RELATIONSHIP OF SELECTED PERSONAL CHARACTERISTICS AND AN OVERWEIGHT CONDITION AMONG FIFTH, SIXTH, AND SEVENTH GRADE STUDENTS

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CHAPTER I

INTRODUCTION

Traditionally, children who are overweight have been seen as a sign of having robust health, but physicians are realizing the prevalence and hazards of an overweight condition at any age. However, physicians are reluctant to treat the problem because it is very time consuming and almost always unsuccessful (Williams, 1974).

An overweight condition has ramifications for physical health such as: heart and circulatory problems, foot problems, backache, fatigue, varicose veins, sleepiness, shortness of breath, gall bladder problems, gout, and diabetes mellitus (Mayer, 1968) as well as psychological problems, especially for the adolescent. Force or persuasion by parents and friends for the adolescent to lose weight can have serious emotional consequences (Borden, 1975). Other problems stemming from the hidden costs of an overweight condition are: job discrimination, problems in purchasing clothes, life insurance, and durable furniture (Kesselman, 1974).

An overweight condition during infancy and childhood is a serious and increasing problem (Mayer, 1968). It is the most common nutritional health problem in the United States today (Collip, 1975). This is indicated by the continued increase in incidences of an overweight condition in school age children. One of every five school children suffer from an overweight condition. Four out of every five overweight children

become overweight adults (Williams, 1974). Previous investigation reports the prevalence of an overweight condition in 10-20 percent of the younger population (Seltzer and Mayer, 1970).

Little is known about what relationship, if any, an overweight condition has on the personality development and self-concept formation of children and adolescents. The only relatively successful treatment to date is behavior modification, which is a method of changing behavior concerning habits (Stunkard, 1976). Personality, self-concept, school performance, and ordinal position in the family and their relationships to an overweight condition can be helpful in gaining greater insight and experiencing greater success in treatment of the increasing number of overweight young children in the United States.

Purpose and Objectives of the Study

The purpose of this study is twofold: (1) to determine if there is a relationship between an overweight condition, and the personality, self-concept, school performance, and ordinal position in the family among fifth, sixth, and seventh grade boys and girls and (2) to identify differences among overweight and nonoverweight males and females among grades. The objectives for the study are:

1. To assess the relationship between an overweight condition and the specific personality characteristics of preadolescent boys and girls such as: sociability, anxiety, popularity, happiness, seriousness, apprehension, and conscientiousness.
2. To assess the relationship between an overweight condition and the self-concept of preadolescents.

3. To assess the relationship between an overweight condition and the personality of preadolescents.
4. To assess the relationship between an overweight condition and school performance in the preadolescent.
5. To identify if a difference exists in personality and self-concept among overweight and nonoverweight males and females in the fifth, sixth and seventh grades.
6. To make recommendations for further study which will be useful in the understanding and treatment of overweight condition in preadolescents.

Hypotheses

The following hypotheses will be examined:

H_1: There is no significant relationship between overweight and nonoverweight preadolescents and personality and self-concept.

H_2: There is no significant relationship between overweight preadolescents and school performance and ordinal position in the family.

H_3: There is no significant difference in self-concept and personality among overweight and nonoverweight males and females in the fifth, sixth and seventh grades.

Assumptions of the Study

The following assumptions are basic to this study:

1. The random sample will be representative of the overweight population of this age group.

2. The questionnaires completed by the students are candidly, conscientiously and independently answered.

Limitations of the Study

The following limitations are recognized in this study:

1. The population accessibility will be limited to subjects from schools randomly selected from schools which employ school nurses through the school system.
2. The attitude toward the subject matter in the study will be a limiting factor.
3. The population will be limited to subjects from selected schools in the state of Oklahoma.

Definitions

The following definitions will explain how certain terms will be used in this study.

Personality - the summation of all one's traits (Rogers, 1969); the quality of one's total behavior (Woodworth and Marquis, 1947). Personality is considered dynamic, developmental and socially oriented (Hawkes and Pease, 1962).

Self-Concept - (self-image) is what and how a person perceives himself to be. It is revealed through actions, decisions, words, facial expressions and even body posture. It is the core of the personality (Williams and Stith, 1974).

Overweight - 10 percent above the normal weight recommendations on the Standard Height-Weight Growth Grids.

Preadolescent - boys and girls in grades five, six, and seven.

Children's Personality Questionnaire (CPQ) - a standardized instrument available from Institute of Personality and Ability Testing.

Piers-Harris Children's Self-Concept Scale (PHCSCS) - a standardized instrument available from Counselor Recordings and Tests.

Developmental Tasks - tasks that arise at or near a certain time in the life of an individual; successful achievement of which leads to happiness, failure leads to unhappiness.

Ordinal Position - birth order.

Summary

This study is organized into five chapters. The significance of the study is stated in the introduction to Chapter I. It is followed by the statement of the problem, purpose and objectives of the study, assumptions and limitations of the study, hypothesis, and a definition of terms. A review of the literature that relates to the research will follow in Chapter II. The procedure and method used in conducting the study will be described in detail in Chapter III. The findings are presented in Chapter IV with the summary, conclusions, and recommendations presented in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

The literature related to an overweight condition in males and females, and its relationship to personality development and self-concept formation will be discussed in relation to five topics: (1) characteristics and causes of an overweight condition, (2) behavior modification as a treatment method, (3) characteristics of preadolescents, (4) personality development and self-concept formation of preadolescents, and (5) characteristics of each ordinal position in the family and information about personality and self-concept instruments. Although a significant amount of work has been done in areas related to overweight conditions at all age levels, there has been little investigation of the relationship between an overweight condition and personality and self-concept development of preadolescents.

Characteristics and Causes of Overweight

Overweight is a condition involving excessive fat. To specify the degree of the overweight condition of a particular individual, one is frequently referred to a standardized weight table. Unfortunately, most of the publicly available weight tables list American averages which do not take into account the fact that the average American is overweight (Mahoney and Mahoney, 1976).

Height-weight tables are not completely accurate in predicting an overweight condition because of variation in muscle size, water retention, bone structure and other inherent factors. However, the height-weight tables are an approximate measure to be used as a reference and for the purposes of this study, the only possible method for determining an overweight condition due to time limitations and personnel involved in the study.

> Overweight is the result of a very complex set of factors. Heredity, metabolism, and motivational influences may be important but they are not the primary factors. First, major differences between overweight and non-overweight individuals lie in their eating and activity patterns. Second, the major differences between successful and unsuccessful weight watchers lie in their self control skills. Regardless of age, sex or physiology, thoughts and images strongly affect behavior and feelings (Mahoney and Mahoney, 1976, p. 23).

Some research discusses several causes of an overweight condition in relation to two forms of the problem: (1) juvenile-onset obesity and (2) maturity-onset obesity. In the first form, the patient has too many fat cells caused by several factors, one or all of which may be contributing to the overweight condition. These factors being studied are: maternal weight gain during pregnancy, brain damage, overzealous bottle-feeding and early feeding of high caloric solid foods, and mother and physicians attitude toward weight gain (Winick, 1975). The second form is maturity onset obesity in which there is not an over-abundance of fat cells. It is instead, a condition of a normal number of fat cells which are too inflated due to overeating and inactivity.

There are several theories mentioned by Winick as to the cause of an overweight condition and each case might be the result of any one theory or a combination of several. There is strong evidence connecting

environmental factors and incidence of an overweight condition (Winick, 1975).

Characteristics of overweight children and teens are similar:

1. A fat child exercises one-third less than the lean child.
2. Overweight boys and girls are taller than their lean peers.
3. They have advanced skeletal development, higher than normal levels of hemoglobin and certain vitamins.
4. Puberty comes earlier.
5. More concern for an overweight condition in better educated families.
6. Adolescent overweight girls actually eat less than their lean thin classmates (Winick, 1975, p. 3, 7).

Overweight people suffer from a mean form of bigotry. Popular theory treats them like flabby exhibitions of weak character, they often accept this view in self contempt. Each pound adds to their burden of guilt (Crowell, 1976).

Winick, in his book, Childhood Obesity, states there are 12-15 different forms of overweight. Some of these are brain lesions and metabolic syndromes. Certain body types are associated with an overweight condition. There is a strong heredity component and there are environmental factors such as physical activity level and social class (not so evident in children). "The most significant of these conditions which causes an overweight condition is the activity level" (Winick, 1975, p. 77).

There are three vulnerable periods for the onset of an overweight condition according to Heald and Hollander and Hirsch. The three periods apparently when susceptability is highest are late infancy and early childhood, around the age of six years, and during adolescence (Heald

and Hollander, 1972). "The most vulnerable periods are: the last trimester of pregnancy, the first three years of life, and adolesence" (Hirsch, 1972, p. 3). Both authorities cite the adolescent period as a crucial period in determining whether a person will be overweight and add numbers of fat cells.

Relationship of an Overweight Condition and Self-Concept

Mayer (1975) states that young overweight subjects exercise less than their lean counterparts causing them to become discouraged because of being excluded from team sports, therefore, causing avoidance of physical exercise. They are also excluded from all sorts of social activities, rejected when applying to colleges which make them more and more isolated.

Heald (1972) defines self-concept as one of the major developmental tasks of the adolescent. A major developmental task is to adjust to a new body image and bodily changes. Another very important issue with which an adolescent must cope is his/her identity, the "who am I" task.

Compliance with society's expectation for a slim physical appearance may be unusually difficult for the overweight teenage girl. Therefore, it is not surprising that under as yet unidentified conditions, certain overweight teenage girls develop a poor body image. Mayer (1968) has found that overweight children have an obsession with self-image. Everything reminds them of fat and they show very clearly an expectation of rejection that is striking. He also states that teenagers are particularly sensitive to weight reduction. They feel they are unattractive; therefore, treatment must be approached slowly and

carefully because of poor body image. Treatment of overweight conditions should be through weight reduction, but also improvement of physical, social, and emotional factors should be considered (Matsuno, Hankin, and Dickenson, 1974).

One successful way to treat the problem and consider self-image is through a controlled group situation away from parents. "The overweight adolescents are consistent in that most of them are fighting self-pity, introspection, depression, and embarrassment" (Spargo, 1966, p. 37).

Relationship of an Overweight Condition and Personality Development

"The childhood onset obesity are less successful in losing weight" (Stunkard, 1976, p. 135). They are also more emotionally disturbed, more complaining, more discouraged, more demanding than those with adult onset obesity. This has been reported in a study done by Stunkard (1976) with a sample of obese adults.

In other research by Stunkard, he notes that body image disturbances do not occur in emotionally healthy overweight subjects. The main feature of an overweight person's disburbance is his/her preoccupation with "fat" to the exclusion of any other personal attribute (Stunkard, 1976). Weight reduction did not correct this disorder.

The critical period in the development of poor body image is a relatively short period at the adolescent stage when derogatory views of peers and parents are expressed to overweight adolescents and pre-adolescents (Winick, 1975). Winick (1975) reiterates what other researchers have found: that an overweight condition does affect body image. Overweight adolescents are obsessed with the problem and show

a clear expectation of rejection at the older teen and adult age. No research has been found concerning the effects of this condition on the adolescent or preadolescent.

Behavior Modification as a Treatment Method

An alternative to psychotherapy, a very expensive method of treatment for overweight, is behavior modification. It is a technique pioneered by John Paul Brady, a psychiatrist. The technique consists of a variety of different therapeutic methods bound together by the belief that behavior disorders are learned responses, and that modern theories of learning have much to teach us about the acquisition and extinction of these responses (Stunkard, 1976). The behavioral program has four parts to it: (1) a description of the behavior to be controlled (eating), (2) control of the stimuli that precede eating, (3) techniques to control the act of eating, and (4) prompt reinforcement of behaviors that delay or control eating (Stunkard, 1976).

Some very carefully controlled studies have been conducted and it can now be unequivocally said that behavior modification represents a significant improvement in the treatment of obesity. Twelve controlled studies carried out within the past five years have reported results favoring behavior modification over a variety of other treatment methods (Stunkard and Mahoney, 1975).

Interest in behavioral modification in obesity developed as a result of some highly relevant research into environmental influences on the eating and overeating of obese people. By emphasizing specific training in "stimulus control," behavior modifcation helps him/her to

manage the environmental determinants of eating. Until resently, treatment of obesity has been so unsuccessful that few attempts at follow-up have been made. With the development of more effective methods, reports of follow-up studies are beginning to appear (Stunkard and Mahoney, 1975).

The difference between behavior modification and more traditional therapies is particularly notable in the demands made on the obese patient in the interval between visits to the doctor. It requires that the patient invest a great deal of hard work in his/her treatment and develop self-control.

The problems of obesity are still far from solved. Even the application of our best available technology leaves huge numbers of obese people unhappy and in ill health. But for the first time in many years research already underway gives promise of aid and comfort in the foreseeable future. And this is just the beginning (Stunkard, 1976).

Characteristics of Preadolescents

When one is in the eighth grade and 13 years old, one is considered an adolescent (Mannister, 1977). The following will focus on the three years prior to this stage. Some of the developmental tasks of the school age child applicable to this study are discussed:

1. Extending his abilities to relate effectively to others, both peers and adults includes the following tasks: Making progress in his ability to adjust to others; Learning to stand up for his rights; Improving his abilities both to lead and to follow others; Meeting basic social expectations--learning simple conventions, rules, customs, courtesies, and standards of his family and groups; Learning genuinely cooperative roles with others in many situations; Making and keeping close friends.

2. Continuing the learning involved in handling his feelings and impulses: Growing in his ability to cope with simple frustrations; Exploring socially acceptable ways of releasing negative emotions; Becoming more mature in expressing feelings in ways and times and places appropriate within his culture; Gaining skill in sharing his feelings with those who can help (parents, teachers, close friends, scout leaders, etc.).

3. Coming to terms with his or her own sex role, both now and as it will become: Learning what is expected as appropriate behavior for boys, for girls, for men, for women, for married people, for parents, and for other adults; Clarifying knowledge about the nature of sex and reproduction; Adjusting to a changing body in the pubertal growth spurt as teen years approach (accepting the new size and form, function and potentials of pubertal growth); Thinking ahead wholesomely to what it will be like to be grown up as a man or woman.

4. Continuing to find himself as a worthy person: Identifying with his own age and sex in appropriate ways; Discovering many ways of becoming acceptable as a person, gaining status; Growing in self-confidence, self-respect, self-control, and self-realization; Extending the process of establishing his own individuality (Duvall, 1976, p. 275).

Children of this age begin to stay away from home for longer and longer periods of time during summer vacations and camps. This is good for the child developing independence, widening social experience, and generally contributing to personality growth. Research shows that children who are well-adjusted family members tend to retain family identifications, norms, and values even while associating with others.

Ordinal Position in the Family

Longitudinal studies indicate that earlier problems such as destructiveness, temper tantrums, and overactivity decline rapidly throughout the school years. However, research finds that ordinal position influences personality development. Each child enters the family at a

different family situation and establishes his or her own role patterns and relationships with the others accordingly (Bossard and Boll, 1956).

