	.12	-.66	-.12	.42	.23
4 Heterosexual interest	.64	.38	.79	.92	.59	.53	.17	.28	-.32	.13	.71	.56
5 Hyperactive expansive	.44	.39	.59	.64	.92	.60	.33	-.04	-.31	.04	.48	.34
6 Poor emotional control	.59	.50	.54	.48	.61	.75	.34	.17	-.13	.31	.48	.35
7 Need approval and dependency	.11	-.10	-.04	.15	.41	.26	.87	-.17	.30	.14	.29	.40
8 Emotional distance	-.02	.10	-.12	-.09	-.12	.01	.04	.46	.37	.47	.26	.18
9 Physical inferiority-timidity	-.21	-.34	-.63	-.38	-.25	-.26	.40	-.04	.82	.16	.00	.13
10 Schizoid withdrawal	.25	.16	.16	.16	.18	.38	.40	.42	.29	.70	.39	.39
11 Bizarre speech and cognition	.72	.44	.50	.62	.50	.50	.28	.25	.06	.14	.86	.66
12 Bizarre action	.51	.23	.29	.51	.45	.44	.49	.26	.18	.38	.80	.71

Cutoffs for one-tailed tests: .306 ($p < .05$), .423 ($p < .01$)

TABLE 4

Correlations of Recreational Staff's Pre-Test and Post-Test Ratings of Residential Students on the DABS (N=30)

Recreational Staff's Post-test DABS Ratings	Recreational Staff's Pre-test DABS Ratings											
	1	2	3	4	5	6	7	8	9	10	11	12
1 Unethical	.67	.47	.80	.60	.35	.28	-.46	-.30	-.47	-.37	-.32	-.29
2 Defiant-resistive	.42	.61	.79	.40	.44	.57	-.27	-.26	-.36	-.18	-.10	-.01
3 Domineering-sadistic	.52	.54	.85	.43	.28	.38	-.47	-.40	-.55	-.42	-.28	-.33
4 Heterosexual interest	.50	.30	.73	.80	.36	.25	-.35	-.33	-.54	-.39	-.25	-.21
5 Hyperactive expansive	.23	.33	.46	.47	.60	.19	-.38	-.39	-.47	-.32	-.39	-.21
6 Poor emotional control	.37	.64	.62	.21	.34	.68	-.21	-.02	-.17	-.03	-.06	.09
7 Need approval and dependency	-.07	-.18	-.14	-.21	-.02	.11	.65	.06	.36	.26	.20	.32
8 Emotional distance	.08	.28	.29	-.02	.35	.49	.16	.09	.17	.28	.19	.28
9 Physical inferiority-timidity	.08	-.15	-.11	-.32	.09	.23	.46	.30	.59	.45	.28	.48
10 Schizoid withdrawal	-.01	.23	.24	-.11	.13	.46	.29	.14	.17	.54	.36	.52
11 Bizarre speech and cognition	.19	.36	.57	.39	.39	.43	-.22	-.09	-.14	-.04	-.03	.07
12 Bizarre action	.18	.31	.44	.01	.28	.40	-.10	-.05	-.02	.16	-.04	.27

Cutoffs for one-tailed tests: .306 ($p < .05$), .423 ($p < .01$)

The correlations of the recreational staff member's ratings at pre-test and post-test, while generally less substantial than the teachers', are positive and significant at $p < .01$ for all but three of the DABS dimensions. The three DABS factors unreliable by this test are the same ones which were unreliable by inter-rater correlation: "emotional distance," "bizarre speech and cognition," and "bizarre action." Hence, it seems that the recreational staff member's ratings on these three dimensions are called into question because their ratings are inconsistent over time and inconsistent with those of the group of raters who were consistent over time.

The pattern of generally stronger correlations over time for the teachers than for the recreational staff member raises some interesting possibilities to be explored and discussed further as the analysis proceeds. The stronger correlations for teachers could mean: 1) that the teachers were more reliable in their use of the instrument, or 2) that the teachers may have picked up less change engendered by the jogging program and for that reason may have produced more similar pre-test and post-test ratings than did the recreational staff member. A comparison of the analysis of covariance results for the two groups of

raters will provide the appropriate exploration of these possibilities.

Devereux Adolescent Behavior Rating Scale (DABS)--Basic Statistics

Table 5 presents the means and standard deviations for the pre-test and post-test DABS scores as rated by the teachers. Table 6 presents the same statistics on DABS ratings by the recreational staff member. The means and standard deviations have been calculated from the raw scores on the 12 DABS factors.

In examining these statistics, the most interesting feature appears to be the unexpected differences in the pre-test ratings when jogging and non-jogging students are contrasted. Since the students were randomly assigned to the jogging or non-jogging categories, the two groups were drawn from the same subject pool and might have been expected to show greater similarity at pre-test than they do. To determine whether and to what extent these pre-test between-group differences were significant, a one way analysis of variance was run on the pre-test scores. The results of these analyses of variance are contained in the Appendix. They will be summarized here.

These analyses indicate that the control group and the group of joggers did differ significantly on a number of

TABLE 5

Basic Statistics for the Teachers' Ratings of the DABS Factors

DABS Behavior Factor	Regression Coefficient ^a	Joggers (N=15)			Non-Joggers (N=15)		
		Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean	Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean
1 Unethical	.8790	8.27 (2.94) ^b	10.13 (3.23)	12.65	14.00 (4.47)	15.47 (4.75)	12.95
2 Defiant-resistive	.7286	9.87 (3.31)	10.73 (3.31)	12.38	13.73 (3.90)	14.80 (4.31)	13.64
3 Domineering-sadistic	.8919	10.80 (3.55)	11.73 (3.56)	13.75	15.33 (5.62)	15.07 (5.87)	13.05
4 Heterosexual interest	.8673	12.20 (3.01)	14.80 (3.21)	18.64	21.07 (9.38)	21.27 (9.51)	17.47
5 Hyperactive expansive	.9031	15.00 (3.46)	14.73 (3.08)	16.69	19.33 (6.83)	20.47 (6.23)	18.52
6 Poor emotional control	.6594	13.93 (5.24)	14.20 (4.18)	16.00	19.40 (3.89)	19.87 (3.36)	18.07
7 Need approval and dependency	.8823	12.13 (4.36)	11.80 (3.69)	12.48	13.67 (4.27)	13.73 (4.91)	13.05
8 Emotional distance	.4785	11.93 (4.56)	14.20 (3.45)	14.52	13.27 (4.68)	12.60 (5.90)	12.28
9 Physical inferiority-timidty	.7132	17.73 (7.99)	15.87 (6.31)	14.83	14.80 (9.67)	14.47 (9.03)	15.52
10 Schizoid withdrawal	.7150	10.07 (3.71)	9.87 (3.74)	10.18	10.93 (3.97)	11.60 (3.92)	11.29
11 Bizarre speech and cognition	1.089	8.87 (2.13)	8.07 (1.44)	9.19	10.93 (3.69)	11.47 (5.00)	10.35
12 Bizarre action	.5739	7.93 (4.01)	7.00 (1.69)	7.58	9.93 (3.94)	9.67 (3.96)	9.10

^aThe numbers in this column are, for each factor, the coefficient of the pre-test scores in a regression of the post-test scores on the pre-test scores for all of the subjects (N=30). It can be calculated as $r \times (SD_2)/(SD_1)$, where r is the correlation between pre-test and post-test for all subjects, SD_1 is the standard deviation of the pre-test scores, and SD_2 is the standard deviation of the post-test scores.

The regression coefficient can be used to calculate the adjusted post-test means as follows: Adjusted post-test cell mean = Unadjusted post-test cell mean - Regression coefficient (Pre-test cell mean - Pre-test overall mean).

^bThe numbers in parentheses are standard deviations.

TABLE 6

Basic Statistics for the Recreational Staff Member's Ratings of the DABS Factors

DABS Behavior Factor	Regression Coefficient ^a	Joggers (N=15)			Non-Joggers (N=15)		
		Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean	Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean
1 Unethical	.7268	8.00 (1.69) ^b	7.93 (2.05)	8.54	9.67 (4.39)	11.67 (4.03)	11.06
2 Defiant-resistive	.7625	10.80 (2.43)	9.20 (1.52)	9.71	12.13 (2.39)	13.40 (2.80)	12.89
3 Domineering-sadistic	.9683	8.93 (1.03)	10.07 (1.53)	11.98	12.87 (4.27)	13.60 (5.19)	11.69
4 Heterosexual interest	.9542	10.93 (2.19)	11.87 (1.19)	13.05	13.40 (4.12)	15.67 (5.15)	14.49
5 Hyperactive expansive	.5931	16.80 (2.08)	16.80 (2.15)	17.59	19.47 (2.23)	19.80 (1.90)	19.01
6 Poor emotional control	.4630	13.67 (3.94)	14.07 (0.96)	14.86	17.07 (3.17)	17.53 (2.75)	16.74
7 Need approval and dependency	.3173	11.00 (2.78)	11.13 (1.25)	11.12	10.93 (3.04)	11.27 (1.58)	11.28
8 Emotional distance	.0868	12.87 (1.85)	10.20 (1.27)	10.17	12.07 (2.40)	12.87 (1.81)	12.90
9 Physical inferiority-timidity	.4302	16.53 (4.76)	11.87 (3.34)	11.30	13.87 (5.13)	14.60 (3.58)	15.17
10 Schizoid withdrawal	.4390	10.07 (1.98)	9.00 (1.56)	9.12	10.60 (3.09)	11.07 (2.09)	10.95
11 Bizarre speech and cognition	.0273	11.00 (3.11)	8.80 (1.08)	8.81	10.27 (2.25)	11.60 (2.23)	11.59
12 Bizarre action	.2987	9.00 (1.93)	8.93 (1.39)	9.08	10.00 (3.05)	12.60 (2.77)	12.45

^aThe numbers in this column are, for each factor, the coefficient of the pre-test scores in a regression of the post-test scores on the pre-test scores for all of the subjects (N=30). It can be calculated as $rs(SD_2)/(SD_1)$, where r is the correlation between pre-test and post-test for all subjects, SD_1 is the standard deviation of the pre-test scores, and SD_2 is the standard deviation of the post-test scores.

The regression coefficient can be used to calculate the adjusted post-test means as follows: Adjusted post-test cell mean = Unadjusted post-test cell mean - Regression coefficient (Pre-test cell mean - Pre-test overall mean).

^bThe numbers in parentheses are standard deviations.

the factors prior to the jogging program. For four of the factors--"domineering-sadistic," "heterosexual interest," "hyperactive expansive," and "poor emotional control," the two groups differed significantly at the .05 level according to both the teachers' ratings and the recreational staff member's ratings. In addition, by the teachers' ratings, significant differences at the .01 level also appear on two other factors, "unethical" and "defiant-resistive."

These differences are somewhat disturbing, because it is possible that differences between the groups at post-test will not be due to the jogging program, but might simply reflect pre-existing differences between the two groups. These differences would pose a very serious problem if the post-test means were to be contrasted by an analysis of variance procedure. Instead an analysis of covariance approach has been chosen to take account of the effects of the pre-test scores on the post-test scores. To the extent that the effects of jogging and the pre-test scores are purely additive (i.e., without interaction), the pre-test differences that exist will be controlled for by the analysis of covariance and will not affect the assessment of the effect of the jogging program. However, if there were an interaction between pre-test and treatment,

the analysis of covariance could still lead to an inaccurate assessment of the effects of jogging. This concern is heightened whenever the pre-test scores are significantly different. The bias imparted to the analysis of covariance results would be larger, the larger the differences between the pre-test scores. Hence, the analysis of covariance results to do with the above-mentioned DABS factors that showed significant pre-test differences will be examined cautiously. In cases of significant analysis of covariance results, an added regression procedure will be used to take account of any interaction between pre-test and jogging.

One-Way Analysis of Covariance: Devereux Adolescent Behavior Rating Scale (DABS)

As has been said the primary method for investigating the extent to which jogging brought about psychological changes as measured by the DABS was an analysis of covariance on the DABS post-test scores, using the pre-test DABS scores as the covariate. The ANOVA subprogram of the Statistical Package for the Social Sciences (SPSS), which is capable of handling analysis of covariance designs, was the procedure followed (Nie et al., 1975).

The analysis of covariance carried out by the computer package operates by first using regression procedures to calculate the degree to which the post-test scores are

predictable from the pre-test scores. Then it uses that information to adjust the post-test scores for their pre-test levels, in essence removing the effect of the pre-test scores. Although the SPSS program does not print out the adjusted post-test scores, it is possible to obtain them following Winer's formula (Winer, 1971, p. 785). To make the analysis of covariance procedure clearer, these adjusted post-test scores have been calculated and are shown in Tables 5 and 6.

What do they mean? The difference between the unadjusted post-test means of joggers and non-joggers for any of the scales may be viewed as consisting of two parts. Part of the difference is attributable to the fact that these groups differed on their pre-test scores, and that the pre-test scores have a relationship to the post-test scores. In other words, part of the difference between the groups could have been predicted from their pre-test scores. The rest of the difference (that part not accounted for, or predicted by, the pre-test scores) is presumably due to other factors which have differentially affected the two groups, in this case the jogging program.

The adjustment process produces adjusted post-test means that have the same average value as the unadjusted post-test means. The direction of adjustment is always

toward, and sometimes beyond, the overall post-test mean. The amount of adjustment depends on how much of a difference their pre-test scores would have predicted. After the adjustment, the difference that exists between the adjusted post-test means reflects only the difference attributable to the jogging program. Within the analysis of covariance procedure, an analysis of variance is then performed on the adjusted post-test means to see whether these differences are significant.

The results of the DABS analysis of covariance based on the recreational staff member's ratings are stronger than those based on the teachers' ratings. That is, the effects of jogging appear much broader when one examines the results for the recreational staff member's ratings. All the significant findings from the analysis of both sets of ratings seem consistent with the hypothesis that jogging leads toward healthier psychological functioning.

