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MEASURES, AND SELF CONCEPTS OF BLACK, URBAN,
OBESE ELEMENTARY SCHOOL CHILDREN.

The Ohio State University, Ph.D., 1977
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AND ONE NUTRITION EDUCATION TECHNIQUE
ON THE WEIGHT, SKINFOLD MEASURES, AND SELF CONCEPTS OF
BLACK, URBAN, OBESE ELEMENTARY SCHOOL CHILDREN

DISSERTATION

Presented in Partial Fulfillment of the Requirement for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

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1977

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CHAPTER I
THE PROBLEM AND ITS SIGNIFICANCE

Introduction

The obesity problem most likely began at the dawn of mankind. Wandering tribes of early people moved from place to place in search of food. It seems likely that the process of natural selection favored those who could survive on a limited food supply, liked high-calorie foods, could smell food furthest away, and could stand the cold weather. As the ages passed, therefore, human developed multiple genetic characteristics which permitted them to survive on a limited amount of food and favored the development of subcutaneous fat. The modern descendants of these fortunate survivors usually have an abundant food supply, adequate clothing, and heating systems. Thus those traits that long ago favored survival are now useless and perhaps dangerous, since they may lead to obesity (Collipp, 1975).

When one attempts to look at the problem of obesity they are confronted with several major problems. Obesity is neither clearly defined nor clearly understood. Culturally it represents a body configuration that is felt by the group to be undesirable. However, cultures have differed and do differ as to which configuration is desirable. From a medical standpoint, obesity has been considered a deviation above what is considered normal in weight
for a given height, age, and sex. It has also been defined as an excessive accumulation of fat. The question then arises, how much above the norm in weight is pathological and how much fat accumulation is abnormal? Also, is excessive deposition of fat or overweightness abnormal at all? Actuarial studies that have been carried out by life insurance companies and studies relating to incidence of obesity in certain diseases would indicate indirectly that it is. People who fell well above the norm for weight showed significant increase in mortality as well as increased incidence of certain diseases (Dublin & Marks, 1930).

The problem of obesity is prevalent in contemporary society. The roots of this problem have been recognized as being complex and diverse, dependent upon the genetic, psychological, sociological, cultural, economic, and physiological characteristics of the person (Bruch, 1956; Bloom & Erdix, 1967; Cauffman & Pauley, 1961; Gygi, 1968; Hirsh, 1968; Kurland, 1967; Mayer, 1955, Schacter, 1968; Simon, 1963; Stunkard & McLaren-Hume, 1959; Stunkard & Mendelson, 1969). It has reached epidemic proportions in Western society. More than one-third of middle-aged Americans are 20% over their ideal weight.

The trend toward less activity brought on by scientific advances has led to the increased incidence of obesity, which in combination with diets rich in saturated fat, cigarette smoking, and untreated high blood pressure has led to the large increase

Despite the growing need for sound medical advice in this area, many medical and paramedical professionals feel daunted and frustrated by this clinical problem because it is so often ingratiating (Howard, 1975). It has been said that the treatment of obesity is both the simplest and the most complex of all disorders: simple in that, in the adult, all that is normally required is caloric restriction; and complex in that cellular, metabolic, socioeconomic, cultural, and psychological factors all militate against the maintenance of the reduced state (Ashwell, 1975).

It is essential to try to locate potential sufferers and prevent this condition. The public school system, from kindergarten through sixth grade, has recently been regarded by several physicians as a possible strong ally in the prevention and treatment of childhood obesity (Collipp, 1975).

The Problem

The purpose of the study contained herein was to investigate the effects of Behavior Modification, Gestalt Awareness, Rational Emotive Education, and Nutrition Education on the weight, food habits, and self-concept of a number of children who referred themselves to the investigator because of the distress of being overweight.
This study is of particular importance because the long term effects of counseling obese children in a school setting are not well known. Most children and youth of the nation are given little or no instruction regarding nutrition or the importance of a nutritionally balanced diet to mental and physical well-being (Senate Bill 945, 1975). The effects of the knowledge base obtained by children in nutrition classes on their personal dietary practices is not clearly understood.