Ordinal position is a major determinant of development. First born children are more likely to be like their parents than later-borns. They have highly developed standards for themselves and others. They tend to be more mature and serious than those in other ordinal positions and they usually are more conscientious in their schoolwork, therefore perform better on achievement tests. Because they strive for perfection, they are quite sensitive to criticism, more reactive to anxiety situations (Bossard and Boll, 1956).

Only children are characterized much the same as first borns who have siblings. They become quite self-centered, feel insecure, and are dependent. They may not relate well to peers because of lack of regular assoications with children, however, only children may not exhibit some of these characteristics due to skillful parents (Dinkmeyer, 1965).

The middle child usually likes physical activity and is action-oriented. He or she may erroneously perceive himself or herself as being less intelligent than the first born and may turn to nonacademic endeavors. They are more practical than theoretical, and relate to such fields as social welfare, entertainment and art. They are generally easy-going, cheerful, gentle, analytical, yet unconcerned (Dinkmeyer, 1965).

The last born may feel inferior because everyone else in the family is older, stronger, and more experienced than the youngest child. They may become discouraged and give up to evade direct struggles with siblings, or on the other hand, they may become the most ambitious and excel due to examples he or she has for modeling (Dinkmeyer, 1965).

Personality Development

Personality is a dimension of behavior in which individuals differ. Each person has a unique blend of such traits as bravery, friendliness and selfishness. Most traits are emotion related, learned in home and school by imitation, and sometimes learned by trial and error through experience.

> No one single trait distinguishes a popular child from an unpopular one; however, highly accepted children are expansive, happy, optimistic, good natured, objective and free from anxieties and fears. They are group centered and anxious to please peers (Woodworth, 1947, p. 7).

Personality has been called the summation of all one's traits--the quality of one's total behavior (Rogers, 1969). There has never been one theory or explanation of personality that has been universally or even nationally accepted (Williams and Stith, 1974). Williams and Stith (1974) list the following summary statements with respect to personality developmental theory:

1. There are differences between individuals even at birth.
2. There is a patterning of growth which shows similarity from person to person.
3. Development is markedly affected by people.
4. Development is mardedly affected by situations.
5. Individuals differ in what they see in situations and in other people.
6. Inherent differences affect perception and response.
7. Individuals play different roles depending upon the prescription they receive in a situation.
8. Physiological needs seem to have priority over what have often been termed psychological needs.

9. A reasonable amount of stability of personality can be expected, providing there are no major environmental, psychological, or physical crises (p. 233).

Self-Concept Instrument

The instrument selected to assess self-concept in this study is the Piers-Harris Children's Self-Concept Scale (PHCSCS), "The Way I Feel About Myself" available from Counselor Recordings and Tests. Most of the reliability data come from the original standardization study. To judge the internal consistency (homogeneity) of the test, the Kuder-Richardson Formula 21 which assumes equal difficulty of items, has been employed with resulting coefficients ranging from .78 to .93 (Piers and Harris, 1969, p. 4). The stability has been tested by a retest after four months on one half the standardization sample. The retest results in coefficients of .72, .71, and .72, which are judged satisfactory for a self-concept instrument in the experimental state over so long a period of time. "The revised 80 item scale, though shorter, is shown to have better reliability since Wing (1966) found for both a two-month and four-month test-retest coefficients of .77 for 244 fifth graders" (Piers-Harris, 1969, p. 4). The scale is thus judged to have good internal consistency and adequate temporal stability.

> Some writers have questioned whether young children have a stable self-concept. They feel that attitudes toward self, which later become fairly well generalized, are at first more of a function of the immediate situation and so cannot be measured in any consistent fashion. While this may be true for preschool age children, it seems clear from the results quoted above, that at least by age eight, self-attitudes have a reasonable amount of stability (Piers-Harris, 1969, p. 5).

In standardizing the Piers-Harris Children's Self-Concept Scale, an attempt is made at the outset to produce a scale with content validity

by defining the universe to be measured as the areas about which children reported qualities they liked or disliked about themselves (Jersild, 1952). From the phenomenological point of view, it is irrelevant whether the self-concept corresponds to ratings by others; construct validity is established by other means. The Piers-Harris Children's Self-Concept Scale has been administered successfully to complete school classes from grades three through twelve. The highest correlations have been reported for the Cooper-Smith Self-Esteem Inventory (1959) which resembles the Piers-Harris scale in format and age range.

The PHCSC has been used in studies concerned with populations such as: learning disabled children, minority groups, and for attitudes among normal children concerning body image. It has also been used successfully in test-retest studies after intervention to see if there has been a change in self-concept. Brunn (1975) explores the relationships among self-concept, body cathexis and sociometric status in a population of 116 institutionalized dependent and/or neglected adolescents.

The pilot study (Piers and Harris, 1969) has established that children in the third, fourth and sixth grades understood the items and could be completed in the mentioned length of time. Items answered in one direction by fewer than 10 percent or more than 90 percent have in most cases been dropped. They have been inspected for sex differences. After an item analysis, the 80 items met two criteria, the present scale has evolved.

Personality Instrument

The instrument chosen to test for personality traits is the Children's Personality Questionnaire (CPQ) available from the Institute for Personality and Ability Testing. It yields a general assessment of personality by measuring 14 distinct dimensions or traits of personality which have been found by psychologists to approach the total personality (Cattell, 1965; 1967; 1973). It is designed for children between the ages of eight and twelve years, with reading vocabulary controlled, and with appropriate norms given according to both age and sex.

The instrument contains items which have been constructed to be as "neutral" as possible with regard to social desirability. It must be emphasized that the test administrator takes the greatest responsibility for keeping distortion effects at a minimum. The administrator should do this by putting the child at ease and by maintaining good rapport throughout the testing period (Porter and Cattell, 1972).

The validity of a test is a measure of the relationship between what the test specifically measures and what it is trying to measure. The process of obtaining "construct validity" is quite complex, arising from factor analytic techniques. Each coefficient can be regarded as a mean correlation of a particular group of items with the factor, that, together, they are supposed to measure. This test has direct construct validity. Over a reasonable period of time, the CPQ scales show good reliability also. No long-term test-retest studies are available to report at the present time.

Summary

Major findings from the review of literature reveal that:

1. Overweight is caused by many factors, inherited and environmental.
2. There is indication of poor effect of overweight on body image, but it is not clear at what age it begins.
3. Inactivity is a large factor in the incidence of overweight and the treatment most successful for changing this trend is to modify behavior.
4. The main feature of an overweight person's disturbance is his exclusion of any personal attribute other than "fat."
5. Behavior problems are most frequent among nine to thirteen year old boys and girls than among any other age group.
6. Adolescent overweight girls actually eat less than their lean classmates.
7. Review of personality and self-concept instruments identified those used for the study.
8. Ordinal position in the family has definite effects on human development.

CHAPTER III

PROCEDURE AND METHOD

The purpose of this chapter is to describe the methods and procedures used in conducting the study. These are determined by the central purpose and objectives of the study (see page 2) as they dictate a research design enabling the gathering of baseline information. As this material is descriptive in nature, the study is accomplished through the survey method.

Compton and Hall (1972, p. 139) have described survey research as "having the principal contribution of describing current practices or beliefs with the intent of making intelligent plans for improving conditions or processes in a particular local situation." Survey research in the scientific sense is a development of the Twentieth Century. In the past much of this type of research has been criticized for being largely descriptive, setting forth facts and observations without seeking causes and analyzing interrelationships among variables. If survey research is explanatory or analytical in nature, inferences can be drawn from samples to the whole population regarding prevalence, distribution, and interrelationships among variables. "Survey research is probably most commonly used to obtain the opinions and attitudes of individuals and to study social structure" (Kerlinger, 1964, p. 422).

Survey studies should consider the following limitations:

1. Surveys are dependent on the cooperation of respondents.

2. Information not known to the respondents cannot be obtained.

3. Respondents are likely to overestimate those characteristics that will make them look good and to minimize those for which society has low esteem.

4. Information obtained from a single survey is less reliable than trend data derived from two or more surveys made by the same methods.

5. Surveys cannot be aimed at obtaining exact quantitative forecasts of things to come (Compton and Hall, 1972, p. 139).

The purpose of this study is twofold: (1) to determine if there is a relationship between overweight and nonoverweight boys and girls and four criterion variables and (2) to identify differences among overweight and nonoverweight males and females among grades. The criterion variables are personality, self-concept, school performance, and ordinal position in the family.

In order to collect and analyze data pertaining to the purpose and objectives of the survey, it has been necessary to accomplish the following tasks:

1. Determine the population for the study.

2. Select two standardized instruments.

3. Collect the data.

4. Select method of data analysis.

In the following section, a discussion of the procedure in this study is included in detail.

Selection of the Sample

The identified sample as defined by the objectives is limited to the fifth, sixth, and seventh grades. Both males and females are

included in the sample, all selected from schools in Oklahoma which employ school nurses. The Annual Report, 1976, from the State Department of Education which lists all of the schools in Oklahoma by district and county is the source of the primary list of schools to be used for selecting a sample. A second list of school nurses and their assigned schools has been made available, School Nurses Directory, by the State Department of Education. From a list of all elementary and junior high school systems in Oklahoma which employ school nurses (24), schools are numbered, elementary schools for the fifth and sixth grades, and the junior high schools for the seventh grades for random selection purposes. The large school districts of Oklahoma City and Tulsa have been omitted from the list. The larger districts included in the selection process, Midwest City and Putnam City, have been randomly sampled separately because of the large number of schools in these districts. Midwest City Schools have 15 elementary schools and five junior high schools. One elementary school and one junior high school have been selected from Midwest City and one each from Putnam City Schools. Other schools included in the study have been selected by randomly sampling the remainder of the schools employing school nurses.

The final sample includes one classroom each in the fifth, sixth, and seventh grades in the following schools: Midwest City, Putnam City, Edmond, Mustang, Duncan, Okmulgee, and Shidler. Each school has then been contacted for permission to be included in the study.

After the schools have been selected, the superintendents are contacted by telephone for permission to include the school system in the study. Following the phone class, a letter (Appendix A) has been sent which explains exactly what the research involves: who it is for, what

information is needed, and how the information is gathered in each classroom. A copy of a permission letter (Appendix B) for the parent's signature has been sent to the principals. A follow-up phone call has been made (after the information is received) to the superintendent to get final permission and the name of the principal in the school selected.

The principal for each of the selected schools has been called. Included are 14 schools because a separate principal is administrator of the fifth and sixth grades and the seventh grades. The study is again explained to the principals, permission obtained from them, and a date set to make the on-site visit.

During the on-site visit, the following information has been gathered from the students participating in the study: number of brothers and their ages, number of sisters and their ages, grade in school, age, and sex. Other information needed--school performance, height, and weight of each student has been obtained from students' health records with the assistance of the teachers, nurses, and in one case, a secretary. To gather the necessary information needed on the personality and self-concept variables, standardized instruments are administered for each of these two variables.

Selection of the Instruments

Identifying the information which is needed to determine a self-concept score and a personality score is the first step in the selection of an instrument. A number of inventories has been reviewed from the following sources: the Buros' Mental Measurement Yearbook and Tests in Print, the Tests and Measurements Department at Oklahoma State

University and Central State University, and the Edmond Guidance Center. The instruments selected have been designed for the specific age group to be included in the sample, are appropriate for classroom and group use, and can be scored by the use of the handbook, key and the computer. The instruments chosen are the Piers-Harris Children's Self-Concept Scale entitled "The Way I Feel About Myself" (Appendix C) and the Children's Personality Questionnaire (Appendix D).

The Piers-Harris Children's Self-Concept Scale available from Counselor Recordings and Tests, is a quickly completed (15-20 minutes) self-report instrument designed for children over a wide age range. It is designed to be administered in group form, requires approximately a third grade reading level and consists of 80 items. Each item requires a yes or no response. The instrument can be administered by responsible, educated non-psychologists. It is designed primarily for research on the development of children's self-attitudes and correlates of these attitudes.

The instrument chosen to test for personality traits is the "Children's Personality Questionnaire" (CPQ) available from the Institute for Personality and Ability Testing. It yields a general assessment of personality by measuring 14 distinct dimensions or traits of personality which have been found by psychologists to approach the total personality (Cattell, 1965). This study will utilize only 13 of the factors. The factor assessing intelligence is omitted since it is being measured by the criterion variable, school performance. The factors utilized are:

1. Reserved versus Outgoing
2. Emotionally Less Stable versus Emotionally Stable
3. Complacent versus Showing Off

4. Obedient versus Stubborn
5. Serious versus Happy-Go-Lucky
6. Disregards Rules versus Conscientious
7. Timid versus Adventurous
8. Tough Minded versus Tender Minded
9. Liking Group Action versus Internally Restrained
10. Unpretentious versus Astute
11. Self-Assured versus Apprehensive
12. Uncontrolled versus Controlled
13. Unfrustrated versus Frustrated

The instrument is designed for children between the ages of eight and twelve years, with reading vocabulary controlled, and with appropriate norms given according to both age and sex. The CPQ is a test composed of 70 items, the whole design of which is aimed at giving the maximum information in the shortest time about the greatest number of dimensions of personality.

The special characteristics of the CPQ are:

1. It includes all of the more adequately research-demonstrated dimensions of personality from the general personality sphere. They are, thus, the objectively determined source traits that are of potential importance in clinical, educational, and counseling practice.

2. The test results give the teacher insightful understanding, as well as a precise, quantitative evaluation of those aspects of a particular pupil's personality contributing to, or detracting from, his performance in school and his social adjustment inside and outside the classroom.

3. These personality measures and concepts are equally relevant to child guidance, counseling, and classroom purposes.

4. The test format is such that it is administrable in both group and individual testing situations.

5. The availability of equivalent forms enables an examiner to use either a short or a more extended version of the test according to the length of testing time available (Cattell, 1972, p. 6).

The final structure of the construction process resulted in a test of 140 items in both forms, A_1 and A_2. Since 140 items in total is too long for the younger and slower readers, the instrument is broken down into two separate parts. For this research study, Form A_1, which consists of 70 items, has been used.

Data Collection

The data have been gathered by the researcher making on-site visits to each of the seven schools selected by random sample for the study. At each site, the inventories have been adminstered by the researcher in four schools and by the counselors in three schools, to one classroom each of fifth, sixth and seventh graders. The instructions have been given to each student participating in the study. All students involved must have a signed permission form from a parent, except for the students in one participating school. The particular school did not request parental permission forms.

One school system has failed to receive the parent's permission forms and will not permit the testing to be done at the scheduled time. A second set of permission forms has been made available and the principals of the schools involved agree to keep the instruments, IBM answer sheets, and instructions for administering the instruments. Counselors for the three grades have gathered the information for the researcher after receiving instructions to follow as similar to the researcher's methods as possible. The information has then been mailed to the researcher.

In two school systems, the counselors prefer to administer the questionnaires and collect the information needed for identifying data. This has been delivered in an on-site visit, instructions given to the counselors, and then completed and picked up by the researcher.