Turning first to the analysis of covariance results on the teachers' DABS ratings, jogging appears to have had a significant effect for two of the 12 DABS factors, "hyperactive expansive" and "poor emotional control." The analysis of covariance summary for the "hyperactive expansive" factor and that for "poor emotional control" are presented in the Appendix. Both of these factors have

been identified as possible problems since there were pre-test differences between joggers and non-joggers. An extended examination of whether the analysis of covariance results are valid will be done after the analysis of covariance results on teachers and recreational staff are presented.

In these and all subsequent analysis of covariance summary tables for the DABS, the first column reflects the effect of jogging after controlling for the effect of the covariate (the pre-test DABS score) on the dependent variable (the post-test DABS score). That is, it presents how much additional variation in the post-test scores is explained by jogging vs. non-jogging status, after allowing for the pre-test scores as a source of variation. The size of the F ratio, the last column, indicates that jogging has an effect on this factor which is significant ($p < .05$).

What is the direction of this effect? Referring to Table 5, the adjusted post-test mean for non-joggers on this factor is 18.52; for joggers, the adjusted post-test mean is only 16.69. This comparison indicates that the effect of jogging is to reduce hyperactivity.

As far as the effects of jogging on the factor "poor emotional control" are concerned, Appendix C indicates that, after allowing for the variation attributable to the

pre-test scores, jogging vs. non-jogging status explained enough additional variation so that jogging may be regarded as significant ($p < .05$). Again, the adjusted post-test means in Table 5 make it clear that jogging is associated with better emotional control.

Table 7 summarizes the analyses of covariance based on the teacher ratings for each of the 12 factors of the DABS. It is actually a grand summary of the analysis of covariance presented in Appendix C. Comparison of the row of Table 7 which summarizes the analysis of covariance for the factor "hyperactive expansive" (the fifth row) with Appendix C will illustrate what data is taken from each column in constructing Table 7. The entry in the fifth row of Table 7 presents the F-statistic for the additional variation in the hyperactive expansive post-test score explained by jogging vs. non-jogging status. This is identical to the number presented in the third column of the Appendix. F-statistics, taken from the third column of the appropriate analysis of covariance, are presented in Table 7 for all 12 factors of the DABS. Table 7 thus allows an overview of all the results on the teachers' DABS ratings.

Turning to the analyses of covariance based on the recreational staff member's ratings, Table 8 (analogous to

TABLE 7

Overview of the Analyses of Covariance of Teachers' Ratings
of the DABS Factors

DABS Behavior Factor	F Ratio for Jogging
1) Unethical	< 1
2) Defiant-resistive	3.16
3) Domineering-sadistic	1.02
4) Heterosexual interest	1.82
5) Hyperactive expansive	7.19*
6) Poor emotional control	4.89*
7) Need approval and dependency	< 1
8) Emotional distance	2.10
9) Physical inferiority-timidity	< 1
10) Schizoid withdrawal	1.21
11) Bizarre speech and cognition	3.59
12) Bizarre action	2.64

*p < .05

TABLE 8

Overview of the Analyses of Covariance of Recreational
Staff's Ratings of the DABS Factors

DABS Behavior Factor	F Ratio for Jogging
1) Unethical	8.31**
2) Defiant-resistive	24.67***
3) Domineering-sadistic	< 1
4) Heterosexual interest	3.00
5) Hyperactive expansive	5.95*
6) Poor emotional control	11.25**
7) Need approval and dependency	< 1
8) Emotional distance	25.26***
9) Physical inferiority-timidity	24.67***
10) Schizoid withdrawal	10.62**
11) Bizarre speech and cognition	18.65***
12) Bizarre action	18.42***

* $p < .05$

** $p < .01$

*** $p < .001$

Table 7 for the teachers' ratings) provides an overview of all 12 analysis of covariance summary tables. The complete analysis of covariance summary tables for all of the factors are presented in Appendix D.

As shown in Table 8, the recreational staff member's DABS ratings show a very strong pattern of effects brought about by the jogging program. At a .001 level of significance, the staff member rated those students who had participated in the jogging program to be less defiant and resistive, less emotionally distant, less timid, and less bizarre in speech and action at the conclusion of the program than students who had been in the control group.¹ (Again, all of these findings are with pre-test levels controlled for. Also, all statements of the direction of the effect of jogging are made with the adjusted post-test means shown in Table 6 in mind.) Other results were lower levels of unethical behavior and lower levels of withdrawn behavior noted among those who had jogged than among those who had not jogged ($p < .01$). Additionally, the recreational staff member's ratings echo those of the teachers. Students who had jogged were viewed as being less hyperactive ($< .05$)

¹ "Emotional distance," "bizarre speech and cognition" and "bizarre action" are the factors for which the inter-rater reliability and the test-retest reliability were very low.

and better controlled emotionally ($p < .01$) than those who had not jogged.

Some of these results must be treated with caution. In particular, the significant effects of jogging on the factors "hyperactive expansive" and "poor emotional control," as assessed by both teachers and recreational staff member, can be called into question because of significant pre-test differences between joggers and non-joggers. Are the post-test differences between these groups due to jogging, or to their pre-test differences? As mentioned in the previous section, the analysis of covariance results can be accepted if there is no interaction between the covariate and the jogging factor. To test whether such an interaction exists, for both of these variables multiple regressions were run. The appropriate regression has the post-test score as the dependent variable, with the covariate (pre-test score), the factor (jogging) and an interaction term (the covariate times the factor) as independent variables. Since teachers' ratings and recreational staff member's ratings are analyzed separately, a total of four regressions were run. On "hyperactive expansive" the results indicated that the interaction between jogging and the pre-test scores was insignificant, so the analysis of covariance results (that jogging lessens hyperactive expansive behavior by both

rating groups) can be accepted. However, for the recreational staff member's ratings of the factor "poor emotional control," the interaction was significant. Furthermore, in this case, once the interaction is taken into account, the effect of jogging is no longer significant at the .05 level (it is significant at the .10 level, however). Teachers' ratings of "poor emotional control" showed no significant interaction between pre-test and treatment so their analysis of covariance result stands. Thus, the degree to which jogging can be said to have improved emotional control depends on whose ratings are used. Jogging tends to be associated with better emotional control by recreational staff member's ratings; jogging definitely improves the emotional control observed by teachers.

Summary of the DABS Results

Jogging has been found to have several effects upon the psychological functioning of adolescent students in residential treatment.

The strongest results ($p < .001$) on those DABS factors that had previously evidenced reliability were for "defiant-resistive" and "physical inferiority-timidity." Jogging seems to have lowered the defiant and resistive manner of these boys as their recreational staff member perceived them. Jogging also led to ratings indicating less timidity or physical inferiority.

There were also very strong results ($p < .001$) for the three factors which had evidenced low inter-rater reliability and low test-retest reliabilities. It is possible that these still deserve consideration since low test-retest reliabilities may be at least partially explained by changes in scores due to jogging. Inter-rater reliability poses a more serious problem. Apparently the teachers and recreational staff either did not agree on what these factors meant or did not have access to the same observational environments. Nonetheless, whatever the recreational staff was responding to could still be meaningful categories of behavior. If one were to allow that possibility, the results would say that jogging had the effect of decreasing bizarreness (in speech and action) and decreasing emotional distance as the recreational staff member understands these variables.

Two more results, on reliably rated factors, were significant at $p < .05$. When residential students jog, their unethical behavior and their degree of schizoid withdrawal diminish by recreational staff member's ratings.

Lastly, on two factors which were reliably rated and had significant analysis of covariance effects for jogging, but also significant pre-test differences, the regression analysis determined that the analysis of covariance results

were largely sustained. By teachers' and recreational staff member's ratings, jogging decreases hyperactive expansive type behavior. Emotional control by recreational staff member's ratings shows a trend toward improving; by teachers' ratings jogging definitely increases the residential students' emotional control.

High School Personality Questionnaire (HSPQ)--Basic Statistics

Raw scores on the HSPQ were all converted to standardized scores called sten scores. The normative sample of teenagers on which the transformation is based had a mean sten score of 5.5, a range from 1-10 and a standard deviation of 1.5 (Cattell & Cattell, 1969). The means and standard deviations for the residential student sample's HSPQ sten scores (pre-testing and post-testing) are presented in Table 9. Table 10 contains the same basic statistics for the regular high school students.

There are some large differences in the pre-test scores of the four groups of students represented here: jogging residential students, non-jogging residential students, jogging high school students, and non-jogging high school students. To determine the significance of these differences a two-way analysis of variance was run on the HSPQ pre-test scores. Table 11 summarizes the 14 analyses

TABLE 9

Basic Statistics for the HSPQ Scores of the Residential Students

HSPQ Scale	Regression Coefficient ^a	Joggers (N=15)			Non-Joggers (N=15)		
		Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean	Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean
A Reserved vs. Warmhearted	.156	4.33 (1.35) ^b	5.20 (1.37)	5.28	4.20 (1.08)	4.13 (1.81)	4.23
B Dull vs. Bright	.402	4.80 (0.78)	6.20 (1.01)	6.44	5.07 (1.03)	5.07 (1.45)	5.20
C Affected by Feelings vs. Emotionally Stable	.435	5.13 (2.00)	4.80 (1.86)	5.12	5.87 (1.55)	4.80 (1.66)	4.80
D Undemonstrative vs. Excitable	.237	7.13 (1.13)	5.20 (1.01)	5.01	6.73 (0.88)	7.13 (1.89)	7.03
E Obedient vs. Assertive	.290	5.27 (1.75)	5.87 (0.64)	5.99	4.87 (1.85)	5.33 (1.92)	5.56
F Sober vs. Enthusiastic	.334	4.00 (2.17)	6.20 (1.82)	6.77	6.07 (1.44)	5.27 (1.58)	5.15
G Disregards Rules vs. Conscientious	.258	4.27 (1.16)	5.27 (1.44)	5.58	5.73 (2.12)	5.80 (1.86)	5.73
H Shy vs. Adventurous	.403	5.13 (2.23)	4.87 (1.25)	5.11	5.73 (1.16)	5.00 (2.00)	4.99
I Tough-Minded vs. Tender-Minded	.791	5.27 (0.96)	5.20 (1.61)	5.30	6.30 (2.04)	6.27 (2.34)	5.64
J Zestful vs. Circumspect Individualism	.270	7.20 (1.27)	6.00 (1.00)	5.85	6.67 (1.45)	5.13 (1.25)	5.12
O Self-Assured vs. Apprehensive	.529	6.20 (1.82)	5.93 (2.02)	5.57	5.87 (1.46)	5.13 (1.73)	4.94
Q ₂ Socially Group-Dependent vs. Self-Sufficient	.420	6.73 (1.34)	5.20 (1.37)	4.76	5.87 (1.60)	5.07 (1.67)	4.99
Q ₃ Uncontrolled vs. Controlled	.238	5.27 (1.62)	4.20 (1.94)	4.21	5.07 (1.39)	5.27 (1.44)	5.32
Q ₄ Relaxed vs. Tense	.271	5.13 (1.36)	6.87 (2.03)	7.10	6.73 (1.79)	6.20 (1.61)	5.99

^aThe numbers in this column are, for each factor, the coefficient of the pre-test scores in a regression of the post-test scores on the pre-test scores for all of the subjects (N=60). They can be used to calculate the adjusted post-test means as follows: Adjusted post-test cell mean = Unadjusted post-test cell mean - Regression Coefficient (Pre-test cell mean - Pre-test overall mean).

^bNumbers in parentheses are standard deviations.

TABLE 10

Basic Statistics for the HSPQ Scores of the High School Students

HSPQ Scale	Regression Coefficient ^a	Joggers (N=15)			Non-Joggers (N=15)		
		Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean	Pre-Test Mean	Post-Test Mean	Adjusted Post-Test Mean
A Reserved vs. Warmhearted	.156	5.00 (1.31) ^b	5.87 (1.06)	5.85	5.87 (1.30)	5.27 (1.22)	5.11
B Dull vs. Bright	.402	5.87 (1.89)	6.73 (1.44)	6.54	5.87 (1.25)	5.20 (1.27)	5.01
C Affected by Feelings vs. Emotionally Stable	.435	6.67 (1.88)	6.33 (1.72)	5.98	5.80 (1.21)	6.07 (1.16)	6.10
D Undemonstrative vs. Excitable	.237	5.53 (1.19)	6.87 (1.60)	7.06	5.87 (1.60)	6.73 (1.83)	6.84
E Obedient vs. Assertive	.290	6.53 (1.30)	7.13 (1.25)	6.88	6.00 (1.46)	5.20 (1.21)	5.10
F Sober vs. Enthusiastic	.334	6.73 (1.87)	6.20 (1.97)	5.86	6.07 (2.12)	5.93 (1.44)	5.81
G Disregards Rules vs. Conscientious	.258	6.13 (1.96)	5.87 (1.64)	5.70	5.73 (1.67)	6.20 (1.42)	6.13
H Shy vs. Adventurous	.403	6.07 (1.94)	7.73 (1.28)	7.59	5.93 (1.71)	6.07 (1.39)	5.98
I Tough-Minded vs. Tender-Minded	.791	5.07 (1.87)	5.00 (2.04)	5.26	5.07 (0.70)	5.87 (1.48)	6.13
J Zestful vs. Circumspect Individualism	.270	5.67 (1.23)	5.00 (2.27)	5.26	7.00 (0.93)	5.07 (2.02)	4.97
O Self-Assured vs. Apprehensive	.529	5.07 (1.53)	4.67 (1.63)	4.91	4.93 (1.39)	4.80 (1.01)	5.11
Q ₂ Socially Group-Dependent vs. Self-Sufficient	.420	5.27 (1.53)	5.33 (1.54)	5.50	4.87 (0.74)	4.93 (1.44)	5.27
Q ₃ Uncontrolled vs. Controlled	.238	5.13	5.60	5.64	5.73	5.13	5.03
Q ₄ Relaxed vs. Tense	.271	5.80 (2.18)	4.67 (1.63)	4.71	6.20 (1.37)	6.13 (1.64)	6.07

^aThe numbers in this column are, for each factor, the coefficient of the pre-test scores in a regression of the post-test scores on the pre-test scores for all of the subjects (N=60). They can be used to calculate the adjusted post-test means as follows: Adjusted post-test cell mean = Unadjusted post-test cell mean - Regression coefficient (Pre-test cell mean - Pre-test overall mean).