It is hoped that the results of this investigation will be of assistance in the development of future comprehensive nutrition education programs for all pupils in our public schools as well as for the prevention of obesity.

Obesity that begins early is remarkably resistant to treatment, and the traditional medical therapy has offered little hope for long-term successful weight reduction. Successful treatment required extraordinary motivation, perseverance, and self-discipline. Practitioners have long been faced with the dilemma of how to effectively treat obese individuals so that weight reduction occurs and this loss is maintained over a long period of time. Medical, psychotherapeutic, and dietary methods of weight reduction have been used with varying degrees of success in treating obesity. Over the past 10 years, behavioral techniques have been developed that attempt to modify directly the eating behavior of the obese individual. Surgical procedures
have also been devised relatively recently that dramatically reduce the absorption of food through the small intestine, resulting in substantial weight reduction.

In the human, the early years of life are thought to be critical in determining the number of adipose cells (Hirsch & Han, 1969). Some more recent data indicate, however, that the critical period for multiplication of adipocytes extends beyond the first years of life (Brook & Lloyd, 1972).

Studies of adipose tissue, metabolism and early development of cellularity indicate that some of the characteristics of lipid metabolism are established early in life. At what age and how the control of metabolism is regulated by dietary means required further investigation and remains an open area for study. However, early postnatal nutrition may be decisive for the whole of our life. In rats, and to some extent mice, more and more data are being accumulated that demonstrate that the type of diet fed in infancy may affect the length of life of the animal and also the disease to which it will eventually succumb. However, there is fairly good, even though not conclusive evidence, that the increasingly early introduction of solid food to the diet of the newborn leads to over-weight and obesity within 6 months after birth or later. How far this obesity is then maintained for the rest of one's life is not known (Björntorp, 1974).
Brook has tied rapid growth in infancy to increased adipose cell replication. Because these cells are permanent, overweight children have a larger adipose tissue to lean body mass ratio than children who are normal height for weight. This is one reason why treating childhood obesity is so difficult (Brook, 1972).

There are many difficulties involved in the developmental study of human adipose tissue cellularity and metabolism. The main problem is the limited material available for study, but there are also methodological difficulties. It is inherently problematic to count the number of fat cells or examine adipose tissue from a small biopsy sample taken from a single site and extrapolate a conclusion for the whole body. Estimates of mean cell size and cell number may be affected by using techniques which miss the small polyvascular cells. These cells may be of particular importance for the development of cellularity.

It is possible that the failure of obese adults to maintain their reduced weights may be due to the fact that dietary intervention occurs at a time when the morphological and metabolic factors are already well established. The critical time for the establishment of patterns of adipose tissue cellularity and metabolism in the human is a matter of variable opinion. As mentioned earlier in the Muscatine Study (1975), excessive fat accumulation during the fetal period does not necessarily lead to an
increased number of adipose cells in adults. Data obtained from experimental animals suggest that the final number of fat cells in the body is determined by the amount or composition of food consumed in the early postnatal period (Kittle & Hirsch, 1968).

One possible area of prevention concerns the overweight infant. Regular height-weight assessment in combination with skinfolds appears to be the best way to detect the overweight infant (Weil, 1975). If excessive weight gain is detected, all possible physical, genetic, social, and psychological factors need to be evaluated to determine what can be changed. Then individualized treatment can be initiated.

Another factor in infant obesity is genetics. Mayer has shown that if both parents are obese, there is an 80% chance of an obese child, and only a 7% chance of an obese child if neither parent is obese (Mayer, 1975).

Withers studied adopted children in London, England, to determine if obesity in infants is a function of environment or genetics (Collip, 1973). His results indicate that there is a high correlation between the weights of children and their natural parents, and a low correlation between the weights of children and their adopted parents (Mayer, 1975). In the Eid study, however, of 20 children with one obese parent, only 2 children were obese. This led Eid to conclude that rate of weight gain in infancy was a
better predictor of obesity than weight status of the natural parents (Eid, 1970). Mayer (1975) has stated that the rate of weight gain may be more a function of activity than either genetics or food intake. His studies showed that obese children eat somewhat less than non-obese children and increased activity is perhaps what is needed. Mayer also reported that a program was initiated in an elementary school requiring one hour of supervised activity per day. After four years, 60% of the overweight children were at an appropriate weight for height. However, because of a lack of funding, the program was dropped. A follow-up three years later revealed that almost all of the previously overweight children were overweight again.