Administration and Scoring

In each selected classroom, the researcher and/or counselors explain the purpose for gathering the information of this nature as the answer sheets are distributed and the Piers-Harris test booklets. The answer sheet function is reviewed and instructions (Appendix F) about identifying data are given, the instruction booklet is opened and a sample question reviewed. A sample answer is also placed on the blackboard. Following a brief discussion suggested by the testing booklets concerning self-concept and personality questionnaires, the students are asked to proceed.

The fifth and sixth grades proceed as the researcher and/or counselor reads each item twice and continues at a consistent pace. The seventh grade students complete the questionnaire on their own. Following the Piers-Harris Scale, the CPQ is distributed, instructions discussed and the same procedure for administering is followed.

On completion of the instruments, necessary information collected from the school and each answer sheet is coded with the grade, school, student number, sisters, brothers, ages, position in the family, school performance, overweight/nonoverweight and male or female. Fifty-three questionnaires have been discarded for the following reasons:

1. Incomplete questionnaires;
2. Information lacking--school performance and height/weight.

Some students have not been included in each of the chosen schools for the following reasons:

1. Parents signed the permission form negatively.
2. Student lost the permission form.
3. Students absent from school when permission forms have been administered or when instruments have been administered.

The total remaining sample is 365.

Statistical Procedure

The data secured from the respondents are recorded by an Opscan scoring machine in the Bureau of Tests and Measures at Oklahoma State University, and have been stored on tape in the computer center for analysis. The data are to be processed on the IBM 360-50 using the Statistical Analysis System 72.

Respondents on the Piers-Harris "Children's Self-Concept Scale" are given a score of one for a response characteristic of a high self-concept, and a zero for a response in the direction of a low self-concept. The analysis of the scores then have been computed and related to the dichotomous variables of overweight and nonoverweight. The "Children's Personality Questionnaire" used in hypothesis one is scored according to a key with numerical loadings identified for each factor with polar extremes which characterize the personality score in that factor. The score obtained then is computed and correlated with the dichotomous variable for a point-biserial correlation.

> The point-biserial coefficient of correlation is a product-moment coefficient of correlation between a continuous variable and a dichotomous variable. It is used when a coefficient of relationship is desired

> between one measure that is continuous and another that is dichotomous (Bruning and Kintz, 1977, p. 182).

This statistical treatment is used to analyze hypothesis one. The formula for computing a point biserial coefficient is (Edwards, 1956, p. 182):

$$r_{pb} = \frac{Y_1 - Y_0}{s_y} \sqrt{\frac{N_1 N_0}{N(N-1)}}$$

Y_1 = the mean of the values of the continuous variable for persons in the dichotomous group of nonoverweight;

Y_0 = the mean of the values of the continuous variable for persons in the dichotomous group of overweight;

N_1 = the number of persons in dichotomous category of nonoverweight;

N_2 = the number of persons in dichotomous category of overweight;

s_y = the estimated standard deviation of the population of continuous variable values from which the sample was taken; and

N = the total number of persons in the sample.

The statistical treatment used for testing hypothesis two is the complex Chi square and the Contingency Coefficient.

> When there are more than two groups the complex Chi square statistical test compares the effects of two variables on either of the two groups. It is used to test the hypothesis of no difference between the variables. The formula used to compute the Chi square is:

$$x^2 = \sum \frac{(O - E)^2}{E}$$

O = the observed frequency for a particular cell of the contingency table

E = the expected frequency for a cell, based upon marginal totals

The contingency coefficient is computed with the Chi square value to determine to what degree the variables are related. The statistical formula for computing the contingency coefficient is:

$$C = \sqrt{\frac{x^2}{x^2 + N}}$$

x^2 = the chi-square value

N = the total of all the values in the contingency table (Bruning and Kintz, 1977, p. 233)

Analysis of variances are provided to test hypothesis three to indicate the existence of significant differences between mean scores on the Piers-Harris Children's Self-Concept Scale and the CPQ, and overweight and nonoverweight among preadolescent males and females. The assumptions associated with the statistical model underlying analysis of variance are:

1. The scores or observations are independently drawn from normally distributed populations.

2. The populations all have the same variance.

3. The F test requires at least interval measurement of the variables involved.

4. The interval scale is characterized by a common and constant unit of measurement which assigns a real number to all pairs of objects in the ordered set (Siegel, 1956, p. 19).

The value of F is obtained by dividing the between mean square by the within mean square (Popham, 1967, p. 185).

$$F = \frac{\text{Between groups mean square}}{\text{Within groups mean square}}$$

In order to compute the formula the following quantities are needed:

1. The sums of squares for the total group, within groups, and between groups;

2. The degrees of freedom for the within groups and between groups; and

3. The mean squares for the within groups and between groups (Popham, 1967, p. 180).

The F value is calculated from observed data and the results are checked against an F table. If the obtained F value is as great or greater than the appropriate labeled table entry, the difference reflected is statistically significant (Kerlinger, 1972). For the analysis of variance, the .05 level of probability is selected as the level which the F score must equal in order for the difference to be significant. The F score, however, does not indicate which differences may be considered statistically significant among fifth, sixth and seventh grade students.

The Duncan's Multiple Range analysis is used to determine which of the differences among the treatment means are significant and which are not (Steel and Torrie, 1960). The basic computational formula for computing the Duncan's Multiple Range critical difference is (Bruning and Kintz, 1966, p. 177):

$$\text{C. diff.} = kr\sqrt{\frac{\text{MS within group error}}{\text{N (per gp)}}}$$

C. diff. = critical difference

MS = mean square

N = number in group

kr = k - minimum significance value at .05 level
r - number of means for range being tested.

CHAPTER IV

ANALYSIS OF DATA

The results of the analysis of data are presented in this chapter in four parts. Part I, general information is presented to gain a composite knowledge of the population. Part II includes information related to personality and self-concept relationships among grades. Part III includes information related to differences in school performance and ordinal position among grades. Part IV is personality and self-concept differences among grades.

Statistical analysis of the data is reported in frequencies and percentages, point-biserial coefficient of correlations and t test. Chi squares and contingency coefficients, analysis of variance, and the Duncan's Multiple Range test are also utilized to analyze the data.

The frequencies and percentages are reported to establish values for each of the variables to identify the general population information. The point-biserial correlation is used to determine if there is a relationship between the continuous variables and the dichotomous variables. The t test, then, is computed to test the significance of the point-biserial coefficient. Chi squares are calculated to test for a relationship between overweight and nonoverweight groups and the criterion variables, ordinal position in the family and school performance. A contingency coefficient is a test to determine to what degree the variables are related. Analyses of variance are utilized to indicate the

existence of significant differences between mean scores, and the Duncan's Multiple Range test provides the direction of the significant differences.

Characteristics of the Subjects

Participating in the study are 365 students in the fifth, sixth, and seventh grades. Of this total sample, 173 students (47 percent) are males. Sixty-five (38 percent) of the male population are overweight, and 108 (62 percent) of the male population are nonoverweight. The total female sample is 192 students (53 percent) with 65 (34 percent) of the female population overweight and 127 students (66 percent) of the female population not overweight.

Table I includes general information about the criterion variables. They are school performance, ordinal position in the family, and grade level characteristics.

School performance as seen in Table I lists frequencies and percentages in each of four categories: poor, 0-20; fair, 21-40; average, 41-60; and above average, 61+. These categories are based on national percentiles from the California Achievement Test for each student. The percentages are calculated on the total population in each category.

Ordinal position recorded by the student according to four categories: oldest, youngest, only, and other, is listed in frequencies and percentages. The percentages are calculated on the total number in each group in all grades.

Grade levels of fifth, sixth, and seventh are charted in frequencies and percentages. The percentages are calculated on the total number in

TABLE I

FREQUENCIES AND PERCENTAGES ON THE CRITERION VARIABLES

Selected Variables	Males N = 173				Females N = 192				Row Total
	Overweight		Nonoverweight		Overweight		Nonoverweight		
	N	Percent	N	Percent	N	Percent	N	Percent	N
School Performance									
Poor	9	21	16	38	10	24	7	17	42
Fair	12	19	17	27	13	21	21	33	63
Average	14	16	27	30	12	14	36	41	89
Above Average	30	18	48	28	30	18	63	37	171
Total									365
Ordinal Position									
Oldest	26	22	39	33	17	14	36	31	118
Youngest	24	22	24	24	14	13	46	42	110
Only	4	19	6	29	5	24	6	29	21
Other	11	10	35	31	29	26	37	33	112
Total									361*
Grade Level									
Fifth	22	20	39	35	15	14	35	32	111
Sixth	19	18	32	30	19	18	38	35	108
Seventh	24	17	36	25	31	22	53	37	144
Total									363**

*4 respondents did not identify ordinal position **2 respondents did not identify grade level

each of the following categories: overweight males, nonoverweight males, overweight females, and nonoverweight females.

School Performance

As can be seen in Table I, the selected variable, school performance, is described in four categories: fair, poor, average, and above average. Of the 42 preadolescent males and females whose school performance is considered to be "poor," 21 percent is overweight males, 38 percent is nonoverweight males, 24 percent is overweight females, and 17 percent is nonoverweight females. The 63 preadolescents with a school performance of "fair" includes 19 percent overweight males, 27 percent nonoverweight males, 21 percent overweight females, and 33 percent nonoverweight females. The school performance category of "average," with a total of 89, finds 16 percent to be overweight males, 30 percent nonoverweight males, 14 percent overweight females, and 41 percent nonoverweight females. Of the 171 preadolescents whose school performance is considered to be "above average," 18 percent is overweight males, 28 percent nonoverweight males, 18 percent overweight females, and 37 percent are nonoverweight females.

Ordinal Position

In Table I percentages are recorded for four categories within ordinal position in the family. They are: oldest, youngest, only, and other. Of 118 oldest children, 22 percent is overweight males, 33 percent is nonoverweight males, 14 percent is overweight females, and 31 percent is nonoverweight females. In the category of 110 youngest children, 22 percent is overweight males, 24 percent nonoverweight

males, 13 percent overweight females, and 42 percent nonoverweight females. Of the 21 only children, 19 percent is overweight males, 29 percent nonoverweight males, 24 percent overweight females, and 29 percent nonoverweight females. The classification of "other" includes all middle children between the youngest and oldest child. Of 112 preadolescents in this group, 10 percent is overweight males, 31 percent nonoverweight males, 26 percent is overweight females, and 33 percent nonoverweight females.

Grade Levels

Of the total fifth grade population, 20 percent is fifth grade overweight males, 35 percent is fifth grade nonoverweight males. The overweight fifth grade females include 14 percent, while the nonoverweight fifth grade females make up 32 percent of the population.

In the sixth grade, 18 percent is overweight males, 30 percent nonoverweight males, 18 percent is overweight females, and 35 percent is nonoverweight females. The seventh grade population includes 17 percent overweight males, 25 percent nonoverweight males, 22 percent overweight females, and 37 percent is nonoverweight females.

As preadolescents progress from the fifth to the seventh grades, the percent of overweight males decreases. It can also be noted that the percent of overweight females increases by four percent per year as they progress from the fifth to the seventh grade.

Personality and Self-Concept

Relationships Among Grades

Hypothesis I states that there is no significant relationship

between overweight and nonoverweight students in the fifth, sixth, and seventh grades and personality and self-concept. To test the hypotheses related to personality and self-concept a point-biserial correlation is calculated, and then a supplemental t test is calculated to test the significance of the point-biserial correlation.

The analysis is divided into three categories. These categories are: overweight and nonoverweight students in the fifth grade, overweight and nonoverweight students in the sixth grade, and overweight and nonoverweight students in the seventh grade.

Preadolescents in the Fifth Grade

Table II contains the results of the correlations (r's) between overweight and nonoverweight fifth grade students and personality and self-concept. The analysis of data indicates that there is no significant relationship between overweight and nonoverweight fifth grade students and personality and self-concept.

Preadolescents in the Sixth Grade

Analysis in Table III reveals that there is a significant relationship among sixth grade overweight and nonoverweight preadolescents and personality in four factors on the CPQ. The four factors showing a significant relationship among sixth grade preadolescents and personality are: Emotionally Less Stable versus Emotionally Stable, Serious versus Happy-Go-Lucky, Disregards Rules versus Conscientious, and Tough Minded versus Tender Minded.

To be significant at the .05 level of probability, a t value of 2.00 is needed (Steel and Torrie, 1960, p. 433). The significant

TABLE II

POINT-BISERIAL CORRELATION BETWEEN OVERWEIGHT AND NONOVERWEIGHT PREADOLESCENTS IN THE FIFTH GRADE AND SELF-CONCEPT AND PERSONALITY

Continuous Variable	Dichotomous Group Nonoverweight Mean	Overweight Mean	S_y	rpb	t
Piers-Harris Children's Self-Concept Scale	N = 74	N = 37			
Behavior	2.38	2.31	1.11	0.03	0.34
Physical Appearance	-2.76	-2.95	1.40	0.06	0.66
Anxiety	-2.17	-2.16	0.99	0.01	1.46
Popularity	-1.08	-0.83	0.82	0.14	1.46
Happiness	-0.08	-0.07	0.45	0.01	0.12
Children's Personality Questionnaire					
Reserved versus Outgoing	3.72	3.84	1.18	0.05	0.51
Emotionally Less Stable vs. Emotionally Stable	3.01	3.24	1.41	0.08	0.81
Complacent vs. Showing Off	1.74	1.57	1.44	0.06	0.60
Obedient versus Stubborn	1.22	1.11	1.08	0.05	0.49
Serious versus Happy-Go-Lucky	2.05	2.19	1.29	0.05	0.52
Disregards Rules versus Conscientious	3.60	3.49	1.06	0.05	0.50
Timid versus Adventurous	3.01	3.13	1.12	0.05	0.54
Tough Minded versus Tender Minded	1.95	1.84	1.59	0.03	0.33
Liking Group Action versus Internally Restrained	1.61	2.08	1.33	0.17	1.77
Unpretentious versus Astute	1.57	1.59	1.21	0.01	0.11
Self-Assured versus Apprehensive	1.65	1.95	1.38	0.10	1.06
Uncontrolled versus Controlled	3.46	3.60	1.04	0.06	0.64
Unfrustrated versus Frustrated	1.96	2.16	1.35	0.07	0.74

S_y = Standard Deviation df = 109

$t = 2.00$ $p < .05$

TABLE III

POINT-BISERIAL CORRELATION BETWEEN OVERWEIGHT AND NONOVERWEIGHT PREADOLESCENTS IN THE SIXTH GRADE AND SELF-CONCEPT AND PERSONALITY

Continuous Variable	Dichotomous Group Nonoverweight Mean	Dichotomous Group Overweight Mean	S_y	rpb	t
Piers-Harris Children's Self-Concept Scale	N = 71	N = 38			
Behavior	2.72	2.79	0.96	0.03	0.34
Physical Appearance	-2.75	-2.48	1.36	0.10	0.99
Anxiety	-2.50	-2.13	1.08	0.17	1.74
Popularity	-1.17	-1.11	0.71	0.04	0.41
Happiness	-0.22	-0.09	0.44	0.14	1.47
Children's Personality Questionnaire					
Reserved versus Outgoing	4.04	3.97	1.05	0.03	0.32
Emotionally Less Stable vs. Emotionally Stable	3.44	2.76	1.37	0.23	2.49*
Complacent versus Showing Off	2.17	1.66	1.54	0.16	1.66
Obedient versus Stubborn	1.42	1.42	1.07	0.001	0.01
Serious versus Happy-Go-Lucky	2.69	2.03	1.23	0.26	2.76*
Disregards Rules versus Conscientious	3.13	3.82	1.37	0.24	2.56*
Timid versus Adventurous	2.92	2.58	1.09	0.15	1.54
Tough Minded versus Tender Minded	1.52	2.34	1.52	0.26	2.76*
Liking Group Action versus Internally Restrained	1.51	1.87	1.32	0.13	1.36
Unpretentious versus Astute	1.76	1.76	1.26	0.001	0.01
Self-Assured versus Apprehensive	1.61	1.58	1.21	0.01	0.11
Uncontrolled versus Controlled	3.27	3.18	1.23	0.03	0.33
Unfrustrated versus Frustrated	2.07	1.95	1.34	0.04	0.45

S_y = Standard Deviation df = 107

*Significant at the $p < .05$

factors have t values of 2.49, 2.76, 2.56, and 2.76 respectively. The nonoverweight sixth grade students scored higher on the factor Emotionally Less Stable versus Emotionally Stable with a mean of 3.44 than did the overweight sixth grade students with a mean of 2.76. The positive significant relationship for the factor Emotionally Less Stable versus Emotionally Stable indicates the following characteristics: "Relatively calm, stable and socially mature for their age, and are better able to cope efficiently with others than are low scorers who are more subject to a loss of emotional control" (Porter and Cattell, 1975, p. 7).