^bNumbers in parentheses are standard deviations.

TABLE 11

Overview of the Analyses of Variance of the HSPQ Scales Before a Jogging Program

HSPQ Scale	F Ratios		
	Group (Residential vs. High School)	Treatment (Jogging vs. Non-Jogging)	Group X Treatment
A Reserved vs. Warmhearted	12.779***	1.262	2.347
B Dull vs. Bright	7.719**	0.158	0.158
C Affected by Feelings vs. Emotionally Stable	2.838	0.023	3.377
D Undemonstrative vs. Excitable	15.187***	0.011	1.342
E Obedient vs. Assertive	8.377**	1.267	0.026
F Sober vs. Enthusiastic	7.587**	1.990	7.587*
G Disregards Rules vs. Conscientious	4.193*	1.369	4.193*
H Shy vs. Adventurous	1.478	0.251	0.619
I Tough-Minded vs. Tender-Minded	2.935	1.438	1.438
J Zestful vs. Circumspect Individualism	3.555	1.580	8.602**
O Self-Assured vs. Apprehensive	6.595*	0.336	0.062
Q ₂ Socially Group-Dependent vs. Self-Sufficient	12.609***	3.325	0.451
Q ₃ Uncontrolled vs. Controlled	0.372	0.209	0.837
Q ₄ Relaxed vs. Tense	0.023	5.139*	1.850

* $p < .05$

** $p < .01$

*** $p < .001$

The respective means can be found in Table 9. All of the high school students' means were higher than those found in the residential population.

of variance, one for each HSPQ scale. The complete analysis of variance summary tables can be found in the Appendix.

Table 11 is similar to Tables 7 and 8, which gave an overview of the analysis of covariance results for the DABS. However, it is somewhat more complicated than those tables, in that the analyses of variance being summarized involve two factors, Group (Residential vs. High School) and Treatment (Joggers vs. Non-Joggers). Table 11 presents three F ratios for each scale of the HSPQ. The first assesses whether the factor "Group" accounts for a significant part of the variation in pre-test scores, the second assesses whether the factor "Treatment"² accounts for a significant part of the variation, and the third measures the significance of the "Group" X "Treatment" interaction. For each scale, these same F ratios can also be found in the final column of the appropriate analysis of variance summary table.

For eight of the fourteen scales, significant differences were found between the pre-test scores of the residential students and the high school students. These differences are not surprising, and they do not threaten to impair the assessment of the effects of jogging, since

² It should be kept in mind that, since the scores being analyzed here are pre-test scores, the treatment has not yet occurred.

residential vs. high school status was included explicitly as a factor in the two-way analysis of covariance done on the post-test scores.

Significant differences between the joggers and non-joggers or a significant interaction between jogging vs. non-jogging status and residential vs. high school status on the pre-test could affect the accuracy of the analysis of covariance, however. One significant main effect of jogging was found. On Scale Q_4 (Relaxed vs. Tense), non-joggers scored as significantly more tense than joggers before the jogging program began. Significant interactions between jogging vs. non-jogging status and residential vs. high school status were found on three scales: F (Sober vs. Enthusiastic), G (Disregards Rules vs. Conscientious), and J (Zestful vs. Circumspect Individualism). In order to make the patterns of these interactions clearer, the pre-test cell means for each of these three scales are presented in Table 12 (for Scale F), Table 13 (for Scale G), and Table 14 (for Scale J).

The patterns for Scales F and G are similar. In each case, the high school students scored significantly higher (i.e., more enthusiastic and more conscientious) than the residential students. Also in each case, within the group of high school students, joggers scored higher than

TABLE 12

Pre-Test Means for the HSPQ Scale "Sober vs. Enthusiastic"

		Treatment	
Group		Joggers	Non-Joggers
	Residential	4.00	6.07
	High School	6.73	6.07

TABLE 13

Pre-Test Means for the HSPQ Scale "Disregards Rules vs. Conscientious"

		Treatment	
Group		Joggers	Non-Joggers
	Residential	4.27	5.73
	High School	6.13	5.73

TABLE 14

Pre-Test Means for HSPQ Scale "Zestful vs. Circumspect Individualism"

		Treatment	
Group		Joggers	Non-Joggers
	Residential	7.20	6.67
	High School	5.67	7.00

non-joggers; within the group of residential students, it was the non-joggers who scored higher. For Scale J the pattern is different. For this scale, the difference between the high school students and residential students on the pre-test was not significant. However, residential joggers rated themselves as more zestful than residential non-joggers, while for high school students, non-joggers rated themselves as more zestful than joggers.

The HSPQ analyses of covariance will adequately control for these pre-test differences if there are no interactions between the covariate (pre-test scores) and the factors (jogging vs. non-jogging and residential vs. high school). If the analysis of covariance results are called into question by these pre-test differences, a multiple regression will have to be used to determine whether the analysis of covariance results are valid or not.

Two-Way Analysis of Covariance: High School Personality Questionnaire (HSPQ)

The general hypothesis that jogging would have positive psychological effects on personality was tested by an analysis of covariance on the HSPQ post-test scores. This analysis of covariance allowed the effect of the pre-treatment level of adjustment to be held constant while testing the effect of the treatment itself on the post-treatment level

of adjustment. In the two-way analysis of covariance, the pre-test HSPQ score was used as the covariate, and jogging vs. non-jogging and residential student vs. regular student were the categorical factors.

As predicted, jogging appears to have several effects upon normal and residential adolescents' personality functioning. An overview of these results appears in Table 15. The fourteen individual analysis of covariance summary tables, on which Table 15 is based, are presented in Table 16. When a conservative .01 significance cut-off is used, four of the 14 HSPQ personality scales are significantly related to jogging either directly or in interaction with group membership. When a less conservative .05 level is employed, variance on seven more scales of the 14 scales is related to the experience of jogging, either directly or in interaction with group membership.³

Direct effects of jogging across both groups of adolescents, uncomplicated by interactions with group membership, are found for three HSPQ factors: A (Reserved vs. Warmhearted), B (Dull, concrete thinking vs. Bright, abstract

³ The pattern of the results seems strong enough to warrant including effects significant at $.01 < p < .05$. The number of relationships significant at the .05 level or better is much higher than would have been predicted by chance.

TABLE 15

Overview of the Analyses of Covariance of the HSPQ Scales

HSPQ SCALE	F Ratios		
	Group (Residential vs. High School)	Treatment (Jogging vs. Non-Jogging)	Group X Treatment
A Reserved vs. Warmhearted	4.13*	5.51*	< 1
B Dull vs. Bright	1.91	11.82***	1.64
C Affected by Feelings vs. Emotionally Stable	8.11**	< 1	< 1
D Undemonstrative vs. Excitable	7.28**	5.56*	9.72**
E Obedient vs. Assertive	< 1	10.66**	3.91
F Sober vs. Enthusiastic	< 1	5.04*	5.74*
G Disregards Rules vs. Conscientious	< 1	< 1	< 1
H Shy vs. Adventurous	23.14***	5.37*	4.59*
I Tough-Minded vs. Tender-Minded	< 1	2.42	< 1
J Zestful vs. Circumspect Individualism	< 1	1.29	< 1
O Self-Assured vs. Apprehensive	< 1	< 1	1.22
Q ₂ Socially Group-Dependent vs. Self-Sufficient	2.15	< 1	< 1
Q ₃ Uncontrolled vs. Controlled	1.82	< 1	4.11
Q ₄ Relaxed vs. Tense	7.24**	< 1	8.50**

* p < .05

** p < .01

*** p < .001

TABLE 16

Summary of the Analysis of Covariance of the HSPQ Scales

HSPQ SCALE	MS Group	MS tmt.	MS int.	MSw	F Group	F tmt.	F int.
A Reserved vs. Warmhearted	8.150	10.869	0.603	1.973	4.13*	5.51*	0.31
B Dull vs. Bright	2.666	16.509	2.290	1.397	1.91	11.82***	1.64
C Affected by Feelings vs. Emotionally Stable	18.376	0.178	0.397	2.265	8.11**	0.08	0.18
D Undemonstrative vs. Excitable	16.432	12.548	21.934	2.257	7.28**	5.56*	9.72**
E Obedient vs. Assertive	1.602	18.215	6.685	1.708	0.94	10.66**	3.91
F Sober vs. Enthusiastic	0.479	10.948	12.474	2.174	0.22	5.04*	5.74*
G Disregards Rules vs. Conscientious	1.351	1.644	0.312	2.403	0.56	0.68	0.13
H Shy vs. Adventurous	46.037	10.682	9.126	1.990	23.14***	5.37*	4.59*
I Tough-Minded vs. Tender-Minded	0.674	5.349	1.057	2.211	0.30	2.42	0.48
J Zestful vs. Circumspect Individualism	1.980	3.761	0.818	2.911	0.68	1.29	0.28
O Self-Assured vs. Apprehensive	1.123	0.709	2.614	2.142	0.52	0.33	1.22
Q ₂ Socially Group-Dependent vs. Self-Sufficient	3.991	0.000	0.598	1.856	2.15	0.00	0.32
Q ₃ Uncontrolled vs. Controlled	4.926	0.981	11.109	2.701	1.82	0.36	4.11*
Q ₄ Relaxed vs. Tense	19.868	0.244	23.321	2.744	7.24*	0.09	8.50**

* $p < .05$ ** $p < .01$ *** $p < .001$

df for MS group = 1

df for MS tmt. = 1

df for MS int. = 1

df for MSw = 55

thinking) and E (Obedient vs. Assertive). In general, when their pre-test levels are controlled, the jogging adolescents score at post-testing as less reserved, brighter, and more assertive than the non-jogging adolescents.

Results suggesting differential effects of jogging on the two groups of adolescents were also found. There are four personality scales for which a significant Group X Treatment interaction was obtained as well as a significant overall F. As shown in Table 15, these four scales are: D (Undemonstrative vs. Excitable), F (Sober vs. Enthusiastic), H (Shy vs. Adventurous) and Q_4 (Relaxed vs. Tense). In order to interpret the effects of jogging for these factors the four adjusted post-test means (jogging residential students, non-jogging residential students, jogging high school students, and non-jogging high school students) were compared using the Newman-Keuls technique. For each pair of cell means, the Newman-Keuls technique determines whether the difference between the two means is significant or not (Winer, 1971). The four adjusted post-test means used in these comparisons are presented in Table 17 for Scale D, in Table 18 for Scale F, in Table 19 for Scale H, and in Table 20 for Scale Q_4 .

For two of the HSPQ scales with a significant Group X Treatment interaction and a significant overall F, an

TABLE 17

Adjusted Post-Test Means for HSPQ Scale "Undemonstrative vs. Excitable"

		Treatment	
		Joggers	Non-Joggers
Group	Residential	5.01	7.03
	High School	7.06	6.84

TABLE 18

Adjusted Post-Test Means for HSPQ Scale "Sober vs. Enthusiastic"

		Treatment	
		Joggers	Non-Joggers
Group	Residential	6.77	5.15
	High School	5.86	5.81

TABLE 19

Adjusted Post-Test Means for HSPQ Scale "Shy vs. Adventurous"

		Treatment	
		Joggers	Non-Joggers
Group	Residential	5.11	4.99
	High School	7.59	5.98

TABLE 20

Adjusted Post-Test Means for HSPQ Scale "Relaxed vs. Tense"

		Treatment	
Group		Joggers	Non-Joggers
	Residential	7.10	5.99
	High School	4.71	6.07

inspection of the revised cell means suggested an impact of the jogging program for the institutionalized adolescents but relatively no change among the other groups. These scales were D (Undemonstrative vs. Excitable) and F (Sober vs. Enthusiastic). When Newman-Keuls tests were carried out, it turned out that on Scale F there were no differences among the four sub-groups significant at the .05 level.⁴ However, on Scale D the residential students who jogged were significantly lower than each of the other three groups. That is, participation in the jogging program led to lower levels of excitability and impatience among the residential students, while the control groups and the jogging high

⁴ Scale F was also the only scale with any significant analysis of covariance results which had pre-test analysis of variance differences. Given the lack of significant Newman-Keuls results, no additional regression procedures seem necessary despite the significant pre-test differences.

school students experienced little or no effect on this dimension.

On the remaining two HSPQ scales with a significant Group X Treatment interaction and a significant overall F, the pattern of revised cell means appeared to highlight ways in which the jogging program affected the high school students particularly. These scales were H (Shy vs. Adventurous) and Q_4 (Relaxed vs. Tense). Newman-Keuls procedures confirmed this impression. On Scale H the jogging high school students scored significantly higher than all three other groups, when pre-test levels of the scale were controlled. Jogging therefore led to increased adventurousness and reduced shyness for these regular high school males while it did not do so for the residential students. On Scale Q_4 the jogging regular high school students scored as significantly more relaxed than the jogging residential students, with the control groups falling in the middle. This interaction pattern suggested a differential effect of jogging on the two categories of students, but since neither jogging group was significantly different from its control group, the results should be interpreted cautiously.

The only other HSPQ variable for which there was a significant interaction (Q_3) cannot be interpreted because

the overall F was not significant and the additional explanatory power achieved in adding group, treatment, and the group X treatment interaction to the covariate was not significant.