In another study which has particular relevance to this research, Mayer (1975) found that in school age children, nutrition education can be useful in treating and preventing childhood obesity. Children can be taught the relationship between food and energy and what is an appropriate intake for them.

Another area of treatment is decreased intake and increased activity. Of primary importance, is not to restrict growth by restricting intake. In grossly obese children, however, intake can be restricted. This method considers obesity is due to physiological process in which the caloric intake exceeds the caloric expenditure. The attempt at this approach is to alter the total caloric intake, to bring it more in line with caloric
expenditure.

Hamer has pointed out that treating childhood obesity with energy intake restriction, exercise, and counseling is usually not effective, with only 10-15% responding to treatment. For this reason, he and others believe that prevention is the key to reducing the incidence of obesity in children (Hamer, 1973; Schwartz, 1975).

Once into childhood, the obesity appears to be as much a function of inactivity as overeating. Stefanik compared intake vs. activity among obese and non-obese boys in a summer camp and in school. His results indicate that obese boys eat somewhat less than non-obese boys and prefer more sedentary activities (Stefanik, 1959).

Adolescence is a critical time of formulation of the self. The adolescent questions his being, his self-value. The decisions reached then about self-concept will in great part determine the adult view of his own worthiness. The obese adolescent faces a hostile world in assessing his self-value. They are often ridiculed and rejected by peers; social and sexual explorations become feared rather than reveled. Self-image disturbances become common with the obese adolescent (Stunkard & Burt, 1967; Stunkard & Mendelson, 1967).

There is only limited evidence on the course of the psychological development of obesity (Collipp, 1975). Adolescent-onset
obesity appears when adolescents are unable to master the normal developmental tasks of their age; and when they find their continued maturation blocked, they may often regress to the self-service mechanism of overeating in order to compensate. Obesity, once established, seems to be self-perpetuating (Collipp, 1975).

Adolescent obesity is an example of a pathological regression to a developmental station that affords enormous gratification. This appears at a specific time in the adolescent's maturational process, but maturation in the emotional area stops; intellectual growth may or may not continue normally. The adolescent returns for pleasure to the ontogenetic given that we have all shared: eating (Kornhaber, 1970).

As a child enters and progresses through adolescence, there is a rapid increase in velocity of growth in height. The total body mass almost doubles during this period. If the child is obese and continues to gain weight in excess of what is needed for growth, the process of increasing in weight begins earlier, but ends sooner than what would be expected with proper intake. As the skeleton matures, the epiphyses of the long bones close sooner than normal and the obese person may be shorter than they would have been (Heald, 1975).

Because the changes in the persons body are accelerated, emotional problems develop in dealing with, what is to the person, a new body. Add to this the rejection caused by obesity, an
emerging sex drive, and a person can develop a poor body image that makes motivation and change difficult (Heald, 1975).

Yet regardless of the fact that childhood and adolescent obesity are critical in determining adult weight problems and self-image disturbances, there have been few studies which have dealt directly with these stages of obesity. Those few authors who do address themselves to adolescent and childhood obesity (Mayer, 1968; Stanley et al., 1970; Hamar et al., 1971, Bruch, 1973), rather than deal with specific means of weight reduction, discuss attempts to make the obese adolescent more self-accepting. The focus is not so much on changing eating patterns as on changing individual or family psychopathology.

Bullen compared relative activities between obese and non-obese girls. In tennis, the non-obese girls were in motion 90% of the time. The same proportion of time held for volleyball (Bullen, Reed & Mayer, 1964).