The nonoverweight sixth grade preadolescents have scored significantly higher with a mean of 2.69 on the factor Serious versus Happy-Go-Lucky than did the overweight sixth grade preadolescents with a mean of 2.03. The factor Serious versus Happy-Go-Lucky will characterize a high scorer as: "Enthusiastic and optimistic. Research shows that high scorers have generally had an easier, less punishing, more optimism-creating environment" (Porter and Cattell, 1975, p. 8).

Overweight sixth grade students scored higher with a mean of 3.82 on the factor Disregards Rules versus Conscientious than did the nonoverweight sixth grade students with a mean of 3.13. The low t value of 2.56 for the factor Disregards Rules versus Conscientious indicates that a low mean score is characteristic of more self-indulgent, quitting, slack, undependable and disregards obligation to people (Porter and Cattell, 1972).

The overweight sixth grade students scored higher on the factor Tough Minded versus Tender Minded with a mean of 2.34 than did the nonoverweight sixth grade preadolescents with a mean of 1.52. The factor Tough Minded versus Tender Minded yields a t value of 2.76 indicating

a low self-concept score. The low scorer on this factor is: tough, masculine, practical, mature and a realistic temperamental dimension (Porter and Cattell, 1972, p. 31).

Preadolescents in the Seventh Grade

Table IV contains the results of the analysis concerning seventh grade students and their personality and self-concept scores. The analysis indicates that there is no significant relationship between overweight and nonoverweight seventh grade preadolescents and their personality and self-concept scores.

School Performance and Ordinal Position Among Preadolescents

Hypothesis two states that there is no significant relationship between overweight preadolescents and school performance and ordinal position in the family. In order to test the hypothesis related to school performance and ordinal position of overweight and nonoverweight preadolescents, the Chi square has been calculated (see page 30 for formula utilized).

School Performance

Table V reports results that reveal school performance is not significantly related to incidence of overweight in preadolescents. Females in the sixth grade and the total female sample have a probability of .08 with a Chi square of 6.74 and 6.81. To be significant at the .05 level of probability the Chi square value of 7.81 is needed.

TABLE IV

POINT-BISERIAL CORRELATION BETWEEN OVERWEIGHT AND NONOVERWEIGHT PREADOLESCENTS IN THE SEVENTH GRADE AND SELF-CONCEPT AND PERSONALITY

Continuous Variable	Dichotomous Group Nonoverweight Mean	Dichotomous Group Overweight Mean	S_y	rpb	t
Piers-Harris Children's Self-Concept Scale	N = 89	N = 58			
Behavior	2.66	2.73	1.02	0.04	0.47
Physical Appearance	-2.83	-2.56	1.31	0.08	0.15
Anxiety	-2.07	-2.12	0.99	0.04	0.42
Popularity	-1.06	-1.21	0.74	0.10	1.25
Happiness	-0.08	-0.19	0.46	0.12	1.45
Children's Personality Questionnaire					
Reserved versus Outgoing	3.96	3.84	1.03	0.05	0.63
Emotionally Less Stable vs. Emotionally Stable	3.18	2.87	1.43	0.08	0.96
Complacent versus Showing Off	2.08	2.44	1.40	0.11	1.34
Obedient versus Stubborn	1.47	1.66	1.17	0.06	0.75
Serious versus Happy-Go-Lucky	2.32	2.07	1.18	0.10	1.23
Disregards Rules versus Conscientious	3.08	3.15	1.14	0.14	0.49
Timid versus Adventurous	2.67	2.56	1.08	0.03	0.38
Tough Minded versus Tender Minded	1.79	2.06	1.50	0.09	1.04
Liking Group Action versus Internally Restrained	1.80	2.09	1.16	0.09	1.12
Unpretentious versus Astute	1.70	1.51	1.21	0.09	1.05
Self-Assured versus Apprehensive	1.55	1.78	1.22	0.08	0.93
Uncontrolled versus Controlled	2.98	2.89	1.22	0.03	0.31
Unfrustrated versus Frustrated	2.28	2.15	1.37	0.06	0.77

S_y = Standard Deviation df = 145
$t = 2.00$ $p < .05$

TABLE V

NUMERICAL FREQUENCIES AND STATISTICAL ANALYSIS OF THE SCHOOL PERFORMANCE OF OVERWEIGHT AND NONOVERWEIGHT MALES AND FEMALES IN THE FIFTH, SIXTH, AND SEVENTH GRADES

	School Performance								Statistical Analysis		
	Poor		Fair		Average		Above Average				
Preadolescents	O	N	O	N	O	N	O	N	χ^2	Sig. Level	Contingency Coefficient
Fifth Grade Females	3	3	3	5	3	11	6	16	1.93	.59	.193
Fifth Grade Males	4	7	6	6	5	6	7	20	2.64	.45	.204
Sixth Grade Females	4	1	2	10	5	13	8	14	6.74	.08	.325
Sixth Grade Males	2	6	3	6	3	9	11	11	2.87	.41	.231
Seventh Grade Females	3	3	8	6	4	12	16	32	4.14	.25	.217
Seventh Grade Males	3	3	3	5	6	12	12	16	0.70	.87	.107
Total Females	10	7	13	21	12	36	30	63	6.81	.08	.185
Total Males	9	16	12	17	14	27	30	48	.44	.93	.05

O = Overweight; N = Nonoverweight
$p < .05$, df = 3

Ordinal Position in the Family

Table VI shows that there is no significant relationship between overweight and nonoverweight and ordinal position in the family. However, the total female sample has a probability of .08, with a Chi square value of 6.66. To be significant at the .05 level of probability, a Chi square value of 7.84 is needed.

Personality and Self-Concept Differences Among Grades

Hypothesis three states that there is no significant difference between overweight and nonoverweight preadolescent males and females in the fifth, sixth and seventh grades and self-concept and personality. To test the null hypothesis, an analysis of variance has been computed. The scores are summed and means are obtained. The mean score is analyzed for differences among the individual variables. The analysis of variance is used to determine whether there is significant differences between mean scores of two or more groups (Siegel, 1956).

Self-Concept Differences Among Grades

The analysis will be described according to four categories in relation to self-concept. The categories are: overweight males, nonoverweight males, overweight females, and nonoverweight females.

Overweight Males. The results of the analysis of the significant differences between fifth, sixth, and seventh grade overweight males and the Piers-Harris Children's Self-Concept Scale are given in Table VII. A significant difference is not identified among any of the

TABLE VI

NUMERICAL FREQUENCIES AND STATISTICAL ANALYSIS OF THE ORDINAL POSITION OF OVERWEIGHT AND NONOVERWEIGHT MALES AND FEMALES IN THE FIFTH, SIXTH, AND SEVENTH GRADES

	Ordinal Position								Statistical Analysis		
	Only		Oldest		Youngest		Other				
Preadolescents	O	N	O	N	O	N	O	N	χ^2	Sig. Level	Contingency Coefficient
Males	26	39	24	26	4	6	11	35	6.12	.11	.86
Females	17	36	14	46	5	6	29	37	6.66	.08	.184

O = Overweight; N = Nonoverweight
$p < .05$, df = 3

self-concept factors, as seen in Table VII.

TABLE VII

ANALYSIS OF VARIANCE BETWEEN FIFTH, SIXTH, AND SEVENTH GRADE OVERWEIGHT MALES AND THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE

Source of Variation	df	Sum of Squares	Mean Square	F	p
Behavior					
Between Grades	2	3.22	1.61	1.36	0.26
Within Sample	62	73.39	1.18		
Physical Appearance and Attributes					
Between Grades	2	6.36	3.18	2.21	0.12
Within Sample	62	89.21	1.44		
Anxiety					
Between Grades	2	0.05	0.02	0.02	0.98
Within Sample	62	69.78	1.13		
Popularity					
Between Grades	2	0.64	0.32	0.65	0.53
Within Sample	62	30.75	0.50		
Happiness and Satisfaction					
Between Grades	2	1.28	0.64	2.45	0.10
Within Sample	62	16.17	0.26		

$p < .05$
*significant at the $p < .05$

Nonoverweight Males. Analysis of the difference between fifth, sixth, and seventh grade nonoverweight males and the Piers-Harris Children's Self-Concept Scale is shown in Table VIII. The factor, Behavior, with an obtained F score of 4.11, is significant at the .02

level of probability. This indicates a positive self concept with respect to behavior. The data also indicate that the factors Physical Appearance and Attributes, Anxiety, Popularity, and Happiness and Satisfaction are not significantly different among nonoverweight males in the fifth, sixth, and seventh grades.

TABLE VIII

ANALYSIS OF VARIANCE BETWEEN FIFTH, SIXTH, AND SEVENTH GRADE NONOVERWEIGHT MALES AND THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE

Source of Variation	df	Sum of Squares	Mean Square	F	p
Behavior					
Between Grades	2	9.18	4.59	4.11*	0.02
Within Sample	105	117.40	1.12		
Physical Appearance and Attributes					
Between Grades	2	0.43	0.21	0.10	0.90
Within Sample	105	219.77	2.09		
Anxiety					
Between Grades	2	4.48	2.24	2.67	0.07
Within Sample	105	87.97	0.84		
Popularity					
Between Grades	2	0.29	0.14	0.20	0.82
Within Sample	105	76.75	0.73		
Happiness and Satisfaction					
Between Grades	2	0.44	0.22	1.18	0.31
Within Sample	105	19.46	0.19		

*significant at the $p < .05$

The directions of the significant differences between nonoverweight males and the Piers-Harris Children's Self-Concept Scale is obtained through the use of the Duncan's Multiple Range test. Significant differences are indicated by means not grouped by the same letter. To identify these differences, the groupings are shown on each Duncan's Multiple Range table by astericks connected by broken lines.

As seen in Table IX, the significant difference calculated by the F test among fifth, sixth, and seventh grade nonoverweight males and the Piers-Harris Children's Self-Concept Scale is found between two groupings in a Duncan's Multiple Range. Nonoverweight males in the fifth grade with a mean of 2.22 have significantly lower scores on the Behavior factor than nonoverweight males in the sixth grade with a mean of 2.86 and nonoverweight males in the seventh grade with a mean of 2.80.

TABLE IX

DUNCAN'S MULTIPLE RANGE ANALYSIS BETWEEN THE FACTOR BEHAVIOR AND NONOVERWEIGHT MALES IN THE FIFTH, SIXTH, AND SEVENTH GRADES

Grade	Mean	Number	Grouping	Significant Differences
Sixth	2.86	33	A	*
Seventh	2.80	36	A	*
Fifth	2.22	39	B	* *

df 105
Mean Square 1.12
$p < .05$

Overweight Females. The results of the analysis of variance of the difference between fifth, sixth, and seventh grade overweight females and the Piers-Harris Children's Self-Concept Scale are given in Table X. The factor, Popularity, with an obtained F score of 4.18 is significant at the .02 level of probability. This high score indicates a description for the respondent as high in popularity. The data indicate that the factors Physical Appearance and Attributes, Anxiety, Happiness and Satisfaction, and Behavior are not significantly different among overweight females in the fifth, sixth, and seventh grades.

TABLE X

ANALYSIS OF VARIANCE BETWEEN FIFTH, SIXTH, AND SEVENTH GRADE OVERWEIGHT FEMALES AND THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE

Source of Variation	df	Sum of Squares	Mean Square	F	p
Behavior					
Between Grades	2	2.31	1.15	1.36	0.26
Within Sample	62	52.51	0.85		
Physical Appearance and Attributes					
Between Grades	2	5.11	2.55	1.47	0.24
Within Sample	62	107.83	1.74		
Anxiety					
Between Grades	2	0.04	0.02	0.01	0.99
Within Sample	62	88.06	1.42		
Popularity					
Between Grades	2	4.09	2.05	4.18*	0.02
Within Sample	62	30.32	0.49		
Happiness and Satisfaction					
Between Grades	2	0.23	0.12	0.61	0.54
Within Sample	62	11.66	0.19		

*significant at $p < .05$

The direction of the significant difference between fifth, sixth, and seventh grade overweight females and the Children's Piers-Harris Self-Concept Scale is obtained through the use of the Duncan's Multiple Range test. Significant differences are indicated by means not grouped by the same letter.

As seen in Table XI, the significant difference calculated by the F test among fifth, sixth, and seventh grade overweight females and the Piers-Harris Children's Self-Concept Scale is found between two groupings. Overweight females in the fifth grade with a mean of -0.66 have significantly higher scores on the Popularity factor than overweight females in the sixth grade with a mean of -1.26 and overweight females in the seventh grade with a mean of -1.25.

TABLE XI

DUNCAN'S MULTIPLE RANGE ANALYSIS BETWEEN THE FACTOR POPULARITY AND OVERWEIGHT FEMALES IN THE FIFTH, SIXTH, AND SEVENTH GRADES

Grade	Mean	Number	Grouping	Significant Differences	
Fifth	-0.66	15	A	*	*
Seventh	-1.25	31	B	*	
Sixth	-1.26	19	B		*

df 62
Mean Square 0.49
$p < .05$

Nonoverweight Females. The results of the analysis of variance of the difference between nonoverweight fifth, sixth, and seventh grade females and the Piers-Harris Children's Self-Concept Scale are given in Table XII. A significant difference is not indicated among any of the self-concept factors. The factor Happiness and Satisfaction came closest to a probability of .05 with an F score of 2.86 at the .06 level of probability, which indicates a higher level of happiness and satisfaction. To be significant at the .05 level of probability an F score of 3.09 is needed.