To summarize the HSPQ results, jogging was found to have many positive effects on personality. Joggers among both groups of adolescents were less reserved, brighter, and more assertive than non-joggers. Among the regular high school students jogging led to greater adventurousness and reduced tension. Among the residential students joggers became less excitable and impatient. Since the analysis of covariance controlled for pre-test levels of each dependent variable, these effects can be thought of as effects from participation in the jogging program per se rather than as pre-existing differences between joggers and non-joggers.

CHAPTER FIVE

DISCUSSION

This exploratory study sought to determine the effects of a six week jogging program on residential and non-institutionalized male adolescents between the ages of 13 and 16. For the residential adolescents, behavior ratings were obtained from teachers and a recreational staff counselor before and after the jogging program utilizing the Devereux Adolescent Behavior Rating Scale. Certain psychological variables were measured on both groups using the Junior-Senior High School Personality Questionnaire, a self-report personality questionnaire.

Numerous studies showing the benefits of jogging on physiological variables have been conducted. Among other things research has shown that jogging will enhance cardiovascular fitness, increase muscle strength, and improve neuromuscular coordination. However, very few studies have been conducted to date measuring psychological changes induced by an exercise or a jogging program.

The overall findings of this study echo the results found by Layman (1960) which concluded that physical fitness facilitated the development of a healthy personality. All

the significant findings from the analysis of both teachers' and recreational staff's ratings were consistent with the hypothesis that jogging leads to healthier psychological functioning. From the perspective of the teachers, the jogging had a positive but limited effect upon the residential students. They were seen as less hyperactive expansive and better controlled emotionally. These behaviors may have come about because the jogging provided adequate outlets for pent-up emotions and energy and concurs with the findings of Ismail and Young (1973) who found that middle-aged men who exercised were more emotionally stable and had more composure after participating in a four month physical fitness program. The recreational staff member, on the other hand, found many positive changes in the direction of mental health brought about by participation in the jogging program. As observed by the recreational staff counselor, the joggers became less defiant and resistive, less distant emotionally, less timid, less bizarre in speech and action, less withdrawn, less hyperactive, better emotionally controlled and demonstrated lower levels of unethical behavior. Having completed a jogging program, the joggers had persevered and succeeded in a task, some for the first time in their lives. In the past, these adolescents had encountered repeated failures in school,

at home, and in peer relationships. Having completed a six week jogging program, their self-esteem was bolstered and many of the residents lost a considerable amount of weight. Johnson (1962) showed that when a person sees himself as becoming more able to do things that are meaningful to him and more able to direct and control his body, he gains a new respect for himself. As a result of this, the adolescents, like those adult males in Brunner's study (1969) became more outgoing and self-confident, which led to a significant decrease in antisocial activities.

It should be noted that an esprit de corps was formed among the joggers, and in many ways they saw themselves as belonging to a special, privileged group. Again, the fact that they saw themselves as special and being part of a group may have led them to feel less timid and withdrawn. Additionally, being involved in an organized daily activity under the guidance of a staff member gave them less time to participate in antisocial and unethical activities.

The joggers met every day after school to jog a mile with one staff member. During this time, the control group was usually involved in a less active, also supervised activity. Thus, the amount of time spent with a staff member was approximately the same for both groups. While the jogging group was out on the track, the non-joggers

could play table games, do homework, watch television, read, or sometimes go fishing. Once the activity was completed, both groups reunited before dinner was served.

Both residential students and a normal high school group of students who participated in the jogging program rated themselves as being less reserved, brighter and more assertive than the non-jogging adolescents. Again, having achieved some measure of success, the students became somewhat less reserved and more assertive. Possibly because exercise was presented to both groups as a healthy activity, those who participated consequently thought of themselves as brighter.

Among the regular high school students, jogging led to greater adventurousness and reduced tension. Michael (1957) also found that regular exercise markedly boosted a person's capacity for enduring normal stress. Young and Ismail (1976), when comparing high-fit to low-fit individuals, concluded that more fit individuals were more relaxed and Kraus and Raab (1961) found that persons exercising showed better adaptability to stress and less neuromuscular tension. Perhaps being involved in a new program was seen as an adventure into the unknown. Nevertheless, jogging at the end of the school day gave these youngsters the opportunity to successfully unwind after a day in school and

they reported feeling less tense as a result. The residential students felt less excitable and impatient which also coincides with the findings of Young and Ismail (1976) and Ismail and Young (1973).

In sum, then, jogging was found to have positive effects on personality. However, since only a small number of subjects were used in this study, it was recommended that the study be repeated using larger numbers in each group in order to ascertain the stability of the findings. Also, a follow-up should be conducted to see if the gains made hold up after an extended period of time. One further problem was that while the teachers were blind as to who was involved in the jogging, the recreational staff member knew who was running. This may have contaminated the results. Also, since the teachers saw the students in a more structured environment, some of the behaviors that the recreational staff member saw as improved did not occur in the classroom.

APPENDICES

APPENDIX A

Summary of Analysis of Variance of Teachers' Rating of the DABS Factors Before a Jogging Program

DABS Behavior Factor	MS Group	MSW	F Ratio
1) Unethical	246.533	14.319	17.22***
2) Defiant-resistive	112.133	13.095	8.56**
3) Domineering-sadistic	154.133	22.062	6.99*
4) Heterosexual interest	589.633	48.476	12.16**
5) Hyperactive expansive	140.833	29.333	4.80*
6) Poor emotional control	224.133	21.305	10.52**
7) Need approval and dependency	17.633	18.609	0.95
8) Emotional distance	13.333	21.352	0.62
9) Physical inferiority-timidity	64.533	78.619	0.82
10) Schizoid withdrawal	5.633	14.781	0.38
11) Bizarre speech and cognition	32.033	9.095	3.52
12) Bizarre action	30.000	15.781	1.90

* $p < .05$

** $p < .01$

*** $p < .001$

df for MS group = 1

df for MSW = 28

APPENDIX B

Summary of Analysis of Variance and Recreational Staff's Ratings of the DABS Factors Before a Jogging Program

DABS Behavior Factor	MS Group	MSW	F Ratio
1) Unethical	20.833	11.048	1.89
2) Defiant-resistive	13.333	5.790	2.30
3) Domineering-sadistic	116.033	9.667	12.00**
4) Heterosexual interest	45.633	10.876	4.20*
5) Hyperactive expansive	53.333	4.648	11.48**
6) Poor emotional control	86.700	12.795	6.78*
7) Need approval and dependency	0.033	8.462	0.00
8) Emotional distance	4.800	4.595	1.05
9) Physical inferiority- timidity	53.333	24.481	2.18
10) Schizoid withdrawal	2.133	6.733	0.32
11) Bizarre speech and cognition	4.033	7.390	0.55
12) Bizarre action	7.500	6.500	1.15

* $p < .05$

** $p < .01$

df for MS group = 1

df for MSW = 28

APPENDIX C

Summary of Analysis of Covariance of Teachers' Ratings of the DABS Factors

DABS Behavior Factor	MS bet	MSW	F Ratio
1) Unethical	1.065	6.446	0.17
2) Defiant-resistive	26.351	8.326	3.17
3) Domineering-sadistic	4.706	4.626	1.02
4) Heterosexual interest	16.193	8.923	1.82
5) Hyperactive expansive	29.090	4.046	7.19*
6) Poor emotional control	43.815	8.966	4.89*
7) Need approval and dependency	2.613	4.940	0.53
8) Emotional distance	38.428	18.315	2.10
9) Physical inferiority-timidty	3.693	20.683	0.18
10) Schizoid withdrawal	9.427	7.774	1.21
11) Bizarre speech and cognition	11.143	4.224	2.64
12) Bizarre action	18.491	5.145	3.59

* $p < .05$

df for MS bet = 1

df for MSW = 27

APPENDIX D

Summary of Analysis of Covariance of Recreational Staff's Ratings of the DABS Factors

DABS Behavior Factor	MS bet	MSW	F Ratio
1) Unethical	50.909	6.127	8.31**
2) Defiant-resistive	82.250	3.334	24.67***
3) Domineering-sadistic	0.816	5.210	0.16
4) Heterosexual interest	18.033	6.016	3.00
5) Hyperactive expansive	21.279	3.574	5.95*
6) Poor emotional control	33.312	2.960	11.25**
7) Need approval and dependency	0.179	1.213	0.15
8) Emotional distance	58.229	2.305	25.26***
9) Physical inferiority- timidity	121.674	4.932	24.67***
10) Schizoid withdrawal	25.474	2.399	10.62**
11) Bizarre speech and cognition	59.086	3.169	18.65***
12) Bizarre action	88.609	4.812	18.42***

* $p < .05$

** $p < .01$

*** $p < .001$

df for MS bet = 1

df for MSW = 27

APPENDIX E

SUMMARY OF ANALYSIS OF VARIANCE OF THE HSPQ SCALES BEFORE A JOGGING PROGRAM

HSPQ Scale	MS Group	MS tmt.	MS int.	MSw	F Group	F tmt.	F int.
A Reserved vs. Warmhearted	20.417	2.017	3.750	1.598	12.78***	1.26	2.35
B Dull vs. Bright	13.067	0.267	0.267	1.693	7.72**	0.16	0.16
C Affected by Feelings vs. Emotionally Stable	8.067	0.067	9.600	2.843	2.84	0.02	3.38
D Undemonstrative vs. Excitable	22.817	0.017	2.017	1.502	15.19***	0.01	1.34
E Obedient vs. Assertive	21.600	3.267	0.067	2.579	8.38**	1.27	0.03
F Sober vs. Enthusiastic	28.017	7.350	28.017	3.693	7.59**	1.99	7.59**
G Disregards Rules vs. Conscientious	13.067	4.267	13.067	3.117	4.19*	1.37	4.19*
H Shy vs. Adventurous	4.817	0.817	2.017	3.260	1.48	0.25	0.62
I Tough-Minded vs. Tender-Minded	6.667	3.267	3.267	2.271	2.94	1.44	1.44
J Zestful vs. Circumspect Individualism	5.400	2.400	13.067	1.519	3.56	1.58	8.60**
O Self-Assured vs. Apprehensive	16.017	0.817	0.150	2.429	6.60*	0.34	0.06
Q ₂ Socially Group-Dependent vs. Self-Sufficient	22.817	6.017	0.817	1.810	12.61***	3.33	0.45
Q ₃ Uncontrolled vs. Controlled	1.067	0.600	2.400	2.867	0.37	0.21	0.84
Q ₄ Relaxed vs. Tense	0.067	15.000	5.400	2.919	0.02	5.14*	1.85

* p < .05

** p < .01

*** p < .001

df for MS group = 1

df for MS tmt. = 1

df for MS int. = 1

df for MS w = 56

APPENDIX F

CONSENT TO ACT AS A SUBJECT FOR RESEARCH
AND INVESTIGATION



THE DEVEREUX FOUNDATION

DEVON, PENNSYLVANIA

ARIZONA
CALIFORNIA
CONNECTICUT
GEORGIA

Institute of Clinical Training
The Devereux Foundation
Devon, Pennsylvania 19333

November 11, 1977

MASSACHUSETTS
TEXAS
ARKANSAS
MAINE

Consent to Act as a Subject for Research and Investigation

I agree to be a participant in the jogging program to be conducted by Mr. Harvey Dulberg. I will jog one mile every day, five days a week, for six (6) weeks. However, if, at any time during those six (6) weeks, I wish to withdraw from the program for any reason, I may. Before the start of the program, I will take the Junior-Senior High School Personality Questionnaire, which I will re-take at the end of the six (6) week program.

The procedures have been explained to me by Mr. Harvey Dulberg. I understand that I may experience some soreness from jogging, and I am aware that Mr. Dulberg will be available to answer any questions that I may have.

As a result of the training program, it is expected that the participants will not only have enhanced cardiovascular fitness, increased muscle strength, and improved neuromuscular coordination, but that they will also make significant changes towards a better psychological adjustment.

Subject's Signature

Date

Subject is a Minor (age _____)
Signatures (one required)

Father

Date

Mother

Date

Guardian

Date

APPENDIX G

JUNIOR-SENIOR HIGH SCHOOL PERSONALITY QUESTIONNAIRE--
FORMS A AND B, ANSWER SHEET, AND PROFILE



Jr.-Sr.

FORM A

1968-69 Edition

HSPQ

WHAT TO DO: You have a Booklet and an Answer Sheet. Write your name, age, etc., on the Answer Sheet where it tells you to.

The Booklet before you has in it questions about your interests and your likes and dislikes. Although you are to read the questions in *this* Booklet, *you must put your answers on the Answer Sheet*, making sure that the number of your answer *matches* the number of the question in the Booklet.

First, we shall give you two examples so that you will know exactly what to do. After each of the questions there are three answers. Read the following examples and fill in the right boxes where it says Example 1 and Example 2, on the Answer Sheet, below your name. Fill in the left-hand box if your answer choice is the "a" answer, the middle box if your choice is the "b" answer, and the right-hand box if you choose the "c" answer.

EXAMPLES:

- | | |
|-------------------------------|----------------------------------|
| 1. Which would you rather do: | 2. If you have a quarrel, do you |
| a. visit a zoo, | make friends again quickly? |
| b. uncertain, | a. yes, b. in between, c. no. |
| c. go up in an airplane? | |

As you see from these examples, there are *usually* no right or wrong answers, although sometimes a correct answer is expected. Each person is different and you should say only what is true for *you*. You can always find one answer that suits you a *little* better than the others, so never leave a question without marking one of the answers.