In another study, Bullen investigated attitudes toward food, family, and activity in obese and non-obese adolescent girls. She concluded that obese girls believed that they ate more than non-obese girls when, as a group, they did not; and, although they realized they were less active than the non-obese girls, they did not perceive this as a possible cause of their obesity (Bullen, 1963).
In children, Mayer has said that the psychological impact of obesity and racial discrimination are similar. Obese children are reminded of their obesity through advertising that emphasizes slimness. This preconception plus the perception that they have no control over the situation, leads to the development of poor self image and frustration when children are actually rejected by someone calling them "Fatty". This leads to increased unhappiness and isolation, which leads to less activity that reinforces the obesity (Mayer, 1975).

In summary, there are many problems surrounding obesity and thus long-term correction of this disorder in the adolescent and the adult have been unsuccessful. Persons working directly with obese children are very aware of limitations of current treatment interventions. While suggestions on how to prevent obesity have been given to the development of programs that point the way to publication, little is offered for the practitioner who must make treatment decisions for children who are suffering from obesity.

Research Questions

Specific research questions are as follows:

1. What effect does counseling have on weight loss?

2. Are there differences in weight loss among subjects who are given Behavior Modification, Rational Emotive Education and Gestalt Awareness counseling and subjects who received no weight loss counseling?
3. Are there self-concept changes as measured by human figure drawings for students receiving weight loss counseling?

4. Are there differences in changes in skinfolds among groups of students who receive different types of weight loss counseling?

5. Are there changes in the food habits and eating practices of students before and after weight loss counseling as measured by the proportion of the basic four food groups reported as included in their diet for a 24-hour period?

6. What are the long term effects of basic nutrition education on weight?

Rationale for the Study

Earlier in this chapter, a description was given of some of the difficulties that are encountered in developing an adequate treatment and/or prevention program for one of the largest nutritional problems affecting the American population today - obesity. These difficulties are multiplied when attempts are made to select instruments to measure the psychological component of the problem. Only recently, have psychological and personality factors contributing to the development of obesity begun to be identified. As further investigations such as this research
are conducted, specific variables should become apparent and the results should be considered in developing new methods of preventing as well as treating obesity.

Many theories have been advanced to explain the origin of obesity. These theories affirm that the explanation of the disorder lies in the complex interrelationship between the psychological and somatic processes. Therefore, to achieve comprehensive knowledge of people, it is necessary to study them as individual mind-body complexes ceaselessly interacting with the social and physical environment in which they are embedded. Thus, the conception of man is dynamic, integrative, and holistic. This advocacy justifies this approach as a distinct approach to the prevention, diagnosis, and management of obesity.

A dynamic, integrative and holistic framework needs a simple, natural model for viewing any living organism.

For the purpose of this investigation a dynamic, integrative, and holistic framework was developed for viewing the problem of obesity (see Figure 1).
Figure 1. Nutrition Model

Explanation of the Dimensions of the Nutrition Model

E = Experience

A person will absorb only that which is permitted to be useful. The way one is allowed, or allows the self to use this information determines the forms of growth potential that develop.

The rules laid down by feedback patterns provide the most important growth functions. The form of growth process that will be used by the growing child in future acts determines whether growth will be permitted and whether it will be growth.
through accretion of sameness or assimilation of differences.

**G = Growth**

Growth is a prerequisite of life. Human beings are biological organisms and are therefore open systems. They are intrinsically active even without external stimuli.

The organism actively searches for psychological nutrition of information to initiate growth. Therefore, the first prerequisite for psychological growth in the availability of sufficient mental nutrition. How the information becomes transformed into growth depends on how it is processed. The attractiveness is not determined by the stimulus itself, but depends on internal signals that indicate the subsequent or anticipated usefulness of the material.

Observing an organism's contact with the environment and subsequent reaction on the organism's own terms is based on what kind of growth the organism wants or has learned to practice.