TABLE XII

ANALYSIS OF VARIANCE BETWEEN FIFTH, SIXTH, AND SEVENTH GRADE NONOVERWEIGHT FEMALES AND THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE

Source of Variation	df	Sum of Squares	Mean Square	F	p
Behavior					
Between Grades	2	0.06	0.03	0.02	0.98
Within Sample	123	137.83	1.12		
Physical Appearance and Attributes					
Between Grades	2	1.11	0.56	0.31	0.74
Within Sample	123	222.23	1.81		
Anxiety					
Between Grades	2	4.70	2.35	2.41	0.09
Within Sample	123	119.59	0.97		
Popularity					
Between Grades	2	0.86	0.43	0.81	0.45
Within Sample	123	65.47	0.53		
Happiness and Satisfaction					
Between Grades	2	1.09	0.54	2.86	0.06
Within Sample	123	23.42	0.19		

$p < .05$

Personality Differences Among Grades

Overweight Males. The results of the analysis of variance of the difference among fifth, sixth, and seventh grade overweight males and the Children's Personality Questionnaire are given in Table XIII. A significant difference is not identified among any of the factors. The factor Uncontrolled versus Controlled came closest to a probability of .05 with an F score of 3.04 at the .06 level of probability, an F score of 3.15 is needed to be significant.

Nonoverweight Males. The results of the analysis of variance of the difference between fifth, sixth, and seventh grade nonoverweight males and the Children's Personality Questionnaire are given in Table XIV. A significant difference is not identified among any of the factors. The factor Timid versus Adventurous came closest to a probability of .05 with an F score of 2.92 at the .06 level of probability. To be significant at the .05 level of probability, an F score of 3.09 is needed.

Overweight Females. The results of the analysis of variance of the difference between fifth, sixth, and seventh grade overweight females and the Children's Personality Questionnaire are given in Table XV. The factors Complacent versus Showing Off, Obedient versus Stubborn, and Disregards Rules versus Conscientious are significant with obtained F scores of 7.98, 4.21, and 5.21 at the .001, .02, and .01 levels of probability respectively.

The data in Table XV indicate the factors in the Children's Personality Questionnaire that are not significantly affected by an overweight

TABLE XIII

ANALYSIS OF VARIANCE AMONG FIFTH, SIXTH, AND SEVENTH GRADE OVERWEIGHT MALES AND THE CHILDREN'S PERSONALITY QUESTIONNAIRE

Source of Variation	df	Sum of Square	Mean Square	F	p
Reserved versus Outgoing					
Between Grades	2	1.57	0.78	0.55	0.58
Within Sample	62	88.68	1.43		
Emotionally Less Stable versus Emotionally Stable					
Between Grades	2	8.18	4.09	2.22	0.12
Within Sample	62	114.28	1.84		
Complacent versus Showing-Off					
Between Grades	2	1.74	0.87	0.38	0.69
Within Sample	62	142.88	2.31		
Obedient versus Stubborn					
Between Grades	2	4.12	2.06	1.36	0.27
Within Sample	62	93.94	1.52		
Serious versus Happy-Go-Lucky					
Between Grades	2	2.42	1.21	0.78	0.46
Within Sample	62	95.83	1.55		
Disregards Rules versus Conscientious					
Between Grades	2	2.28	1.14	0.87	0.42
Within Sample	62	80.86	1.30		
Timid versus Adventurous					
Between Grades	2	2.28	1.14	0.87	0.42
Within Sample	62	68.93	1.11		
Tough Minded versus Tender Minded					
Between Grades	2	1.21	0.60	0.29	0.75
Within Sample	62	128.33	2.07		
Liking Group Action versus Internally Restrained					
Between Grades	2	0.19	0.09	0.05	0.95
Within Sample	62	115.57	1.86		
Unpretentious versus Astute					
Between Grades	2	2.62	1.31	0.79	0.46
Within Sample	62	103.13	1.66		
Self Assured versus Apprehensive					
Between Grades	2	4.17	2.09	1.29	0.28
Within Sample	62	100.05	1.61		
Uncontrolled versus Controlled					
Between Grades	2	7.32	3.66	3.04	0.06
Within Sample	62	74.62	1.20		
Unfrustrated versus Frustrated					
Between Grades	2	0.18	0.09	0.05	0.95
Within Sample	62	114.22	1.84		

$p < .05$

TABLE XIV

ANALYSIS OF VARIANCE AMONG FIFTH, SIXTH, AND SEVENTH GRADE NONOVERWEIGHT MALES AND THE CHILDREN'S PERSONALITY QUESTIONNAIRE

Source of Variation	df	Sum of Square	Mean Square	F	p
Reserved versus Outgoing					
Between Grades	2	0.19	0.09	0.07	0.93
Within Sample	105	135.92	1.29		
Emotionally Less Stable versus Emotionally Stable					
Between Grades	2	3.39	1.70	0.88	0.42
Within Sample	105	201.82	1.92		
Complacent versus Showing-Off					
Between Grades	2	0.62	0.31	0.16	0.85
Within Sample	105	202.05	1.92		
Obedient versus Stubborn					
Between Grades	2	4.11	2.06	1.51	0.23
Within Sample	105	142.80	1.36		
Serious versus Happy-Go-Luchy					
Between Grades	2	4.04	2.02	1.38	0.26
Within Sample	105	154.07	1.47		
Disregards Rules versus Conscientious					
Between Grades	2	9.11	4.56	2.79	0.07
Within Sample	105	171.41	1.63		
Timid versus Adventurous					
Between Grades	2	7.99	3.97	2.92	0.06
Within Sample	105	143.67	1.37		
Tough Minded versus Tender Minded					
Between Grades	2	2.36	1.18	0.69	0.50
Within Sample	105	178.31	1.70		
Liking Group Action versus Internally Restrained					
Between Grades	2	4.18	2.09	1.48	0.23
Within Sample	105	148.67	1.42		
Unpretentious versus Astute					
Between Grades	2	0.15	0.07	0.06	0.95
Within Sample	105	138.77	1.32		
Self Assured versus Apprehensive					
Between Grades	2	0.21	0.10	0.07	0.94
Within Sample	105	163.67	1.56		
Uncontrolled versus Controlled					
Between Grades	2	1.84	0.92	0.82	0.44
Within Sample	105	117.90	1.12		
Unfrustrated versus Frustrated					
Between Grades	2	2.67	1.33	0.89	0.42
Within Sample	105	158.10	1.51		

$p < .05$

TABLE XV

ANALYSIS OF VARIANCE AMONG FIFTH, SIXTH, AND SEVENTH GRADE OVERWEIGHT FEMALES AND THE CHILDREN'S PERSONALITY QUESTIONNAIRE

Source of Variation	df	Sum of Square	Mean Square	F	p
Reserved versus Outgoing					
Between Grades	2	1.10	0.55	0.37	0.69
Within Sample	62	90.66	1.46		
Emotionally Less Stable versus Emotionally Stable					
Betweeb Grades	2	8.48	4.24	2.08	0.13
Within Sample	62	126.08	2.03		
Complacent versus Showing-Off					
Between Grades	2	32.02	16.01	7.98*	0.001
Within Sample	62	124.43	2.00		
Obedient versus Stubborn					
Between Grades	2	8.65	4.32	4.21*	0.02
Within Sample	62	63.60	1.02		
Serious versus Happy-Go-Lucky					
Between Grades	2	2.98	1.49	1.01	0.37
Within Sample	62	91.24	1.47		
Disregards Rules versus Conscientious					
Between Grades	2	10.97	5.48	5.21*	0.01
Within Sample	62	64.48	1.04		
Timid versus Adventurous					
Between Grades	2	5.93	2.96	2.56	0.09
Within Sample	62	71.92	1.16		
Tough Minded versus Tender Minded					
Between Grades	2	5.41	2.71	1.69	0.19
Within Sample	62	99.20	1.60		
Liking Group Action versus Internally Restrained					
Between Grades	2	3.15	1.58	0.88	0.42
Within Sample	62	110.63	1.78		
Unpretentious versus Astute					
Between Grades	2	0.15	0.08	0.05	0.96
Within Sample	62	105.71	1.69		
Self Assured versus Apprehensive					
Between Grades	2	0.15	0.08	0.05	0.95
Within Sample	62	99.60	1.61		
Uncontrolled versus Controlled					
Between Grades	2	7.68	3.84	2.52	0.09
Within Sample	62	94.53	1.53		
Unfrustrated versus Frustrated					
Between Grades	2	1.82	0.91	0.40	0.67
Within Sample	62	139.17	2.25		

* significant at the $p < .05$

condition in females. These are: Reserved versus Outgoing, Emotionally Less Stable versus Emotionally Stable, Serious versus Happy-Go-Lucky, Disregards Rules versus Conscientious, Timid versus Adventuresome, Tough Minded versus Tender Minded, Liking Group Action versus Internally Restrained, Unpretentious versus Astute, Self-Assured versus Apprehensive, Uncontrolled versus Controlled, and Unfrustrated versus Frustrated.

The direction of the significant difference between overweight females and the Children's Personality Questionnaire is obtained through the use of the Duncan's Multiple Range test. Significant differences are indicated by means not grouped by the same letter.

As seen in Table XVI, the significant difference calculated by the F test between fifth, sixth, and seventh grade overweight females and the factor Complacent versus Showing Off is found in two groupings. Overweight females in the seventh grade with a mean of 2.58 have a significantly higher score on the Complacent versus Showing Off factor than overweight females in the sixth grade with a mean of 1.21 and overweight females in the fifth grade with a mean of 1.33. The seventh grade overweight females are significantly more prone to characteristics associated with high scoring on this factor, such as:

> The high scoring individual, though likable and affectionate in quieter moods, is apt to be reguarded as a considerable nuisance in restrictive situations, since he is so "impulsive." This individual reports that he is a restless sleeper, easily distracted from work by noise or intrinsic difficulty, is hurt and angry if not given important positions or whenever he is restrained or punished. It appears as a really substantial dimension in children (Porter and Cattell, 1972, p. 26).

TABLE XVI

DUNCAN'S MULTIPLE RANGE ANALYSIS BETWEEN THE FACTOR COMPLACENT VERSUS SHOWING-OFF AND OVERWEIGHT FEMALES IN THE FIFTH, SIXTH, AND SEVENTH GRADES

Grade	Mean	Number	Grouping	Significant Differences	
Seventh	2.58	31	A	*	*
Sixth	1.21	19	B	*	
Fifth	1.33	15	B		*

df 62
Mean Square 2.01
$p < .05$

As seen in Table XVII, the significant difference calculated by the F test between fifth, sixth, and seventh grade overweight females and the factor Obedient versus Stubborn is found in two groupings. Overweight females in the seventh grade with a mean of 1.48 have a significantly higher score on the Obedient versus Stubborn factor than overweight females in the sixth grade with a mean of 0.84 and overweight females in the fifth grade with a mean of 0.67. The seventh grade overweight females are significantly more prone to display characteristics of the high scorer on this factor such as:

> High dominance may lead to disobedience, headstrong self-will, independence and creativity of mind, and sometimes, antisocial behavior. High score is very definitely part of the delinquency-behavior problem pattern in teenagers (Porter and Cattell, 1972, p. 27).

TABLE XVII

DUNCAN'S MULTIPLE RANGE ANALYSIS BETWEEN THE FACTOR OBEDIENT VERSUS STUBBORN AND OVERWEIGHT FEMALES IN FIFTH, SIXTH, AND SEVENTH GRADES

Grade	Mean	Number	Grouping	Significant Differences	
Seventh	1.48	31	A	*	*
Sixth	0.84	19	B	*	
Fifth	0.67	15	B		*

df 62
Mean Square 1.03
$p < .05$

As seen in Table XVIII, the significant difference calculated by the F test between fifth, sixth, and seventh grade overweight females and the factor Disregards Rules versus Conscientious is found in two groupings. Overweight females in the seventh grade with a mean of 3.29 have a significantly lower score on the Disregards Rules versus Conscientious factor than overweight females in the fifth grade with a mean of 3.93 and overweight females in the sixth grade with a mean of 4.21. The seventh grade overweight females are significantly more "self-indulgent, quitting, slack, undependable and disregards obligations to people" (Porter and Cattell, 1977, p. 28).

Non-Overweight Females. The results of the analysis of the difference between fifth, sixth, and seventh grade nonoverweight females and the Children's Personality Questionnaire are given in Table XIX. The

factors Reserved versus Outgoing, Emotionally Less Stable versus Emotionally Stable, Serious versus Happy-Go-Lucky, and Tough Minded versus Tender Minded are significantly higher with obtained F scores of 3.82, 3.33, 7.59 and 3.92 at the .03, .04, .001 and .02 levels of probability respectively.

TABLE XVIII

DUNCAN'S MULTIPLE RANGE ANALYSIS BETWEEN THE FACTOR DISREGARDS RULES VERSUS CONSCIENTIOUS AND OVERWEIGHT FEMALES IN FIFTH, SIXTH, AND SEVENTH GRADES

Grade	Mean	Number	Grouping		Significant Differences	
Sixth	4.21	19	A			*
Fifth	3.93	15	A		*	
Seventh	3.29	31		B	*	*

df 62
Mean Square 1.04
$p. < .05$

The data in Table XIX indicate the factors in the Children's Personality Questionnaire that are not significantly affected by a nonoverweight condition in fifth, sixth, and seventh grade females. These are: Complacent versus Showing-Off, Obedient versus Stubborn, Disregards Rules versus Conscientious, Timid versus Adventurous, Liking Group Action versus Internally Restrained, Unpretentious versus Astute,

TABLE XIX

ANALYSIS OF VARIANCE AMONG FIFTH, SIXTH, AND SEVENTH GRADE NONOVERWEIGHT FEMALES AND THE CHILDREN'S PERSONALITY QUESTIONNAIRE

Source of Variation	df	Sum of Square	Mean Squares	F	p
Reserved versus Outgoing					
Between Grades	2	6.26	3.13	3.82*	0.03
Within Sample	123	100.73	0.82		
Emotionally Less Stable versus Emotionally Stable					
Between Grades	2	12.23	6.12	3.33*	0.04
Within Sample	123	225.90	1.84		
Complacent versus Showing-Off					
Between Grades	2	11.11	5.56	2.57	0.08
Within Sample	123	265.74	2.16		
Obedient versus Stubborn					
Between Grades	2	1.21	0.60	0.71	0.49
Within Sample	123	104.45	0.85		
Serious versus Happy-Go-Lucky					
Between Grades	2	15.36	7.68	7.59*	0.001
Within Sample	123	124.51	1.01		
Disregards Rules versus Conscientious					
Between Grades	2	5.62	2.81	2.06	0.13
Within Sample	123	168.16	1.37		
Timid versus Adventurous					
Between Grades	2	0.25	0.13	0.11	0.89
Within Sample	123	137.53	1.12		
Tough Minded versus Tender Minded					
Between Grades	2	14.67	7.34	3.92*	0.02
Within Sample	123	230.26	1.87		
Liking Group Action versus Internally Restrained					
Between Grades	2	3.23	1.62	1.14	0.32
Within Sample	123	174.64	1.42		
Unpretentious versus Astute					
Between Grades	2	1.64	0.82	0.55	0.58
Within Sample	123	184.49	1.50		
Self Assured versus Apprehensive					
Between Grades	2	1.07	0.54	0.31	0.73
Within Sample	123	211.29	1.72		
Uncontrolled versus Controlled					
Between Grades	2	9.42	4.71	2.89	0.06
Within Sample	123	200.62	1.63		
Unfrustrated versus Frustrated					
Between Grades	2	5.61	2.80	1.46	0.24
Within Sample	123	236.26	1.92		

* significant at the $p < .05$

Self-Assured versus Apprehensive, Uncontrolled versus Controlled, and Unfrustrated versus Frustrated (Porter and Cattell, 1977).