Inside you will find more questions like the ones above. When you are told to turn the page, begin with number 1 and go on until you finish all the questions. In answering them, please keep these four points in mind:

1. Answer the questions frankly and truthfully. There is no advantage in giving an untrue answer about yourself because you think it is the "right thing to say."
2. Answer the questions as quickly as you can. Don't spend too much time thinking about them. Give the first, natural answer that comes to you. Some questions may seem much like others, but no two are exactly alike so your answers will often be different too.
3. Use the middle answer *only* when it is *absolutely impossible* to decide on one of the other choices. In other words, the "a" or the "c" answer should be used *most* of the time.
4. Don't skip any questions. Sometimes a statement may not seem to apply to you, but answer every question, somehow.

If there is anything you don't understand, please ask your questions now. If you have no question now, but later on come across a word you don't know, ask the examiner then.

DO NOT TURN PAGE UNTIL TOLD TO DO SO

1. Have you understood the instructions?
a. yes, b. uncertain, c. no.
2. At a picnic would you rather spend some time:
a. exploring the woods alone,
b. uncertain,
c. playing around the campfire with the crowd?
3. In a group discussion, do you like to tell what you think?
a. yes, b. sometimes, c. no.
4. When you do a foolish thing, do you feel so bad that you wish the earth would just swallow you up?
a. yes, b. perhaps, c. no.
5. Do you find it easy to keep an exciting secret?
a. yes, b. sometimes, c. no.
6. When you decide something, do you:
a. wonder if you may want to change your mind,
b. in between,
c. feel sure you're satisfied with it?
7. Can you work hard on something, without being bothered if there's a lot of noise around you?
a. yes, b. perhaps, c. no.
8. If friends' ideas differ from yours, do you keep from saying yours are better, so as not to hurt their feelings?
a. yes, b. sometimes, c. no.
9. Do you usually ask someone else to help you when you have a hard problem?
a. seldom, b. sometimes, c. often.
10. Would you say that *some* rules and regulations are stupid and out of date?
a. yes, and I don't bother with them if I can help it,
b. uncertain,
c. no, most rules are necessary and should be obeyed.
11. Which of these says better what you are like?
a. a dependable leader,
b. in between,
c. charming, good looking.
12. Do you sometimes feel, before a big party or outing, that you are not so interested in going?
a. yes, b. perhaps, c. no.
13. When you rightly feel angry with people, do you think it's all right for you to shout at them?
a. yes, b. perhaps, c. no.
14. When classmates play a joke on you, do you usually enjoy it as much as others without feeling at all upset?
a. yes, b. perhaps, c. no.
15. Are there times when you think, "People are so unreasonable, they can't even be trusted to look after their own good"?
a. true, b. perhaps, c. false.
16. Can you stay cheerful even when things go wrong?
a. yes, b. uncertain, c. no.
17. Do you try to keep up with the fads of your classmates?
a. yes, b. sometimes, c. no.
18. Do most people have more friends than you do?
a. yes, b. uncertain, c. no.
19. Would you rather be:
a. a traveling TV actor,
b. uncertain,
c. a medical doctor?
20. Do you think that life runs more smoothly and more satisfyingly for you than for many other people?
a. yes, b. perhaps, c. no.
21. Do you have trouble remembering someone's joke well enough to tell it yourself?
a. yes, b. sometimes, c. no.

22. Have you enjoyed being in drama, such as school plays?
a. yes, b. uncertain, c. no.
23. "Mend" means the same as:
a. repair, b. heal, c. patch.
24. "Truth" is the opposite of:
a. fancy, b. falsehood, c. denial.
25. Do you completely understand what you read in school?
a. yes, b. usually, c. no.
26. When chalk screeches on the blackboard does it "give you the shivers"?
a. yes, b. perhaps, c. no.
27. When something goes all wrong, do you get very angry with people before you start to think what can be done about it?
a. often, b. sometimes, c. seldom.
28. When you finish school, would you like to:
a. do something that will make people like you, though you are poor,
b. uncertain,
c. make a lot of money?
29. Do you avoid going into narrow caves or climbing to high places?
a. yes, b. sometimes, c. no.
30. Are you always ready to show, in front of everyone, how well you can do things compared with others?
a. yes, b. perhaps, c. no.
31. Do you ask advice from your parents about the best things to do at school?
a. often, b. sometimes, c. seldom.
32. Can you talk to a group of strangers without stammering a little or without finding it hard to say what you want to?
a. yes, b. perhaps, c. no.
33. Do some types of movies upset you?
a. yes, b. perhaps, c. no.
34. Would you enjoy more watching a boxing match than a beautiful dance?
a. yes, b. perhaps, c. no.
35. If someone has been unkind to you, do you soon trust him again and give him another chance?
a. yes, b. perhaps, c. no.
36. Do you sometimes feel you are not much good, and that you never do anything worthwhile?
a. yes, b. perhaps, c. no.
37. When a group of people are doing something, do you:
a. take an active part in what they are doing,
b. in between,
c. usually only watch?
38. Do you tend to be quiet when out with a group of friends?
a. yes, b. sometimes, c. no.
39. Do people say you are a person who can always be counted on to do things exactly and properly?
a. yes, b. perhaps, c. no.
40. When you read an adventure story, do you:
a. just enjoy the story as it goes along,
b. uncertain,
c. get bothered whether it's going to end happily?
41. Does it bother you if you have to sit still and wait for something to begin?
a. yes, b. in between, c. no.

42. Do you feel hurt if people borrow your things without asking you?
a. yes, b. perhaps, c. no.
43. "Firm" is the opposite of:
a. easy, b. kind, c. loose.
44. "Rich" is to "money" as "sad" is to:
a. trouble, b. friends, c. land.
45. Have you always got along really well with your parents, brothers, and sisters?
a. yes, b. in between, c. no.
46. If your classmates leave you out of a game, do you:
a. think it just an accident,
b. in between,
c. feel hurt and angry?
47. Do people say you are sometimes excitable and scatterbrained though they think you are a fine person?
a. yes, b. perhaps, c. no.
48. When you are on a bus or train, do you talk:
a. in your ordinary voice,
b. in between,
c. as quietly as possible?
49. Which would you rather be:
a. the most popular person in school,
b. uncertain,
c. the person with the best grades?
50. In a group of people, are you generally one of those who tells jokes and funny stories?
a. yes, b. perhaps, c. no.
51. Do you like to tell people to follow proper rules and regulations?
a. yes, b. sometimes, c. no.
52. Are your feelings easily hurt?
a. yes, b. perhaps, c. no.
53. In a play, would you rather act the part of a famous teacher of art than that of a tough pirate?
a. yes, b. perhaps, c. no.
54. Which course would you rather take:
a. practical mathematics,
b. uncertain,
c. foreign language or drama?
55. Would you rather spend free time:
a. by yourself, on a book or stamp collection,
b. uncertain,
c. working under others in a group project?
56. Do you feel that you are getting along well, and that you do everything that could be expected of you?
a. yes, b. perhaps, c. no.
57. Do you have trouble acting like or being like other people expect you to be?
a. yes, b. uncertain, c. no.
58. If you found you had nothing to do some evening, would you:
a. call up some friends and do something with them,
b. not sure,
c. read a good book or work on a hobby?
59. Would you like to be extremely good-looking, so that people would notice you wherever you go?
a. yes, b. perhaps, c. no.
60. When something important is coming up, such as a test or a big game, do you:
a. stay very calm and relaxed,
b. in between,
c. get very tense and worried?
61. If someone puts on noisy music while you are trying to work, do you feel you *must* get away?
a. yes, b. perhaps, c. no.

62. In dancing or music, do you pick up a new rhythm easily?
a. yes, b. sometimes, c. no.
63. "Run" is to "pant" as "eat" is to:
a. exercise, b. indigestion, c. sleep.
64. If Joan's mother is my father's sister, what relation is Joan's father to my brother?
a. second cousin, b. grandfather, c. uncle.
65. Do you often make big plans and get excited about them, only to find that they just won't work out?
a. yes, b. occasionally, c. no.
66. When things go wrong and upset you, do you believe in:
a. just smiling,
b. in between,
c. making a fuss?
67. Do you often remember things differently from other people, so that you have to disagree about what really happened?
a. yes, b. perhaps, c. no.
68. Are there times when you feel so pleased with the world that you just have to sing and shout?
a. yes, b. perhaps, c. no.
69. When you are ready for a job, would you like one that:
a. is steady and safe, even if it takes hard work,
b. uncertain,
c. has lots of change and meetings with lively people?
70. Do you like doing really unexpected and startling things to people?
a. yes, b. once in a while, c. no.
71. If everyone were doing something you think is wrong, would you:
a. go along with them,
b. uncertain,
c. do what you think is right?
72. Can you work just as well, without feeling uncomfortable, when people are watching you?
a. yes, b. perhaps, c. no.
73. Would you rather spend a free afternoon:
a. in a place with beautiful pictures and gardens,
b. uncertain,
c. in a duck shooting match?
74. Would you rather spend an afternoon by a lake:
a. watching dangerous speed boat racing,
b. uncertain,
c. walking by the lovely shore with a friend?
75. When you are in a group, do you spend more time:
a. enjoying the friendship,
b. uncertain,
c. watching what happens?
76. Can you always tell what your real feelings are, for example, whether you are tired or just bored?
a. yes, b. perhaps, c. no.
77. When things are going wonderfully, do you:
a. actually almost "jump with joy,"
b. uncertain,
c. feel good inside, while appearing calm?
78. Would you rather be:
a. a builder of bridges,
b. uncertain,
c. a member of a traveling circus?
79. When something is bothering you a lot, do you think it's better to:
a. try to ignore it until you cool off,
b. uncertain,
c. blow off steam?
80. Do you sometimes say silly things, just to see what people will say?
a. yes, b. perhaps, c. no.
81. When you do poorly in an important game, do you:
a. say, "This is just a game,"
b. uncertain,
c. get angry and "kick yourself"?

82. Do you go out of your way to avoid crowded buses and streets?
a. yes, b. perhaps, c. no.
83. "Usually" means the same as:
a. sometimes, b. always, c. generally.
84. The grandmother of the daughter of my brother's sister is my:
a. mother, b. sister-in-law, c. niece.
85. Are you almost always contented?
a. yes, b. in between, c. no.
86. If you keep breaking and accidentally wasting things when you are making something, do you keep calm just the same?
a. yes, b. perhaps, c. no, I get furious.
87. Have you ever felt dissatisfied and said to yourself, "I bet I could run this school better than the teachers do"?
a. yes, b. perhaps, c. no.
88. Would you rather be:
a. someone who plans homes and parks,
b. uncertain,
c. a singer or member of a dance band?
89. If you had a chance to do something really wild and adventurous, but also rather dangerous, would you:
a. probably not do it,
b. not sure,
c. certainly do it?
90. When you have homework to do, do you:
a. very often just not do it,
b. in between,
c. always get it done on time?
91. Do you usually discuss your activities with your parents?
a. yes, b. sometimes, c. no.
92. When the class is discussing something, do you usually have something to say?
a. almost never,
b. once in a while,
c. always.
93. Do you stand up before your class without looking nervous and ill-at-ease?
a. yes, b. perhaps, c. no.
94. Which would you rather watch on a fine evening:
a. car racing,
b. uncertain,
c. an open-air musical play?
95. Have you ever thought what you would do if you were the only person left in the world?
a. yes, b. not sure, c. no.
96. Do you learn games quickly?
a. yes, b. in between, c. no.
97. Do you wish you could learn to be more carefree and lighthearted about your school work?
a. yes, b. perhaps, c. no.
98. Are you, like a lot of people, slightly afraid of lightning?
a. yes, b. perhaps, c. no.
99. Do you ever suggest to the teacher a new subject for the class to discuss?
a. yes, b. perhaps, c. no.
100. Would you rather spend a break between morning and afternoon classes in:
a. a card game,
b. uncertain,
c. catching up on homework?
101. When you are walking in a quiet street in the dark, do you often get the feeling you are being followed?
a. yes, b. perhaps, c. no.

102. In talking with your classmates, do you dislike telling your most private feelings?
a. yes, b. sometimes, c. no.
103. When you go into a new group, do you:
a. quickly feel you know everyone,
b. in between,
c. take a long time to get to know people?
104. Look at these five words: *mostly, gladly, chiefly, mainly, highly*. The word that does not belong with the others is:
a. mostly, b. gladly, c. highly.
105. Do you sometimes feel happy and sometimes feel depressed without real reason?
a. yes, b. uncertain, c. no.
106. When people around you laugh and talk while you are listening to radio or TV:
a. are you happy,
b. in between,
c. does it spoil things and annoy you?
107. If you accidentally say something odd in company, do you stay uncomfortable a long time and find it hard to forget?
a. yes, b. perhaps, c. no.
108. Which would you rather read about:
a. how to win at basketball,
b. uncertain,
c. how to be nice to everyone?
109. Are you best thought of as a person who:
a. thinks, b. in between, c. acts?
110. Do you spend most of your weekly allowance for fun (instead of saving some for future needs)?
a. yes, b. perhaps, c. no.
111. Do other people often get in your way?
a. yes, b. in between, c. no.
112. How would you rate yourself?
a. inclined to be moody,
b. in between,
c. not at all moody.
113. How often do you go places or do things with a group of friends:
a. very often, b. sometimes, c. hardly ever.
114. What kind of movie do you like best?
a. musicals, b. uncertain, c. war stories.
115. Do you get in trouble more often by saying to a group that wants to do something:
a. "Let's go!"
b. uncertain,
c. "I'd rather not join in"?
116. When you were growing up, did you expect the world to be:
a. kinder and more considerate than it is,
b. uncertain,
c. tougher and harder than it is?
117. Do you find it easy to go up and introduce yourself to an important person?
a. yes, b. perhaps, c. no.
118. Do you think that often a committee of your classmates takes more time and makes poorer decisions than one person would?
a. yes, b. perhaps, c. no.
119. Do you feel you are doing pretty much what you should be doing in life?
a. yes, b. uncertain, c. no.
120. Do you sometimes feel so mixed up that you don't know what you are doing?
a. yes, b. perhaps, c. no.
121. When someone is disagreeing with you, do you:
a. let him say all he has to say,
b. uncertain,
c. tend to interrupt before he finishes?

122. Would you rather live:
 a. in a deep forest, with only the song of birds,
 b. uncertain,
 c. on a busy street corner, where a lot happens?
123. If you were to work on a railroad, would you rather:
 a. be a conductor and talk to the passengers,
 b. uncertain,
 c. be the engineer and run the train?
124. Look at these five words: *below, beside, above, behind, between*. The word that does not belong with the others is:
 a. below, b. between, c. beside.
125. If someone asks you to do a new and difficult job, do you:
 a. feel glad and show what you can do,
 b. in between,
 c. feel you will make a mess of it?
126. When you raise your hand to answer a question in class, and many others raise their hands too, do you get excited?
 a. sometimes, b. not often, c. never.
127. Would you rather be:
 a. a teacher, b. uncertain, c. a scientist?
128. On your birthday, do you prefer:
 a. to be asked beforehand to choose the present you want,
 b. uncertain,
 c. to have the fun of getting a present that's a complete surprise?
129. Are you very careful not to hurt anyone's feelings or startle anyone, even in fun?
 a. yes, b. perhaps, c. no.
130. If you were working with groups in class, would you rather:
 a. walk around to carry things from one person to another,
 b. uncertain,
 c. specialize in showing people how to do one difficult part?
131. Do you take trouble to be sure you are right before you say anything in class?
 a. always, b. generally, c. not usually.
132. Are you so afraid of what might happen that you avoid making decisions one way or the other?
 a. often, b. sometimes, c. never.
133. When things are frightening, can you laugh and not be bothered?
 a. yes, b. perhaps, c. no.
134. Do some books and plays almost make you cry?
 a. yes, often, b. sometimes, c. no, never.
135. Would you like better, when in the country:
 a. running a class picnic,
 b. uncertain,
 c. learning to know all the different trees in the woods?
136. In group discussions, do you often find yourself:
 a. taking a lone stand,
 b. uncertain,
 c. agreeing with the group?
137. Do your feelings get so bottled up that you feel you could burst?
 a. often, b. sometimes, c. seldom.
138. Which kind of friends do you like? Those who like to:
 a. "kid around,"
 b. uncertain,
 c. be more serious?
139. If you were not a human being, would you rather be:
 a. an eagle on a far mountain,
 b. uncertain,
 c. a seal, in a seal colony by the seashore?
140. Are you usually a very careful person?
 a. yes, b. in between, c. no.
141. Do small troubles sometimes "get on your nerves" even though you know that they are not very important?
 a. yes, b. perhaps, c. no.
142. Are you sure you have answered *every* question?
 a. yes, b. perhaps, c. no.



Jr.-Sr.

FORM B

1968-69 Edition

HSPQ

WHAT TO DO: You have a Booklet and an Answer Sheet. Write your name, age, etc., on the Answer Sheet where it tells you to.

The Booklet before you has in it questions about your interests and your likes and dislikes. Although you are to read the questions in *this* Booklet, *you must put your answers on the Answer Sheet*, making sure that the number of your answer *matches* the number of the question in the Booklet.

First, we shall give you two examples so that you will know exactly what to do. After each of the questions there are three answers. Read the following examples and fill in the right boxes where it says Example 1 and Example 2, on the Answer Sheet, below your name. Fill in the left-hand box if your answer choice is the "a" answer, the middle box if your choice is the "b" answer, and the right-hand box if you choose the "c" answer.

EXAMPLES:

- | | |
|-------------------------------|----------------------------------|
| 1. Which would you rather do: | 2. If you have a quarrel, do you |
| a. visit a zoo, | make friends again quickly? |
| b. uncertain, | a. yes, b. in between. c. no. |
| c. go up in an airplane? | |

As you see from these examples, there are *usually* no right or wrong answers, although sometimes a correct answer is expected. Each person is different and you should say only what is true for *you*. You can always find one answer that suits you a *little* better than the others, so never leave a question without marking one of the answers.

Inside you will find more questions like the ones above. When you are told to turn the page, begin with number 1 and go on until you finish all the questions. In answering them, please keep these four points in mind:

1. Answer the questions frankly and truthfully. There is no advantage in giving an untrue answer about yourself because you think it is the "right thing to say."
2. Answer the questions as quickly as you can. Don't spend too much time thinking about them. Give the first, natural answer that comes to you. Some questions may seem much like others, but no two are exactly alike so your answers will often be different too.
3. Use the middle answer *only* when it is *absolutely impossible* to decide on one of the other choices. In other words, the "a" or the "c" answer should be used *most* of the time.
4. Don't skip any questions. Sometimes a statement may not seem to apply to you, but answer every question, somehow.

If there is anything you don't understand, please ask your questions now. If you have no question now, but later on come across a word you don't know, ask the examiner then.

DO NOT TURN PAGE UNTIL TOLD TO DO SO

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1. Have you understood the instructions?
a. yes, b. uncertain, c. no.
2. If you had to be a tree, would you prefer to be:
a. a tall pine tree alone on a mountain top,
b. not sure,
c. an apple tree in a large orchard?
3. Do you have as many friends as most of your classmates do?
a. yes, b. perhaps, c. no.
4. When you work, do you generally:
a. find it hard to get started,
b. in between,
c. sit down and start right away?
5. Is your appetite as good as usual when eating just before an exam (or something upsetting)?
a. yes, b. sometimes, c. no.
6. Do you have trouble thinking of things to say when talking to persons you dislike?
a. yes, b. sometimes, c. no.
7. Do your folks say that you usually:
a. sleep quietly,
b. in between,
c. toss about or talk in your sleep?
8. Do you think that as many as a dozen people now in your classroom will do better than you when they leave school?
a. yes, b. not sure, c. no.
9. When someone is telling you what you ought to do (like a teacher or a minister in church), do you sometimes feel like laughing at him?
a. yes, b. perhaps, c. no.
10. Would you say you are best described as:
a. a person with lots of new ideas,
b. in between,
c. a very steady and responsible person?
11. Would you rather spend half an hour with:
a. a book of interesting facts,
b. uncertain,
c. a comic book?
12. When it is dark in the bedroom, have you sometimes thought you've seen faces or people moving?
a. yes, b. perhaps, c. no.
13. Do you enjoy subjects like mathematics (or science) more than drama (or historical plays)?
a. yes, b. not sure, c. no.
14. Which are you more often in trouble for:
a. being too active or noisy with the group,
b. uncertain,
c. not taking part in the group activities?
15. Does it bother you to ask friends to go to some trouble to help you, if you actually need it?
a. yes, b. perhaps, c. no.
16. From day to day are you:
a. in the same steady mood,
b. uncertain,
c. sometimes full of pep and sometimes worn out?
17. At a sports event, do you enjoy cheering for your team more than just watching other people?
a. yes, b. perhaps, c. no.
18. Would you rather go to a:
a. museum that has interesting things to see,
b. uncertain,
c. party with many people?
19. Would you rather be picked to go on a nationwide TV show than make the best class grades you ever made?
a. yes, b. perhaps, c. no.
20. When your elders are correcting you on something, can you listen without speaking back?
a. yes, b. sometimes, c. no.
21. When people interfere with your work, do you sometimes feel so angry you could hit them?
a. yes, b. perhaps, c. no.

22. When friends use your things without asking, do you:
a. tell them it's all right,
b. in between,
c. scold them and "tell them off"?
23. "Hollow" means the same as:
a. empty, b. light, c. hungry.
24. "Vanish" is the opposite of:
a. grow, b. appear, c. burst.
25. Can you keep calm when you think you should (even if things are very upsetting)?
a. always, b. sometimes, c. practically never.
26. Do you sometimes wish that you were a different person from what you are?
a. yes, b. perhaps, c. no.
27. When people explain something that is difficult and dull, do you:
a. find your mind running on to other things,
b. in between,
c. just listen and wait till it's over?
28. Would you rather have a job as a:
a. clerk in a store,
b. not sure,
c. mounted policeman?
29. Do you believe in being really careful what you say, instead of talking fast and freely as some people do?
a. yes, b. perhaps, c. no.
30. Would you say that the people you really like are:
a. kind of wild and noisy,
b. just about average,
c. on the quiet side?
31. Do you make the effort to go and speak to a new teacher or pupil at school, and introduce them around?
a. yes, b. sometimes, c. no.
32. Do you think you have more fun in life than others in your family and circle of friends?
a. yes, b. perhaps, c. no.
33. Do you sometimes get quite worried when you think back over things that happened during the day?
a. yes, b. perhaps, c. no.
34. In spite of the danger would you like to go tiger hunting?
a. yes, b. perhaps, c. no.
35. When you start a book and find it boring, do you:
a. seldom finish it,
b. uncertain,
c. usually finish it anyway?
36. Have you ever felt upset because people called you careless or inattentive?
a. yes, b. sometimes, c. no.
37. Do you like people with a lot of amusing things to say better than those who just say a few serious things?
a. yes, b. perhaps, c. no.
38. In a lively group discussion do you often keep your ideas to yourself even though they seem better than some that are being talked about?
a. yes, b. perhaps, c. no.
39. In making decisions, do you bother to consider everything, even the smaller facts?
a. yes, b. perhaps, c. no.
40. How often do you have stomach aches?
a. less than once a year,
b. in between,
c. more than once a month.
41. Do people who rave a lot about something often actually make you want to go against it?
a. yes, b. perhaps, c. no.

42. Do you turn your back on friends if they laugh at you for being a little odd or different, especially about the clothes you wear?
a. yes, b. sometimes, c. no.
43. "Responsible" is the opposite of:
a. lighthearted, b. stupid, c. careless.
44. "Wear" is to "clothes" as "eat" is to:
a. food, b. fork, c. beef.
45. When you plan something, are you full of hope and sure that all will go well?
a. yes, b. sometimes, c. no.
46. If someone gets angry and shouts at you, do you:
a. stay quiet and smiling,
b. in between,
c. get mad and shout back?
47. Before an exciting game, do you:
a. get tense and wrapped up in what's coming,
b. in between,
c. keep quite calm?
48. When everything is turning out just exactly right, do you:
a. feel very happy but look calm,
b. in between,
c. actually almost "jump for joy"?
49. Would you rather spend an evening:
a. at a lively party,
b. uncertain,
c. working on a good hobby?
50. Do you like doing daring things to amuse people?
a. yes, b. sometimes, c. no.
51. Are you usually patient with people who speak very fast or very slowly?
a. yes, b. sometimes, c. no.
52. Do you have a feeling that you are searching for something that no one else understands or bothers about?
a. yes, b. sometimes, c. no.
53. Whom do you admire more:
a. a great poet and writer of plays,
b. uncertain,
c. a test pilot who flies dangerous missions?
54. How often have you been so breathless with enthusiasm that you had to tell everyone about it?
a. seldom, b. sometimes, c. many times.
55. Would you rather spend two weeks in the summer:
a. bird-watching and walking in the country with a friend or two,
b. uncertain,
c. being a leader of a group in a camp?
56. On an average day, how many times are you stopped from doing things you want to do?
a. about once,
b. in between,
c. more than half a dozen times.
57. If a poor piece of your schoolwork were picked out for showing, would you:
a. want to hide,
b. uncertain,
c. not mind too much?
58. Do you like to talk and play around with a group of friends on a street corner?
a. yes, b. sometimes, c. no.
59. Do you sometimes snap your fingers when you are eager to answer a question in class?
a. yes, b. perhaps, c. no.
60. When people try to boss you, do you usually:
a. quietly go your own way,
b. uncertain,
c. answer them back and put them in their place?
61. Would you rather listen to:
a. a dance band,
b. uncertain,
c. a good speaker on modern world problems?

62. In a discussion with classmates, do you usually tell everyone quite freely what you think?
a. yes, b. perhaps, c. no.
63. "Part" is to "half" as "parent" is to:
a. grandfather, b. father, c. son.
64. John is taller than Harry. Dick is not so tall as John. Who is the tallest?
a. Dick, b. Harry, c. John.
65. Have you sometimes almost wished that you had never been born?
a. yes, b. perhaps, c. no.
66. Do you feel jealous and furious when people overlook you, even though you know it may not be on purpose?
a. never, b. sometimes, c. generally.
67. If people chatter while music is on, do you:
a. feel the music is spoiled,
b. in between,
c. listen hard so that you no longer hear them?
68. Do you answer people politely, even when they ask questions about you that you think they ought not to ask?
a. yes, b. perhaps, c. no.
69. Would you think it good to go out to a party (or to play games):
a. only once a week or even less often,
b. in between,
c. almost every day of the week?
70. When people say something is wrong or mischievous, does that often make you want to try it anyway?
a. yes, b. uncertain, c. no.
71. Would it be a good thing if those who want to quit school could, even if they haven't reached the proper age?
a. yes, b. perhaps, c. no.
72. Can you put your thoughts into words easily?
a. generally, b. sometimes, c. never.
73. If you had a chance to travel, would you go to see:
a. new people and learn to understand their different ways of living,
b. uncertain,
c. engineering feats and remarkable sights?
74. Do you think people are silly to cry at movies?
a. yes, b. not sure, c. no.
75. When you're sure someone has been unfair to you, do you find it easy to forget about it anyway?
a. yes, b. perhaps, c. no.
76. Do you feel comfortable talking to your teachers about the things that bother you in school?
a. yes, b. perhaps, c. no.
77. Do you sometimes feel worn out because of emotional struggles?
a. yes, b. perhaps, c. no.
78. Do you avoid getting into group projects that take up a lot of your time?
a. true, b. perhaps, c. false.
79. Do you believe in putting more time into homework than is actually asked?
a. yes, b. perhaps, c. no.
80. Would you enjoy watching a sport (for example, a boxing match or football game) better:
a. if you had a bet on who would win,
b. uncertain,
c. if you hadn't bet anything on it?
81. If people around show they are annoyed with you, do you still go along quite happily?
a. yes, b. perhaps, c. no.