The direction of the significant difference between nonoverweight females and the Children's Personality Questionnaire is obtained through the use of the Duncan's Multiple Range test. Significant differences are indicated by means not grouped by the same letters.

As seen in Table XX, the significant difference calculated by the F test between fifth, sixth, and seveth grade nonoverweight females and the Children's Personality Questionnaire is found between two groupings. Nonoverweight females in the fifth grade with a mean of 3.66 have significantly lower scores on the Reserved versus Outgoing factor than nonoverweight females in the sixth grade with a mean of 4.21 and nonoverweight females in the seventh grade with a mean of 4.09.

TABLE XX

DUNCAN'S MULTIPLE RANGE ANALYSIS BETWEEN THE FACTOR RESERVED VERSUS OUTGOING AND NONOVERWEIGHT FEMALES IN THE FIFTH, SIXTH, AND SEVENTH GRADES

Grade	Mean	Number	Grouping	Significant Differences
Sixth	4.21	58	A	*
Seventh	4.09	53	A	*
Fifth	3.66	35	B	* *

df 123
Mean Square 0.82
$p < .05$

The fifth grade nonoverweight females show characteristics associated with the low factor, Reserved. These are:

> More compromising and earnest, prefers things or words to people, likes working alone, favors a thinking quality in companionship, is introspective, hard to approach, coolly objective and precise (Porter and Cattell, 1972, p. 24).

The direction of the significant difference between nonoverweight females and the Children's Personality Questionnaire is obtained through the use of the Duncan's Multiple Range test. Significant differences are indicated by means not grouped by the same letters.

As seen in Table XXI, the significant difference calculated by the F test between the factor Emotionally Less Stable versus Emotionally Stable and nonoverweight females in the fifth, sixth, and seventh grades is found between two groupings. Nonoverweight females in the fifth grade with a mean of 2.66 have a significantly lower score on the Emotionally Less Stable versus Emotionally Stable factor than nonoverweight females in the sixth grade with a mean of 3.42 and nonoverweight females in the seventh grade with a mean of 3.28.

The low scoring factor Emotionally Less Stable includes characteristics for the trait as follows:

> . . . tends to be easily annoyed by things and people, is more often dissatisfied with his family and his school, has emotional difficulty in keeping quiet and restraining himself, and is discouraged by his inability to meet good standards of behavior (Porter and Cattell, 1972, p. 26)

The direction of the significant difference between nonoverweight females and the Children's Personality Questionnaire is obtained through the use of the Duncan's Multiple Range test. Significant differences are indicated by means not grouped by the same letters.

TABLE XXI

DUNCAN'S MULTIPLE RANGE ANALYSIS BETWEEN THE FACTOR EMOTIONALLY LESS STABLE VERSUS EMOTIONALLY STABLE AND NONOVERWEIGHT FEMALES IN THE FIFTH, SIXTH, AND SEVENTH GRADES

Grades	Mean	Number	Grouping	Significant Difference	
Sixth	3.42	38	A	*	
Seventh	3.28	53	A		*
Fifth	2.66	35	B	*	*

df 123
Mean Square 1.84
$p < .05$

As seen in Table XXII, the significant difference calculated by the F test between fifth, sixth, and seventh grade nonoverweight females and the Children's Personality Questionnaire is found between two groupings. Nonoverweight females in the fifth grade with a mean of 1.46 have significantly lower scores on the Serious versus Happy-Go-Lucky factor than nonoverweight females in the sixth grade with a mean of 2.37 and nonoverweight females with a mean of 2.02.

The low factor scoring, Serious, is typified by such characteristics as:

> . . . seriousness, caution, and subduedness. While desurgent children are not outstandingly popular with peers and do not usually succeed in elected leadership or personal contact work. These individuals have generally been brought up with more severe, exacting standards and difficult conditions (Porter and Cattell, 1972, p. 28).

TABLE XXII

DUNCAN'S MULTIPLE RANGE ANALYSIS BETWEEN THE FACTOR SERIOUS VERSUS HAPPY-GO-LUCKY AND NONOVERWEIGHT FEMALES IN THE FIFTH, SIXTH, AND SEVENTH GRADES

Grades	Mean	Number	Grouping	Significant Differences	
Sixth	2.37	38	A	*	*
Seventh	2.02	53	A		*
Fifth	1.46	35	B	*	

df 123
Mean Square 1.01
$p < .05$

As seen in Table XXIII, the significant difference calculated by the F test between the factor Tough Minded versus Tender Minded and the nonoverweight females in the fifth, sixth, and seventh grades is found between two groupings. Nonoverweight females in the fifth grade with a mean of 2.86 have a significantly higher score on this factor than nonoverweight females in the sixth grade with a mean of 3.42 and nonoverweight females in the seventh grade with a mean of 3.28.

The high score for this factor, Tender Minded, has the following characteristics:

> . . . more fussing, slowing-up group performance in arriving at decisions, and making social-emotional, negative (self-indulgent, over-refining, morale-upsetting) remarks. The central feature of high pole is the emotionally indulgent, over-protective home. This child should probably be encouraged to develop responsibility, to cling less to teachers and parents, and indulge more in the activities of his own age group (Porter and Cattell, 1972, p. 31).

TABLE XXIII

DUNCAN'S MULTIPLE RANGE ANALYSIS BETWEEN THE FACTOR TOUGH MINDED VERSUS TENDER MINDED AND NONOVERWEIGHT FEMALES IN THE FIFTH, SIXTH, AND SEVENTH GRADES

Grades	Mean	Number	Grouping	Significant Differences	
Fifth	2.86	35	A	*	*
Seventh	2.13	53	B	*	
Sixth	2.05	38	B		*

df 123
Mean Square 1.87
$p < .05$

Summary

This chapter has presented the statistical analysis of the data collected for this study. Frequency counts and percentages have been reported to establish values for each of the variables with which the study is designed. Each hypothesis of the study is discussed and the results are explained in detail.

The analysis also tests for a relationship between a continuous variable and dichotomous variables. Further analysis has been done to provide the significance of the relationship. Other analysis tests the relationship between two variables, ordinal position in the family and school performance. Further tests are computed to find to what degree the variables are related to the criterion variable.

The analysis tests the difference between mean scores among overweight and nonoverweight students in the fifth, sixth, and seventh grades. Scores have been obtained from the Piers-Harris Children's Self-Concept Scale and the Children's Personality Questionnaire. Further analysis provides the direction of the significant differences. The study will be summarized in Chapter V. Conclusions will be stated and recommendations will be made for further study.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The preceding chapters describe the nature of the study, a description of the sample, method of analysis and rationale for accepting or not accepting the hypotheses. This chapter presents an overview of the study, a summary of each of the hypotheses, conclusions, and recommendations for further research.

Obesity during infancy and childhood is a serious problem that is increasing in intensity. It is the most common nutritional health problem in the United States today. This is indicated by the continued increase in incidences of overweight in school age children. One of every five children suffers from an overweight condition. Four of every five overweight children become overweight adults. Previous investigations report the prevalence of obesity in 10-20 percent of the younger population. The purpose of this study is to determine if there is a relationship between an overweight condition and selected personal variables among preadolescents.

Two standardized instruments have been utilized; one instrument focuses on self-concept, the Piers-Harris Children's Self-Concept Scale, and the other instrument focuses on personality, the Children's Personality Questionnaire. These standardized tests have been administered to 365 preadolescent fifth and sixth, and seventh grade students in Oklahoma schools. The data have been analyzed by an IBM computer.

Of the 365 preadolescents participating in the study, 173 are male and 192 are female. A total of 65 males and 65 females is overweight. The nonoverweight sample in the comparison group is 108 males and 127 females.

Summary of Findings

Of the five self-concept factors included in the Piers-Harris Children's Self-Concept Scale, three are not significantly related to any of the selected sex and weight variables. These traits are: Physical Appearance, Anxiety, and Happiness. The remaining two areas are related to the variables as follows:

Behavior: nonoverweight males in the fifth grade indicate a significantly lower self-concept regarding Behavior than males in the sixth and seventh grades.

Popularity - overweight females in the fifth grade indicate a significantly higher self-concept regarding popularity than the overweight females in the sixth and seventh.

The Children's Personality Questionnaire includes 13 personality traits. Of the 13, six of them are not related to any of the selected sex and weight variables. The remaining seven are related to the variables as follows:

Reserved versus Outgoing - nonoverweight females in the fifth grade are significantly less outgoing than nonoverweight females in the sixth or seventh grade.

Emotionally Less Stable versus Emotionally Stable - seventh grade nonoverweight females are significantly less emotionally stable than those in the fifth or sixth grades.

Complacent versus Showing Off - overweight females in the seventh grade are characteristically more prone to showing off than overweight females in the fifth and sixth grades.

Obedient versus Stubborn - overweight females in the seventh grade are significantly more assertive than overweight females in the fifth or sixth grades.

Serious versus Happy-Go-Lucky - sixth grade nonoverweight females are significantly more happy-go-lucky than nonoverweight females in the fifth or the seventh grade.

Disregards Rules versus Conscientious - overweight seventh grade females are more prone to have a low superego strength and disregard rules significantly more than overweight females in the fifth or sixth grade.

The selected variables, ordinal position in the family and school performance, are not significantly related to an overweight condition. Self-concept and personality are not significantly related to preadolescent, overweight males, and in only one area, Behavior, is self-concept and personality significantly related to nonoverweight males.

Conclusions

Three hypotheses for the study test certain selected personal variables that may be impacting on overweight conditions in preadolescents. The following conclusions are drawn from the study:

H_1: There is no significant relationship between overweight and nonoverweight preadolescents' personality and self-concept. Analysis of data indicates that there is no significant relationship between overweight and nonoverweight fifth and seventh grade preadolescents and

personality and self-concept. Among nonoverweight sixth grade preadolescents, four significant relationships are identified. They are:

1. The nonoverweight sixth grade students scored higher on the factor Emotionally Less Stable versus Emotionally Stable than did the overweight sixth grade students.
2. The nonoverweight sixth grade students scored higher on the factor Serious versus Happy-Go-Lucky than did the overweight sixth grade preadolescent.
3. The overweight sixth grade students scored higher on the factor Disregards Rules versus Conscientious than did the nonoverweight sixth grade preadolescent.
4. The overweight sixth grade students scored higher on the factor Tough Minded versus Tender Minded than did the nonoverweight sixth grade preadolescent.

Analysis of data indicates that no significant relationships are attributed to personality and self-concept of fifth and seventh grade preadolescents. However, significant relationships are found among sixth grade preadolescents. Therefore, the first hypothesis is not accepted.

H_2: There is no significant relationship between overweight and nonoverweight preadolescents and school performance and ordinal position in the family. Analysis of data reveals that school performance and ordinal position in the family is not significantly related to incidence of overweight condition in preadolescents. Therefore, hypothesis two is accepted.

H_3: There is no significant difference between overweight and nonoverweight males and females in the fifth, sixth, and seventh grades and self-concept and personality. The results of the analysis indicate no

significant differences among any of the self-concept factors of the Piers-Harris Children's Self-Concept Scale between fifth, sixth, and seventh grade overweight males.

Analysis of data indicates that a significant difference in the factor Behavior appears to be attributed to the nonoverweight preadolescent male. Nonoverweight males in the fifth grade have significantly lower scores on the Behavior factor than nonoverweight males in the sixth and seventh grades.

Results of the analysis of data indicate that a significant difference in the area of popularity appears to be related to an overweight condition in preadolescent females. Overweight females in the fifth grade indicate a significantly higher self-concept regarding popularity than overweight females in the sixth and seventh grades. The results of the analysis indicate no significant differences among any of the self-concept factors of the Piers-Harris Children's Self-Concept Scale among fifth, sixth, and seventh grade nonoverweight females.

The results of the analysis indicate no significant differences among any of the personality factors of the Children's Personality Questionnaire between fifth, sixth, and seventh grade overweight and nonoverweight males. Analysis results indicate significant differences in the following factors in the Children's Personality Questionnaire, Complacent versus Showing Off, Obedient versus Stubborn, and Disregards Rules versus Conscientious, are attributed to an overweight condition in preadolescent females. Overweight females in the seventh grade appear to be characteristically more prone to showing off than those in the fifth and sixth grade. Overweight females in the seventh grade appear to be more assertive than overweight females in the fifth and

sixth grade. Overweight seventh grade students appear to be more prone to have a low superego strength and disregard rules significantly more than fifth and sixth grade preadolescent overweight females.

Analysis of data indicates that significant differences in four personality factors and these appear to be attributed to the nonoverweight preadolescent female. These factors are: Reserved versus Outgoing, Emotionally Less Stable versus Emotionally Stable, Serious versus Happy-Go-Lucky, and Tough Minded versus Tender Minded. Nonoverweight females in the fifth grade appear to be less outgoing than nonoverweight females in the sixth and seventh grades. Seventh grade nonoverweight females appear to be less emotionally stable than nonoverweight females in the fifth and sixth grades. Sixth grade nonoverweight females appear to be more happy-go-lucky than nonoverweight females in the fifth and seventh grades. Fifth grade nonoverweight females appear to be more tender minded than nonoverweight females in the sixth or seventh grades. Therefore, hypothesis three is not accepted.

In looking at characteristics of the teenage stage, there is probably no other age group as concerned and preoccupied with their physique and appearance as adolescents--before and even more--after pubescence. Their fear of being "too fat" or being rated as such, is an exaggeration of the weight consciousness of our whole society which condemns even mild degress of overweight as ugly and undesirable and criticizes it as a sign of self-indulgence (Bruch, 1973).