82. When you talk about things, is it hard to get your classmates to share your enthusiasm?
a. yes, b. perhaps, c. no.
83. "Teach" means the same as:
a. lead, b. explain, c. instruct.
84. If you have five coins and three of them are bent and four of them are silver, which of the following is certainly true:
a. two silver coins are bent,
b. one silver coin is bent,
c. three silver coins are bent?
85. When everyone is watching you, can you work just as fast as usual and without mistakes?
a. yes, b. uncertain, c. no.
86. Suppose you never got elected to any position in your class, would you still be quite satisfied?
a. yes, b. perhaps, c. no.
87. Do you sometimes have nightmares about the disappearance of your parents or other people that you depend on?
a. yes, b. perhaps, c. no.
88. In class do you believe in going on asking questions until you yourself are satisfied?
a. yes, b. perhaps, c. no.
89. Do you like to dress for school:
a. in a quiet style,
b. in between,
c. with some bright colors and fashionable styles?
90. In visiting a museum, do you like:
a. just to see what's amusing and stop when you're tired,
b. uncertain,
c. to fill every minute, being shown around by someone who knows?
91. Are you known as a person who really works hard on projects that interest you?
a. yes, b. uncertain, c. no.
92. When someone calls on you to defend one of your ideas, do you:
a. find yourself "tongue-tied,"
b. in between,
c. always have a ready answer?
93. Do you enjoy going to parties where there are lots of people you don't know?
a. yes, b. uncertain, c. no.
94. When you've hurt somebody's feelings:
a. do you say, "They'll soon get over it,"
b. in between,
c. does it worry you to think about it?
95. Which do you object to more:
a. having to look after younger children,
b. uncertain,
c. having to obey people who don't know things as well as you?
96. If something bad happens to discourage you, does your stomach "turn over" and your appetite vanish?
a. hardly ever, b. sometimes, c. frequently.
97. When you try as hard and carefully as others do, are other boys and girls:
a. still faster than you in getting done,
b. about as fast,
c. slower and not so good?
98. Would you rather have a summer job as:
a. a group helper at a beach,
b. uncertain,
c. a forest ranger or a forester?
99. When you have work to do, do you usually:
a. work steadily until the job gets done,
b. in between,
c. work hard for a while, then relax and come back later?
100. Do people ever tell you that you do things they would not expect a person like you to do?
a. yes, b. sometimes, c. no.
101. When there is a big delay in something, do you usually get jittery and decide to leave rather than wait?
a. often, b. sometimes, c. hardly ever.

102. Supposing they cost the same, would you rather live in:
 a. a house out in the country with no one around,
 b. uncertain,
 c. a city apartment with lots of people around?
103. When a new boy (or girl) joins your class, does he (or she) get to know you as quickly as he does the others?
 a. yes, b. perhaps, c. no.
104. Look at these five words: *trust, rely, learn, hope, believe*. The word that does not belong with the others is:
 a. trust, b. learn, c. hope.
105. When you are happy, can some small thing quite suddenly make you sad?
 a. yes, b. perhaps, c. no.
106. When your friends go somewhere without inviting you, do you:
 a. think they just forgot,
 b. in between,
 c. feel upset and angry?
107. Would you rather give your spare pocket money toward:
 a. a Christmas fund for children abroad,
 b. uncertain,
 c. a gift to your successful sports coach?
108. Do most people consider you a very calm, confident person, or a rather modest person who hangs back?
 a. confident, b. in between, c. modest.
109. Do you prefer to have just a few close friends instead of a whole lot of acquaintances?
 a. yes, b. in between, c. no.
110. Do you check to be sure you're doing a good job?
 a. seldom, b. sometimes, c. almost always.
111. Would you like a school where you didn't have to go to all classes, but only those you found easiest?
 a. yes, b. perhaps, c. no.
112. Do you feel afraid when you think you've forgotten something you should have done?
 a. often, b. sometimes, c. seldom.
113. When invited to a party, are you always happy to go and pretty sure you'll do the right thing?
 a. yes, b. perhaps, c. no.
114. On a visit in Spain, would you rather:
 a. listen to a concert of old guitar music,
 b. uncertain,
 c. watch a bull fight?
115. Would you speak up in class in defense of a good friend if a teacher criticized him more than seemed right?
 a. yes, b. perhaps, c. no.
116. Do you think story books make people seem:
 a. nicer and more intelligent than they are in real life,
 b. the same as they are,
 c. less good company than they really are?
117. Do you find it easy to make new friends?
 a. yes, b. uncertain, c. no.
118. When you are shown a new game do you:
 a. wait till you see how other people do it,
 b. uncertain,
 c. get right in and try it out?
119. Do people say that no matter what happens you stay calm and self-controlled?
 a. yes, b. uncertain, c. no.
120. Are there times when you do things you think you really shouldn't do?
 a. yes, often, b. sometimes, c. very rarely.
121. Do you think parents have a right to punish children severely when they shout back at them?
 a. yes, b. perhaps, c. no.

122. If in a show or play you do not get the part you can do well and naturally, would you ask:
 a. to be left out altogether,
 b. uncertain,
 c. to try some other part?
123. When you are older, which job would you prefer:
 a. a school supervisor or inspector,
 b. undecided,
 c. a designer of factories?
124. Look at these five words: *and, but, if, although, now*. The word that does not belong with the others is:
 a. but, b. now, c. although.
125. When you have to decide things in a hurry, do you stay happy with your decision?
 a. usually, b. sometimes, c. very rarely.
126. When you are studying, especially for tests, and there is noise around, do you:
 a. get really annoyed.
 b. in between,
 c. just keep on studying?
127. If you were a newspaper reporter would you rather report on:
 a. movies and shows,
 b. uncertain,
 c. political events?
128. How are you at seeing that people helping you on a job really do it properly?
 a. better than most,
 b. about the same as most,
 c. perhaps not so good as most.
129. Do you prefer classmates who:
 a. are more quiet and thoughtful,
 b. in between,
 c. have a quick, witty "reply" for wisecracks?
130. When you see a hungry, homeless cat in the street, do you:
 a. leave it to the man whose job it is to pick up strays,
 b. uncertain,
 c. take it home while you find out what can be done?
131. If you were given a lot of money and didn't have to work, would you:
 a. work anyway,
 b. in between,
 c. not work at all?
132. Do your hands sometimes tremble and your heart beat fast when you get excited about speaking up in class?
 a. yes, b. perhaps, c. no.
133. If you accidentally do something silly in front of people, can you laugh it off and go on, without feeling ashamed?
 a. yes, b. perhaps, c. no.
134. Would you rather receive as a present:
 a. a book of poetry and drama,
 b. undecided,
 c. a book about national sports teams?
135. When people are playing practical jokes, do you:
 a. join in and enjoy the fun,
 b. uncertain,
 c. feel it's childish and wrong?
136. Do you, or did you when you were younger, think a lot about what you would do if you got lost on a journey?
 a. yes, b. uncertain, c. no.
137. Are you sometimes bothered by useless thoughts you can't get rid of?
 a. yes, b. perhaps, c. no.
138. In general, would you say that people would rather have you as a friend than as an enemy?
 a. yes, much rather,
 b. uncertain,
 c. I don't think most people care one way or the other.
139. If you weren't a human being, would you rather be:
 a. a seagull (or an eagle on a mountain),
 b. uncertain,
 c. a race horse in a large stable of horses?
140. When you read about great deeds, do you feel:
 a. like trying to do the same,
 b. uncertain,
 c. that they are for someone else to do?
141. Do you sometimes feel nervous, so that sudden sounds annoy you?
 a. yes, b. perhaps, c. no.
142. Are you sure you have answered *every* question?
 a. yes, b. perhaps, c. no.



ANSWER SHEET: The Jr.-Sr. H S P Q, FORM _____ (A, B, C, or D)

EDITION USED: 1963

1968-69

NAME _____ FIRST _____ LAST _____ AGE _____ YRS. MTHS. SEX _____ G. OR B. SCHOOL _____ TODAY'S DATE _____

INSTRUCTIONS: FILL IN COMPLETELY THE BOX BELOW WHICH IS NUMBERED THE SAME AS THAT YOU ARE ANSWERING IN THE TEST BOOKLET.

EXAMPLE 1: ☐ a ☐ b ☐ c EXAMPLE 2: ☐ a ☐ b ☐ c

Page 2			Page 3			Page 4			Page 5			Page 6			Page 7			Page 8									
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Factor	SCORE	
	Raw	Std.
A	_____	_____
B	_____	_____
C	_____	_____
D	_____	_____
E	_____	_____
F	_____	110
G	_____	_____
H	_____	_____
I	_____	_____
J	_____	_____
O	_____	_____
Q ₁	_____	_____
Q ₂	_____	_____
Q ₃	_____	_____



Jr.-Sr. H S P Q TEST PROFILE

Name: _____ Age: _____ Sex: _____ Grade in School: _____ Date: _____

FACTOR	RAW SCORE			Sten Score	LOW SCORE DESCRIPTION	STANDARD TEN SCORE (STEN)										HIGH SCORE DESCRIPTION	
	Form A/C	Form B/D	Total			1	2	3	4	5	6	7	8	9	10		
A					RESERVED, DETACHED, CRITICAL, ALOOF, STIFF (Sizonyimial)	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	WARMHEARTED, OUTGOING, EASY-GOING, PARTICIPATING (Affectothymia, formerly Sizonyimial)
B					DULL, CONCRETE-THINKING (Lower intelligence)	.	.	.	.	.	.	.	.	.	.	.	BRIGHT, ABSTRACT-THINKING (Higher intelligence)
C					AFFECTED BY FEELINGS, EMOTIONALLY LESS STABLE, EASILY UPSET, CHANGEABLE (Lower ego strength)	.	.	.	.	.	.	.	.	.	.	.	EMOTIONALLY STABLE, MATURE, FACES REALITY CALM (Higher ego strength)
D					UNDEMONSTRATIVE, DELIBERATE, INACTIVE, STODGY (Phlegmatic temperament)	.	.	.	.	.	.	.	.	.	.	.	EXCITABLE, IMPATIENT, DEMANDING, OVERACTIVE, UNRESTRAINED (Excitability)
E					OBEDIENT, MILD, EASILY LED, DOCILE, ACCOMMODATING (Submissiveness)	.	.	.	.	.	.	.	.	.	.	.	ASSERTIVE, AGGRESSIVE, COMPETITIVE, CLUBBORN (Assertiveness)
F					SOBER, TACITURN, SERIOUS (Deliberateness)	.	.	.	.	.	.	.	.	.	.	.	ENTHUSIASTIC, REEDLESS, HAPPY-GO-LUCKY (Enthusiasm)
G					DISREGARDS RULES, EXPEDIENT (Weaker superego strength)	.	.	.	.	.	.	.	.	.	.	.	CONSCIENTIOUS, PERSISTENT, MORALISTIC, STAYD (Stronger superego strength)
H					SHY, TIMID, THREAT-SENSITIVE (Timidity)	.	.	.	.	.	.	.	.	.	.	.	ADVENTUROUS, "THICK-SKINNED", SOCIALLY BOLD (Fearlessness)
I					TOUGH-MINDED, REJECTS ILLUSIONS (Harshness)	.	.	.	.	.	.	.	.	.	.	.	TENDER-MINDED, SENSITIVE, CLINGING, OVER-PROTECTED (Receptiveness)
J					ZESTFUL, LIKES GROUP ACTION (Zeppia)	.	.	.	.	.	.	.	.	.	.	.	CIRCUMSPECT INDIVIDUALISM, REFLECTIVE, INTERNALLY RESTRAINED (Coastmentia)
O					SELF-ASSURED, COMPLACENT, SECURE, PLACID, SERENE (Self-satisfaction)	.	.	.	.	.	.	.	.	.	.	.	APPREHENSIVE, SELF-REPROACHING, INSECURE, WORRYING, TROUBLED (Self-doubt)
Q ₂					SOCIABLY GROUP-DEPENDENT, A "JOINER" AND SOUND FOLLOWER (Group dependency)	.	.	.	.	.	.	.	.	.	.	.	SELF-SUFFICIENT, PREFER SOLO, DECISION-RELIANCEFUL (Self-reliance)
Q ₃					UNCONTROLLED, LAX, FOLLOWS OWN URGES, CARELESS OF SOCIAL RULES (Low self-sentiment integration)	.	.	.	.	.	.	.	.	.	.	.	CONTROLLED, EXACTING WILL POWER, SOCIALLY PRECISE, COMPULSIVE (High self-sentiment integration)
Q ₄					RELAXED, TRANQUIL, EASY, UNFRUSTRATED, COMPOSED (Relaxation)	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	TENSE, PREOCCUPIED, DRIVEN, OVERTHOUGHT, FRETFUL (Anxiety)

SECOND-ORDER AND DERIVED SCORES

Second Exvia _____ Anxiety _____
Stratum Cortertia _____ Independence _____

Derived Neuroticism _____ Achievement _____
Leadership _____ Creativity _____

A sten of 1 2 3 4 5 6 7 8 9 10 is obtained by about 2.3% 4.4% 9.2% 15.0% 19.1% 19.1% 15.0% 9.2% 4.4% 2.3% of teenagers

Comments: _____

APPENDIX H

DEVEREUX ADOLESCENT BEHAVIOR RATING SCALE

DEVEREUX ADOLESCENT BEHAVIOR (DAB) RATING SCALE*

George Spivack, Ph.D.

Jules Spotts, Ph.D.

Peter E. Haimes, Ph.D.