Self-esteem and body image are often poor in obese children. Adolescents, whether obese or nonobese, usually worry about their appearance (Dwyer, Blonde, and Mayer, 1975). Obesity is the only condition which involves at the same time a disturbance in body image

and disturbance in impulse control. The simultaneous occurrence of both these problems makes each more malignant. In view of this, if we consider the naturally occurring body image changes and impulse control disturbance of the average adolescent state, it is no wonder that the treatment of obesity in adolescents is difficult and that preventive intervention is imperative (Dwyer et al., 1975).

Recommendations

Results of the study suggest the following recommendations in fulfilling the sixth objective:

1. Because of the significant findings in regard to the overweight females and personality characteristics and a lack of significant relationships for overweight males, further studies are warranted on overweight preadolescent females.
2. Further studies in other areas impacting upon an overweight condition such as overweight condition in parents, weight gain of mother during pregnancy, and the preadolescent's birth weight may produce strong evidence of the need for nutrition education in a broader variety of program areas.
3. The following recommendations are implications suggested by the researcher resulting from the review of the literature and professional experience in nutrition education, specifically with the overweight child:
    a. Emphasis should be placed on prevention of an overweight condition with nutrition education throughout the life cycle rather than on treatment after the condition is present.

b. In view of the developmental traits assigned to the teenage stage, it is recommended that a nutrition education specialist and a behavioral scientist team effort be utilized in the treatment of the overweight child.

c. Cooperation of the school food service program by making available more choices of low calorie foods in the cafeteria line.

d. The public school systems require more organized, planned exercise programs rather than free play periods.

e. To emphasize a positive nutrition program in the schools through the school lunch program, it is recommended that all snack food and drink machines be removed from the school environment.

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APPENDIX A

LETTER OF INFORMATION SENT

TO SUPERINTENDENTS

ADMINISTRATION:

I appreciate your willingness to consider my request for conducting research in your schools. Some of the details of my study are outlined to give you a better understanding of what information I will be needing.

Surveys are showing that approximately twenty percent of our school age population is overweight. It is the number one health problem in the United States today, and there has been very little success with treatment methods to date. The most successful method of treatment, which is relatively recent, is behavior modification. The research I am conducting should contribute important information for designing this method of treatment.

Subject: TO DETERMINE THE RELATIONSHIP OF OBESITY TO THE PERSONALITY, SELF-CONCEPT, AND SCHOOL PERFORMANCE OF TEN, ELEVEN, AND TWELVE YEAR OLD BOYS AND GIRLS.

Sample Population: Schools in Oklahoma which employ school nurses were randomly sampled. Ten each of fifth, sixth, and seventh grades were selected. Equal representation was given to the large and small ADA school districts.

Methodology: Two questionnaires will be administered to a total classroom. The instruments to be used are: The Piers-Harris Self-Concept Scale, and the Children's Personality Questionnaire. Each instrument requires 15-20 minutes and can be administered by the school nurse or myself. The information needed about the student will be his/her height, weight, age, sex, school performance, and ordinal position in the family. Height and weight will be obtained by the school nurse or by access to the files. Ordinal position, age, and sex will be furnished by the student. School performance will be determined by dividing achievement test scores into a range and placing them on a scale of poor, fair, average, and above average. The overweight student will not be discriminated against. Their questionnaire will be color-coded and the remainder of the class will serve as the control group. All students will be anonymous and will be identified as a number after the information is completed at the school site.

A letter will be sent to the parents requesting permission for their child to complete the questionnaire. Results of the study will be furnished to the schools participating, and copies will be made available to any parent interested in receiving the information.

Your cooperation and willingness to participate in the study will be sincerely appreciated.

Kaye Sears, Researcher
Home Economics Department
Central State University
Edmond, Oklahoma 73034

APPENDIX B

PARENT'S PERMISSION FORM

Dear Parents,

A graduate student at Oklahoma State University is collecting research in the public schools for her dissertation. The research will involve your child completing a personality questionnaire and a self-concept scale. Other information needed will be birth order, age, sex, height, weight, and school performance.

The questionnaire will be administered in the classroom and will take about 40 minutes to complete both of them. The school nurse will assist in getting the height and weight from health records.

All names will be dropped before leaving the school site, and the instruments will then be identified by number only. Copies of the instruments are on file in the Superintendent's office if you are interested in viewing them.

Thank you for your prompt consideration.

In compliance with the Privacy Act, permission is requested for your child to participate in this activity.

_____ has my permission to complete the
Child's name

questionnaires.

_____
Parent's signature

APPENDIX C

CHILDREN'S PERSONALITY QUESTIONNAIRE

PART A_1

CPQ, Form A (1975 Edition) **Part A_1**

What You Do and What You Think

Print Your Name: First _____ Last _____

Your Age _____ Date of Birth _____ Boy ☐ Girl ☐

Teacher _____ Grade in School _____

Read each question and then fill in the box, like this ■, on the side that fits you better. If you have an answer sheet, mark only on that. If you do not have an answer sheet, mark on the booklet.

Here are two examples.

1. Would you rather read a book ☐ or ☐ play a game

If you would rather read a book, you would fill in the box on the left, next to that answer. If you would rather play a game, you would fill in the other box, on the right side next to that answer. There is no right or wrong answer, because people like to do different things.

There are a few questions that do have a right answer, and they have three answers to choose from, like example 2. The right answer is 8, so the box next to 8 is filled in.

2. The next number in 2, 4, 6, __, is 2☐ or 8■ or 12☐

Don't spend too much time on any one question, even if it seems hard to answer. Just mark it the best you can. Be sure to mark every question. While you are working, if you don't know a word, raise your hand and the teacher will come to you. You may begin now.

1.	After school do you get together with others for games and fun	☐	or	☐ would you rather do things on your own
2.	When a classmate tells you you're wrong to believe something, do you keep on believing it anyway	☐	or	☐ ask other people if you're right
3.	Are your ideas better than other children's ideas	☐	or	☐ usually not quite so good
4.	Do you make a lot of mistakes	☐	or	☐ just a few
5.	Do you wish you had more time to be alone	☐	or	☐ do you enjoy spending the time with your friends
6.	Does your mother say you are too slow	☐	or	☐ do you do things quickly and well
7.	Do you feel unhappy at a party that keeps going on and on	☐	or	☐ do you wish the party would last a lot longer
8.	Do your plans often not work out	☐	or	☐ do they work out well
9.	When your mother tells you to wash your hands, do you wash them	☐	or	☐ wash them only if you think she'll check them
10.	Are you usually sure of yourself	☐	or	☐ do you often not feel very sure of yourself

GO RIGHT ON TO THE NEXT PAGE

Do not write here.
A____ C____

PAGE 2 *In every question, mark just one box.*

11. *Dry* is the opposite of *wet* ☐ or *cool* ☐ or *sticky* ☐

12. Is it hard to keep from laughing when others make mistakes ☐ or ☐ do you not feel like laughing at them

13. If you saw some small wild animals in the woods, would you rather just watch them ☐ or ☐ catch them or hunt them with a bow and arrow

14. If your parents scold you, do you get mad ☐ or ☐ do you feel like crying

15. *Work* is to *play* as *night* is to *dark* ☐ or *light* ☐ or *day* ☐

16. Does your teacher often have to tell you to pay attention to your work ☐ or ☐ do you hardly ever "fool around"

17. Do you go to friends' houses without telling your mother ☐ or ☐ do you always first tell your mother where you're going

18. Can you put unpleasant things out of your mind as if they never happened ☐ or ☐ is it hard for you to forget unpleasant things

19. The next number in 2, 5, 8, __, is 7 ☐ or 11 ☐ or 9 ☐

20. Do you obey the rules all the time ☐ or ☐ only when you have to

21. Would you rather be a teacher ☐ or ☐ a scientist

22. Do you think you could easily learn to fly an airplane ☐ or ☐ would it be too hard

23. Which one of these does not belong with the others: *string, rope, catch, wire* *rope* ☐ or *wire* ☐ or *catch* ☐

24. Does your teacher think you are good at sitting still ☐ or ☐ that you move around the room too much

25. Do you have many accidents ☐ or ☐ do you keep away from things that are dangerous

26. Do people often hurt your feelings ☐ or ☐ does this hardly ever happen

27. If Mary's uncle is my father, what relation is Mary's sister to me cousin ☐ or niece ☐ or aunt ☐

28. If a classmate calls you a bad name, do you call him another ☐ or ☐ keep your temper and just let it pass

29. Do you usually wear your coat neatly zipped or buttoned up ☐ or ☐ do you just throw it on

30. If you were a man, would you rather be the captain of a peaceful ocean liner ☐ or ☐ captain of a submarine in a war

GO RIGHT ON TO THE NEXT PAGE

Do not write here.
B____ D____ E____ F____

PAGE 3 *In every question, mark just one box.*

31. When people talk about a place you know well, do you start telling them about it too	☐	or	☐	do you keep quiet until they finish
32. Are you wide awake most days	☐	or	☐	are there some days when you aren't much good at things
33. Would you rather play a rough game, like touch football	☐	or	☐	fly a kite
34. Do most of the kids in your class read better than you	☐	or	☐	can you read well
35. Do you do things you should do	☐	or	☐	only things you like to do
36. Are you afraid of large dogs in the street	☐	or	☐	do you like to go over and pat them
37. Would you rather dream you had become an elf or pixie	☐	or	☐	that you were on a tiger hunt
38. Do you wish you were better looking	☐	or	☐	do you think you're good looking enough
39. If you were a teacher, would you let the kids be noisy	☐	or	☐	would you make them be quiet
40. Do you lie awake thinking about things	☐	or	☐	do you usually go right to sleep
41. Do you like to read about wars and battles	☐	or	☐	do they frighten you
42. Do you forget things you have told people you will do	☐	or	☐	do you usually remember what you said you'd do
43. When your mother is annoyed with you, is it often her fault	☐	or	☐	do you usually feel you are wrong
44. If people aren't doing something the way it should be done, do you tell them	☐	or	☐	do you feel you shouldn't say anything
45. If you had to choose, would you rather be a school teacher	☐	or	☐	a great hunter or athlete
46. Do people pay enough attention to you	☐	or	☐	do you have to do things to make people notice you
47. Would you rather listen to a teacher	☐	or	☐	talk yourself
48. Can you easily keep track of everything that belongs to you	yes ☐	or	☐	no
49. If you had a choice, would you go to auto races	☐	or	☐	a dog show
50. Do you succeed in most things you try	☐	or	☐	do things often go wrong for you

GO RIGHT ON TO THE LAST PAGE

Do not write here.
G___ H___ I___ J___

PAGE 4 *In every question, mark just one box.*

51.	Do grownups at home talk to you as if your feelings don't matter	☐	or	☐ do they respect you and try not to hurt your feelings
52.	Are other people easy for you to understand	☐	or	☐ are you sorry that you can't get to know people easily
53.	When there's group singing, would you rather not join in	☐	or	☐ would you gladly join in with the others
54.	If people tease you, do you boil up inside	☐	or	☐ do you smile and not care too much
55.	Do people say you're the first one to try exciting new things	☐	or	☐ do they say you're pretty careful
56.	Do you usually feel happy and contented	☐	or	☐ do you often feel that any little thing could make you cry
57.	Would you rather learn a lesson in school	☐	or	☐ watch a game
58.	Does it make you mad to have to stop and change your clothes before you go out to play	☐	or	☐ do you just change them anyway
59.	Do you like being a student in school	☐	or	☐ would you quit school if you could
60.	Do you hardly ever feel lonely	☐	or	☐ feel lonely quite often
61.	When people play a joke on you, do you get all upset	☐	or	☐ take it quietly
62.	Do you often do things so fast that you're sorry later	☐	or	☐ are you pretty relaxed and careful about everything you do
63.	Would you rather learn something new in school	☐	or	☐ watch television
64.	Do so many things seem to go wrong for you that you feel upset a lot of the time	☐	or	☐ don't you feel upset very often
65.	Do you do your homework without being told	☐	or	☐ must you be reminded a few times before you get started
66.	When your teacher reads aloud do you listen to every word	☐	or	☐ do you begin to think about something else
67.	Would you rather not have to be polite to people	☐	or	☐ do you like to be polite
68.	When you have to go to the doctor, is it hard to be brave	☐	or	☐ doesn't it bother you a bit
69.	When you are told exactly how to do a job, do you still do it the way that seems easiest to you	☐	or	☐ do you do it just as you are told
70.	Do you remember most of what you learn	☐	or	☐ do you forget things easily

DID YOU PUT ONE MARK DOWN FOR EVERY STATEMENT? CHECK BACK AND SEE.

Do not write here.
N.____ O.____ Q_3 ____ Q_4 ____

APPENDIX D

PIERS-HARRIS SELF-CONCEPT SCALE

"THE WAY I FEEL ABOUT MYSELF"

THE PIERS - HARRIS
CHILDREN'S SELF CONCEPT SCALE

(The Way I Feel About Myself)

by

ELLEN V. PIERS, Ph.D.

and

DALE B. HARRIS, Ph.D.

Published by

Counselor Recordings and Tests

BOX 6184 ACKLEN STATION NASHVILLE, TENNESSEE 37212

THE WAY I FEEL ABOUT MYSELF

NAME .....

AGE ..... GIRL OR BOY.....

GRADE ..... SCHOOL.....

DATE .....

Here are a set of statements. Some of them are true of you and so you will circle the *yes.* Some are not true of you and so you will circle the *no.* Answer *every* question even if some are hard to decide, but do *not* circle both *yes* and *no.* Remember, circle the *yes* if the statement is generally like you, or circle the *no* if the statement is generally not like you. There are no right or wrong answers. Only you can tell us how you feel about yourself, so we hope you will mark the way you really feel inside.