Devereux Foundation Institute for Research and Training

Youngster's Name _____ Rater's Name _____

Youngster's Sex _____ Rater's Relationship to Child _____

Youngster's Birthdate _____ Date of Rating _____

RATING GUIDE

- | | |
|---|---|
| 1. Base rating on youngster's <u>recent and current</u> behavior. | Consider only the behavior of the youngster over the past two (2) weeks. |
| 2. Compare the youngster with normal adolescents his age. | In most of the items, the standard for comparison should be the normal adolescent of the same age and sex. |
| 3. Base rating on your own experience with the youngster. | Consider only your own impressions. As much as possible, ignore what others have said about the youngster, and their impressions. |
| 4. Consider each question <u>independently</u> . | Make no effort to describe a consistent behavioral picture or personality. It is known that adolescents may display seemingly contradictory behavior. |
| 5. Avoid interpretations of "unconscious" motives and feelings. | As much as possible, base ratings on outward behavior you actually observe. Do not try to interpret what might be going on in the youngster's mind. |
| 6. Use <u>extreme</u> ratings whenever <u>warranted</u> . | Avoid tending to rate near the middle of all scales. Make use of the full range offered by the scales. |
| 7. Rate each item <u>quickly</u> . | If you are unable to reach a decision, go on to the next item and come back later to those you skipped. |
| 8. Rate <u>every</u> question. | Attempt to rate each item. If you have had no opportunity to observe the youngster in certain situations necessary for the rating (e.g., "sexual relations", etc.), circle the item number. |

YOU ARE GOING TO RATE THE OVERT BEHAVIOR OF AN ADOLESCENT. FOR ITEMS 1-57, USE THE RATING SCALE BELOW. WRITE YOUR RATING (NUMBER) FOR EACH ITEM IN THE BOX TO THE LEFT OF THE ITEM NUMBER.

Very frequently Often Occasionally Rarely Never
5 4 3 2 1

COMPARED TO NORMAL ADOLESCENTS HIS AGE, HOW OFTEN DOES THE YOUNGSTER

Rating	Item	Rating	Item
<input type="checkbox"/>	1. Show an interest in violence, death, people in accidents (e.g., in what he reads, talks about, watches on TV...., etc.)?	<input type="checkbox"/>	13. Mechanically repeat what is said to him (i.e., echolalia)?
<input type="checkbox"/>	2. Have social contact with peers of the opposite sex?	<input type="checkbox"/>	14. Put inedible, unhealthy, or even dangerous things in his mouth (e.g., paper, wood, dirt, pins, garbage, etc.)?
<input type="checkbox"/>	3. Have a fixed facial expression that lacks feeling?	<input type="checkbox"/>	15. Blame or condemn himself for things that happen to him?
<input type="checkbox"/>	4. Intentionally tell lies?	<input type="checkbox"/>	16. Look puzzled or confused by things happening around him?
<input type="checkbox"/>	5. Wear clothes that are provocative (e.g., short skirts and/or tight sweaters for girls; tight trousers and and/or open shirts for boys)?	<input type="checkbox"/>	17. Get easily upset by peers (e.g., when pushed, teased, etc.)? (By peers is meant youngsters his own age, <u>excluding</u> brothers and sisters.)
<input type="checkbox"/>	6. Seek out adults for attention?	<input type="checkbox"/>	18. Resist or refuse doing what is asked of him, or display a negative attitude?
<input type="checkbox"/>	7. Persist when told he cannot have something (e.g., nag, demand, repeatedly ask for it, etc.)?	<input type="checkbox"/>	19. Display odd facial grimaces, strange postures, or odd movements (e.g., hitting or biting himself, senseless or magical movements of the fingers, arms, legs or head, etc.)?
<input type="checkbox"/>	8. Express the belief that he has committed some unpardonable act, that he is evil, or that he deserves severe punishment?	<input type="checkbox"/>	20. Tend to cling to adults (e.g., want to sit next to them, be around them a lot, etc.)?
<input type="checkbox"/>	9. Mumble, shout out, or make unusual vocal noises?	<input type="checkbox"/>	21. Act bossy or domineering with other youngsters?
<input type="checkbox"/>	10. Cheat (e.g., in games, or sports)?	<input type="checkbox"/>	22. Express anger in a poorly controlled fashion?
<input type="checkbox"/>	11. Mechanically repeat certain words or phrases in a meaningless way?	<input type="checkbox"/>	23. Tend to be loud and boisterous?
<input type="checkbox"/>	12. Daydream?	<input type="checkbox"/>	24. Rock back and forth while sitting or standing?

Very frequently 5	Often 4	Occasionally 3	Rarely 2	Never 1
<input type="checkbox"/>	25. Speak in a way that is disconnected, incoherent or not sensible (i.e., disregard speech handicaps and focus on the quality of the thought expressed)?	<input type="checkbox"/>	35. Substitute, confuse or misuse pronouns in conversation (e.g., use the pronoun "he" when referring to himself, confuse the pronouns "you" and "I", etc.)?	
<input type="checkbox"/>	26. Express anger?	<input type="checkbox"/>	36. Tease or bully other youngsters? (Excluding brothers and sisters.)	
<input type="checkbox"/>	27. Exhibit interest in sex, through action or what he says?	<input type="checkbox"/>	37. Report hearing voices or other hallucinations?	
<input type="checkbox"/>	28. Brag or act boastfully?	<input type="checkbox"/>	38. Resent being told what to do?	
<input type="checkbox"/>	29. Walk around oblivious to what is going on around him (e.g., seem wrapped up in his own thoughts)?	<input type="checkbox"/>	39. Seek out adult approval and praise for what he has done?	
<input type="checkbox"/>	30. Express the belief that others influence or control his thoughts (even though this isn't true)?	<input type="checkbox"/>	40. Do what he wants to even when told he shouldn't (act defiant)?	
<input type="checkbox"/>	31. Appear overactive and constantly moving about?	<input type="checkbox"/>	41. Take things that do not belong to him (steal)?	
<input type="checkbox"/>	32. Express grandiose ideas about himself which are extremely strange (e.g., that he has unusual or fantastic power over others, or things, that he is an extremely important person, etc.)?	<input type="checkbox"/>	42. Tell you things from his imagination as though they were really true?	
<input type="checkbox"/>	33. Seem elated or high in mood?	<input type="checkbox"/>	43. Talk rapidly or hurriedly?	
<input type="checkbox"/>	34. Use his name rather than the word "I" when referring to himself in conversation (e.g., John went upstairs to get his coat)?	<input type="checkbox"/>	44. React with immediate anger or upset if he has difficulty mastering or learning something?	
			45. Make up his own words or use common words in such a peculiar way that it is difficult to understand what he means?	

Very frequently 5	Often 4	Occasionally 3	Rarely 2	Never 1
Rating	Item	Rating	Item	
<input type="checkbox"/>	46. Act before he thinks (i.e., is impulsive)?	<input type="checkbox"/>	53. Have a blank stare or far away look in his eyes?	
<input type="checkbox"/>	47. Do everything with boundless energy?	<input type="checkbox"/>	54. Express the belief that people are against him (e.g., say that others pick on him, do not like him, talk about him behind his back, etc.)?	
<input type="checkbox"/>	48. Get very upset or overemotional if things don't go his way?			
<input type="checkbox"/>	49. Express depressed or despairing thoughts (e.g., express lack of hope, feelings of discouragement, that he expects the worst, no sense trying, etc.)?	<input type="checkbox"/>	55. Express the belief that certain people are plotting or conspiring against him (e.g., secret police, criminals, international spies, etc.)?	
<input type="checkbox"/>	50. Seek out adult help in doing things?	<input type="checkbox"/>	56. Say that his body is diseased, distorted, or that his internal organs are rotted or missing?	
<input type="checkbox"/>	51. Insist on doing things his way?			
<input type="checkbox"/>	52. Shut out sounds by lifting his shoulders to cover his ears, or putting his fingers in his ears?	<input type="checkbox"/>	57. Say that certain external forces (e.g., machines, electronic devices) are influencing or controlling his behavior and thinking?	

FOR ITEMS 58-64, USE THE RATING SCALE BELOW:

Extremely 8	Markedly 7	Distinctly 6	Quite a bit 5	Moder- ately 4	A little 3	Very slightly 2	Not at all 1
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TO WHAT DEGREE IS THE YOUNGSTER...

Rating	Item	Rating	Item
<input type="checkbox"/>	58. Afraid of getting hurt in physical activities (e.g., climbing, roughhousing, sports, etc.)?	<input type="checkbox"/>	60. Obsessed or preoccupied with ideas he worries or talks a lot about?
<input type="checkbox"/>	59. Preoccupied with compulsive acts he recognizes as unreasonable, but can not stop himself from doing (e.g., touching, counting, certain acts or routines, etc.)?	<input type="checkbox"/>	61. Impatient and unable to wait for things?
		<input type="checkbox"/>	62. Unemotional - rarely shows feelings?

Extremely	Markedly	Distinctly	Quite a bit	Moderately	A little	Very slightly	Not at all
8	7	6	5	4	3	2	1
<input type="checkbox"/> Rating	Item			<input type="checkbox"/> Rating	Item		
<input type="checkbox"/>	63. Prone to avoid competition with peers?			<input type="checkbox"/>	74. Prone to tire quickly or have low endurance?		
<input type="checkbox"/>	64. Withdrawn from others his age (i.e., avoids social contacts, remains alone or isolated)?			<input type="checkbox"/>	75. Prone to keep his distance or reserve with adults?		
<input type="checkbox"/>	65. Anxious or overconcerned about the future?			<input type="checkbox"/>	76. Unpredictable in his behavior?		
<input type="checkbox"/>	66. Boycrazy (for girls) or girlcrazy (for boys)?			<input type="checkbox"/>	77. Preoccupied with cosmetics (e.g., eye shadow, rouge; after shave lotion, hair tonic, etc)?		
<input type="checkbox"/>	67. Unaware of how adults feel toward him?			<input type="checkbox"/>	78. Unable to concentrate (e.g., jumps from one thing to another while talking or doing things, easily distracted in what he is doing by what others are doing around him, etc.)?		
<input type="checkbox"/>	68. Lacking in muscle tone (e.g., when you feel his muscles they seem soft and doughy)?			<input type="checkbox"/>	79. A fringe participant in peer social activities?		
<input type="checkbox"/>	69. Changeable or variable in mood or emotional state?			<input type="checkbox"/>	80. Timid or shy (i.e., will not "venture" out to try something new)?		
<input type="checkbox"/>	70. Physically weak?			<input type="checkbox"/>	81. Prone to hit or physically threaten peers?		
<input type="checkbox"/>	71. Sneaky or underhanded in much of what he does?			<input type="checkbox"/>	82. Talkative?		
<input type="checkbox"/>	72. Bossed or dominated by peers?			<input type="checkbox"/>	83. Easily overexcited?		
<input type="checkbox"/>	73. Poorly coordinated physically (e.g., clumsy or awkward in gross body movements, or in doing things with hands or fingers, etc.)?			<input type="checkbox"/>	84. One whose contacts with peers of the opposite sex must be supervised?		

ADDED COMMENTS

Use space below to record any additional descriptions of this child's behavior which you think are striking or characteristic, or may not be sufficiently covered by the scales

DEVEREUX ADOLESCENT BEHAVIOR (DAB) RATING SCALE* **(DAB Profile)**

George Spivack, Ph.D., Jules Spotts, Ph.D., Peter E. Haines, Ph.D.

Behavior Factors	Factor Item	Raw Scores	Sum Raw Sc.	RAW SCORES IN STANDARD SCORE UNITS			
				-1SD	0	+1SD	+2SD
1. Unethical	lies	4 — 41	steals				
	cheat	10 — 71	sneaky				
2. Defiant	neg.	18 — 40	defy				
Resistive	resent	38 — 51	insist				
3. Domineer	boss	21 — 34	tease				
Sadistic	brag	28 — 81	phys. egg.				
4. Hetero	social	2 — 66	"crazy"				
Sexual	clothes	5 — 77	cosmic				
Interest	interest	27 — 84	need supply				
5. Hyper-Activity	loud	23 — 43	talk fast				
Expansive	hyper.	31 — 47	energ't.				
	elated	33 — 82	talkiv.				
6. Poor Emotional Control	peer upset	17 — 44	im'd. mad				
	no contr.	22 — 48	upset				
	sth. mad	24 —					
7. Needs Approval Dependency	needs atm.	6 — 39	needs appr'l.				
	elling	20 — 50	help				
8. Emotional Distance	face	3 — 67	unaware				
	unemot.	62 — 75	adults				
9. Physical Inferiority	fears hurt	58 — 74	fires				
Timidity	tone	68 — 80	timid				
	weak	70 —					
10. Schizoid Withdrawal	day drm.	12 — 29	obliv's.				
	confus.	16 — 53	stare				
11. Bizarre Speech and Cognition	stereo.	11 — 35	pronoun.				
	echol.	13 — 37	halluc.				
	incoh.	23 — 45	neolog.				
	i-name	34 —					
12. Bizarre Action	vocal	9 — 24	rock				
	inedib.	14 — 52	no. hear				
	mvmts.	19 —					
Rational Clusters	Cluster Item	Raw Scores					
1. Inability to Delay	neg	7 — 69	mood				
	impuls.	46 — 76	unpred.				
	impat.	61 — 83	excit.				
2. Paranoid Thinking	viol.	1 — 32	grand.				
	influ.	30 — 42	imag.				
3. Anxious Self-Blame	sin	8 — 60	obess				
	self blame	15 — 65	anx. fut'r.				
	despair	49 —					

Additional Items		-1SD	0	+1SD	+2SD
(Youngster's Last Name)	54 persec				
	55 plots				
	56 body				
(First Name)	57 influ				
	59 comp. act				
	63 avd. comp				
Birth Date: _____	64 withdrawn				
	79 fringe				
	72 bossed				
Date of Rating: _____	73 coord				
	78 distract				

Age: _____ Sex: _____ IQ: _____

Rater's Name _____ Relationship to Youngster _____

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