1. My classmates make fun of me..... yes no
2. I am a happy person..... yes no
3. It is hard for me to make friends..... yes no
4. I am often sad..... yes no
5. I am smart..... yes no
6. I am shy..... yes no
7. I get nervous when the teacher calls on me..... yes no
8. My looks bother me..... yes no
9. When I grow up, I will be an important person..... yes no
10. I get worried when we have tests in school..... yes no
11. I am unpopular..... yes no
12. I am well behaved in school..... yes no
13. It is usually my fault when something goes wrong..... yes no
14. I cause trouble to my family..... yes no
15. I am strong..... yes no
16. I have good ideas..... yes no
17. I am an important member of my family..... yes no
18. I usually want my own way..... yes no
19. I am good at making things with my hands..... yes no
20. I give up easily..... yes no

21. I am good in my school work ..... yes no
22. I do many bad things ..... yes no
23. I can draw well ..... yes no
24. I am good in music ..... yes no
25. I behave badly at home ..... yes no
26. I am slow in finishing my school work ..... yes no
27. I am an important member of my class ..... yes no
28. I am nervous ..... yes no
29. I have pretty eyes ..... yes no
30. I can give a good report in front of the class ..... yes no
31. In school I am a dreamer ..... yes no
32. I pick on my brother(s) and sister(s) ..... yes no
33. My friends like my ideas ..... yes no
34. I often get into trouble ..... yes no
35. I am obedient at home ..... yes no
36. I am lucky ..... yes no
37. I worry a lot ..... yes no
38. My parents expect too much of me ..... yes no
39. I like being the way I am ..... yes no
40. I feel left out of things ..... yes no

41. I have nice hair..... yes no
42. I often volunteer in school ..... yes no
43. I wish I were different ..... yes no
44. I sleep well at night..... yes no
45. I hate school..... yes no
46. I am among the last to be chosen for games..... yes no
47. I am sick a lot ..... yes no
48. I am often mean to other people..... yes no
49. My classmates in school think I have good ideas ..... yes no
50. I am unhappy ..... yes no
51. I have many friends ..... yes no
52. I am cheerful ..... yes no
53. I am dumb about most things ..... yes no
54. I am good looking ..... yes no
55. I have lots of pep..... yes no
56. I get into a lot of fights..... yes no
57. I am popular with boys..... yes no
58. People pick on me ..... yes no
59. My family is disappointed in me..... yes no
60. I have a pleasant face ..... yes no

61. When I try to make something, everything seems to go wrong. yes no
62. I am picked on at home ..... yes no
63. I am a leader in games and sports ..... yes no
64. I am clumsy ..... yes no
65. In games and sports, I watch instead of play ..... yes no
66. I forget what I learn ..... yes no
67. I am easy to get along with ..... yes no
68. I lose my temper easily ..... yes no
69. I am popular with girls ..... yes no
70. I am a good reader ..... yes no
71. I would rather work alone than with a group ..... yes no
72. I like my brother (sister) ..... yes no
73. I have a good figure ..... yes no
74. I am often afraid ..... yes no
75. I am always dropping or breaking things ..... yes no
76. I can be trusted ..... yes no
77. I am different from other people ..... yes no
78. I think bad thoughts ..... yes no
79. I cry easily ..... yes no
80. I am a good person ..... yes no

APPENDIX E

HEIGHT-WEIGHT TABLES FROM THE INSTITUTE OF CHILD BEHAVIOR AND DEVELOPMENT, UNIVERSITY OF IOWA

WEIGHT AND HEIGHT OF BOYS FROM 5 TO 18 YEARS

	Measurement		Percentile						
			3	10	25	50	75	90	97
5 YEARS	Weight	pounds	34.5	36.6	39.6	42.8	46.5	49.7	53.2
		kilograms	15.65	16.6	17.96	19.41	21.09	22.54	24.13
	Height	inches	40.2	41.5	42.6	43.8	45.0	45.9	47.0
		centimeters	102.1	105.3	108.3	111.3	114.2	116.7	119.5
6 YEARS	Weight	pounds	38.5	40.9	44.4	48.3	52.1	56.4	61.1
		kilograms	17.46	18.55	20.14	21.91	23.63	25.58	27.71
	Height	inches	42.7	43.8	44.9	46.3	47.6	48.6	49.7
		centimeters	108.5	111.2	114.1	117.5	120.8	123.5	126.2
7 YEARS	Weight	pounds	43.0	45.8	49.7	54.1	58.7	64.4	69.9
		kilograms	19.5	20.77	22.54	24.54	26.63	29.21	31.71
	Height	inches	44.9	46.0	47.4	48.9	50.2	51.4	52.5
		centimeters	114.0	116.9	120.3	124.1	127.6	130.5	133.4
8 YEARS	Weight	pounds	48.0	51.2	55.5	60.1	65.5	73.0	79.4
		kilograms	21.77	23.22	25.17	27.26	29.71	33.11	36.02
	Height	inches	47.1	48.5	49.8	51.2	52.8	54.0	55.2
		centimeters	119.6	123.1	126.6	130.0	134.2	137.3	140.2
9 YEARS	Weight	pounds	52.5	56.3	61.1	66.0	72.3	81.0	89.8
		kilograms	23.81	25.54	27.71	29.94	32.8	36.74	40.73
	Height	inches	48.9	50.5	51.8	53.3	55.0	56.1	57.2
		centimeters	124.2	128.3	131.6	135.5	139.8	142.6	145.3
10 YEARS	Weight	pounds	56.8	61.1	66.3	71.9	79.6	89.9	100.0
		kilograms	25.76	27.71	30.07	32.61	36.11	40.78	45.36
	Height	inches	50.7	52.3	53.7	55.2	56.8	58.1	59.2
		centimeters	128.7	132.8	136.3	140.3	144.4	147.5	150.3
11 YEARS	Weight	pounds	61.8	66.3	71.6	77.6	87.2	99.3	111.7
		kilograms	28.03	30.07	32.48	35.2	39.55	45.04	50.67
	Height	inches	52.5	54.0	55.3	56.8	58.7	59.8	60.8
		centimeters	133.4	137.3	140.5	144.2	149.2	151.8	154.4
12 YEARS	Weight	pounds	67.2	72.0	77.5	84.4	96.0	109.6	124.2
		kilograms	30.48	32.66	35.15	38.28	43.55	49.71	56.34
	Height	inches	54.4	56.1	57.2	58.9	60.4	62.2	63.7
		centimeters	138.1	142.4	145.2	149.6	153.5	157.9	161.9

Age	Measurement		Percentile						
			3	10	25	50	75	90	97
13 years	Weight	pounds	72.0	77.1	83.7	93.0	107.9	123.2	138.0
		kilograms	32.66	34.97	37.97	42.18	48.94	55.88	62.6
	Height	inches	56.0	57.7	58.9	61.0	63.3	65.1	66.7
		centimeters	142.2	146.6	149.7	155.0	160.8	165.3	169.5
14 years	Weight	pounds	79.8	87.2	95.5	107.6	123.1	136.9	150.6
		kilograms	36.2	39.55	43.32	48.81	55.84	62.1	68.31
	Height	inches	57.6	59.9	61.6	64.0	66.3	67.9	69.7
		centimeters	146.4	152.1	156.5	162.7	168.4	172.4	177.1
15 years	Weight	pounds	91.3	99.4	108.2	120.1	135.0	147.8	161.6
		kilograms	41.41	45.09	49.08	54.48	61.23	67.04	73.3
	Height	inches	59.7	62.1	63.9	66.1	68.1	69.6	71.6
		centimeters	151.7	157.8	162.3	167.8	173.0	176.7	181.8
16 years	Weight	pounds	103.4	111.0	118.7	129.7	144.4	157.3	170.5
		kilograms	46.9	50.35	53.84	58.83	65.5	71.35	77.34
	Height	inches	61.6	64.1	65.8	67.8	69.5	70.7	73.1
		centimeters	156.5	162.8	167.1	171.6	176.6	179.7	185.6
17 years	Weight	pounds	110.5	117.5	124.5	136.2	151.4	164.6	175.6
		kilograms	50.12	53.3	56.47	61.78	68.67	74.66	79.65
	Height	inches	62.6	65.2	66.8	68.4	70.1	71.5	73.5
		centimeters	159.0	165.5	169.7	173.7	178.1	181.6	186.6
18 years	Weight	pounds	113.0	120.0	127.1	139.0	155.7	169.0	179.0
		kilograms	51.26	54.43	57.65	63.05	70.62	76.66	81.19
	Height	inches	62.8	65.5	67.0	68.7	70.4	71.8	73.9
		centimeters	159.6	166.3	170.5	174.5	178.9	182.4	187.6

*Several measurements at 5 years differ slightly from their counterparts in Table A.2 because they were obtained from a different population of children.

Source: The data in this table are from studies by and are reproduced by courtesy of Howard V. Meredith, Ph.D., Professor of Child Somatology, Institute of Child Behavior and Development, University of Iowa.

WEIGHT AND HEIGHT OF GIRLS FROM 5 TO 18 YEARS

Age	Measurement		Percentile						
			3	10	25	50	75	90	97
5 years[a]	Weight	pounds	33.7	36.1	38.6	41.4	44.2	48.2	51.8
		kilograms	15.29	16.37	17.51	18.78	20.05	21.86	23.5
	Height	inches	40.4	41.3	42.2	43.2	44.4	45.4	46.5
		centimeters	102.6	105.0	107.2	109.7	112.9	115.4	118.0
6 years	Weight	pounds	37.2	39.6	42.9	46.5	50.2	54.2	58.7
		kilograms	16.87	17.96	19.46	21.09	22.77	24.58	26.63
	Height	inches	42.5	43.5	44.6	45.6	47.0	48.1	49.4
		centimeters	108.0	110.6	113.2	115.9	119.3	122.3	125.4
7 years	Weight	pounds	41.3	44.5	48.1	52.2	56.3	61.2	67.3
		kilograms	18.73	20.19	21.82	23.68	25.54	27.76	30.53
	Height	inches	44.9	46.0	46.9	48.1	49.6	50.7	51.9
		centimeters	114.0	116.8	119.2	122.3	125.9	128.9	131.7
8 years	Weight	pounds	45.3	48.6	53.1	58.1	63.3	69.9	78.9
		kilograms	20.55	22.04	24.09	26.35	28.71	31.71	35.79
	Height	inches	46.9	48.1	49.1	50.4	51.8	53.0	54.1
		centimeters	119.1	122.1	124.8	128.0	131.6	134.6	137.4
9 years	Weight	pounds	49.1	52.6	57.9	63.8	70.5	79.1	89.9
		kilograms	22.27	23.86	26.26	28.94	31.98	35.88	40.78
	Height	inches	48.7	50.0	51.1	52.3	54.0	55.3	56.5
		centimeters	123.6	127.0	129.7	132.9	137.1	140.4	143.4
10 years	Weight	pounds	53.2	57.1	62.8	70.3	79.1	89.7	101.9
		kilograms	24.13	25.9	28.49	31.89	35.88	40.69	46.22
	Height	inches	50.3	51.8	53.0	54.6	56.1	57.5	58.8
		centimeters	127.7	131.7	134.6	138.6	142.6	146.0	149.3
11 years	Weight	pounds	57.9	62.6	69.9	78.8	89.1	100.4	112.9
		kilograms	26.26	28.4	31.71	35.74	40.42	45.54	51.21
	Height	inches	52.1	53.9	55.2	57.0	58.7	60.4	62.0
		centimeters	132.3	137.0	140.3	144.7	149.2	153.4	157.4
12 years	Weight	pounds	63.6	69.5	78.0	87.6	98.8	111.5	127.7
		kilograms	28.85	31.52	35.38	39.74	44.82	50.58	57.92
	Height	inches	54.3	56.1	57.4	59.8	61.6	63.2	64.8
		centimeters	137.8	142.6	145.9	151.9	156.6	160.6	164.6

Age	Measurement	Percentile						
		3	10	25	50	75	90	97
13 years	Weight (pounds)	72.2	79.9	89.4	99.1	111.0	124.5	142.3
	Weight (kilograms)	32.75	36.24	40.55	44.95	50.35	56.47	64.55
	Height (inches)	56.6	58.7	60.1	61.8	63.6	64.9	66.3
	Height (centimeters)	143.7	149.1	152.6	157.1	161.5	164.8	168.4
14 years	Weight (pounds)	83.1	91.0	99.8	108.4	119.7	133.3	150.8
	Weight (kilograms)	37.69	41.28	45.27	49.17	54.29	60.46	68.4
	Height (inches)	58.3	60.2	61.5	62.8	64.4	65.7	67.2
	Height (centimeters)	148.2	153.0	156.1	159.6	163.7	167.0	170.7
15 years	Weight (pounds)	89.0	97.4	105.1	113.5	123.9	138.1	155.2
	Weight (kilograms)	40.37	44.18	47.67	51.48	56.2	62.64	70.4
	Height (inches)	59.1	61.1	62.1	63.4	64.9	66.2	67.6
	Height (centimeters)	150.2	155.2	157.7	161.1	164.9	168.1	171.6
16 years	Weight (pounds)	91.8	100.9	108.4	117.0	127.2	141.1	157.7
	Weight (kilograms)	41.64	45.77	49.17	53.07	57.7	64.0	71.53
	Height (inches)	59.4	61.5	62.4	63.9	65.2	66.5	67.7
	Height (centimeters)	150.8	156.1	158.6	162.2	165.7	169.0	172.0
17 years	Weight (pounds)	93.9	102.8	110.4	119.1	129.6	143.3	159.5
	Weight (kilograms)	42.59	46.63	50.08	54.02	58.79	65.0	72.35
	Height (inches)	59.4	61.5	62.6	64.0	65.4	66.7	67.8
	Height (centimeters)	151.0	156.3	159.0	162.5	166.1	169.4	172.2
18 years	Weight (pounds)	94.5	103.5	111.2	119.9	130.8	144.5	160.7
	Weight (kilograms)	42.87	46.95	50.44	54.39	59.33	65.54	72.89
	Height (inches)	59.4	61.5	62.6	64.0	65.4	66.7	67.8
	Height (centimeters)	151.0	156.3	159.0	162.5	166.1	169.4	172.2

[a]Several measurements at 5 years differ slightly from their counterparts in Table A.5 because they were obtained from a different population of children.

Source: The data in this table are from studies by and are reproduced by courtesy of Howard V. Meredith, Ph.D., Professor of Child Somatology, Institute of Child Behavior and Development, University of Iowa.

APPENDIX F

INSTRUCTIONS FOR ADMINISTERING THE INSTRUMENTS

Instructions for Administering

the Questionnaires

Piers-Harris Self-Concept Scale

1. Be perfectly honest in your response. Answer items as you really feel you are, not as you think you ought to be.

2. There are no right or wrong answers because it is about you and your feelings. The results will not affect your grades.

3. No one will read them. They will be scored by a computer.

4. You will need a pencil. Do not begin until I have given you some instructions about changes to make.

5. Instructions were read for the P-H and instructions for filling out identifying information and using the IBM answer sheet were given.

6. Do not leave an answer blank, and do not answer any one with both responses.

7. When you finish one page, continue on to the next ones until you finish the 80 items.

8. If you have questions about the meaning of a word, raise your hand and it will be explained to you.

Children's Personality Questionnaire

1. Turn your answer sheets over and put your last name only on the blank for the name.

2. Again there are no right or wrong answers except for a few questions that do have a right answer, and they have three answers to choose from, like example 2.

3. Mark only on the answer sheet. Choose one response or the other depending on which one is most like you. The word "or" was stressed to indicate a choice.

4. Begin the questionnaire and continue until you complete Part A_1. Do not continue past test item 70.

VITA 2

Donna Kaye Sears

Candidate for the Degree of

Doctor of Education

Thesis: RELATIONSHIP OF SELECTED PERSONAL CHARACTERISTICS AND AN OVERWEIGHT CONDITION AMONG FIFTH, SIXTH, AND SEVENTH GRADE STUDENTS

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Professional Organizations: Oklahoma Association for Children Under Six, Southern Association for Children Under Six, American Home Economics Association, Oklahoma Home Economics Association; Nutrition Education Society, School Food Service Association, National Association for the Education of Young Children, Governor's Task Force on Children and Youth, Delta Kappa Gamma, Oklahoma Task Force on Day Care, National Council on Family Relations, Omicron Nu.