**C = Change**

Fatness cannot be modified. It is only those behaviors which lead people to make the interpretive statement, "I am fat" that can be modified. It is hard, however, for one to make such an acknowledgment unless they have already changed. In other words, the full realization of "fatness" is a severe ego "insult" and one must have some new source of strength to endure it (Heald, 1975; Mayer, 1975).
Social Factors

External and internal stimuli that are perceived by and are meaningful to the person, activate emotions, and elicit physiological changes that threaten health and survival. The key interviewing variables are information, its cognitive appraisal and subjective meaning and emotions. The organization of society with its many structures and accompanying value systems, plays an important part in the acceptance or rejection of food patterns. For example, food is abundant, physical labor is reduced to a minimal level, and automobiles are plentiful.

Krasner pointed out in a recent research review, the technology of behavior therapy becomes effective in modifying behavior only within the context of social influence (In Levitz, 1973).

Physical Factors

Genetic determination of predisposition to obesity is correlated to certain body types. Thus the physiologic conditions are favorable for the phenotype to manifest whatever genotypic predispositions to obesity are present in a given individual. A high proportion of obese children are born to obese parents. In addition, there is a correlation between total calories consumed and activity. Obese expend less energy than their non-obese counterparts.

Psychological Factors

Overeating seems to be guided by a set of psychological principles that are implicated in the experience of affect (Schacter, 1971). The syndrome often occurs in the "passive-
dependant complaint child who cannot clearly distinguish between thoughts, feelings, and action. Eating may represent an incorporative mode, a discharge of aggression directed at the self, or a self-destructive act (Metabolic suicide). The obese process involves a cyclic phenomena. The following diagram demonstrates this phenomenon (Kornhaber & Kornhaber, 1972):

![Diagram of Cyclic Phenomena](image)

Figure 1. Diagram of Cyclic Phenomena

A core assumption asserts that man's symbolic activity, subserved by the cerebral structures and functions, influences organismic processes at all other levels of organization down to the cellular level. Thus, the realm of conscious and unconscious perceptions, thoughts, memories, imagery, and fantasy constitutes a set of factors affecting homeostasis, adaptation, and health. In time, symbolic activity is influenced by environmental stimuli and by bodily processes that directly affect cerebral functions. Symbolic processes are responsive to information inputs from the following three sources: (a) the environment; (b) the body; and (c) the partly autonomous symbolic activity itself. Information can affect the individual insofar as it is appraised, consciously-unconsciously, or both, and endowed with subjective meaning. The latter is a condition for activation
of emotions. In turn, emotions have physiological concomitants and cognitive and behavioral consequences, all of which can bring about changes in health (Lipowski, 1973).

Developmental factors and the kinds, timing, duration, and intensity of environmental, especially social, stimuli during the early development of the organism and personality help shape future psychophysiological response patterns. They codetermine susceptibility to disease (Ader, 1974).

Schacter, Goldman, and Gordon (1968) concluded that eating behavior of the obese is under external, rather than internal, control. In effect, the obese seem stimulus bound. In another study Rodin, Herman, and Schacter (1973) compared fat and normal subjects on simple and on complex reaction time. The findings indicated that the obese are more efficient stimulus or information processors.

Rational Emotive Education not only employs emotive and behavioristic methods but significantly stresses and undermines the cognitive element in self-defeating behavior and overreactions to normal and to unusual stimuli (Ellis, 1974). Consequently, it was felt by the investigator that a 3-way, rational emotive-behavioristic approach to the problem of obesity might be efficacious.

Bruch (1974) explains that the most persistent explanation for fat people's inability to reduce is what is called their
lack of will power. She further explains that recent investigations have shown that this lack is related to the abnormal development of hunger awareness. Though the fat person may speak of being always hungry, it is a paradoxical fact that they overeat because they do not recognize real hunger, the signal of nutritional need, and do not differentiate it from a variety of other states of discomfort which they misinterpret as a need to eat. Bruch believes that obesity can be prevented if:

1. The child has an increased awareness of food intake
2. The child is fed when hungry
3. The child is played with when it needs attention
4. The child is encouraged to be active when it is restless.

The investigator chose Gestalt Awareness Exercises because they provide opportunities for deepening a person's awareness of their own body and its interaction with the environment.

Behavior therapy, which has become currently fashionable for treating many types of behavior disorders, has also been applied to obesity. The results appear more promising than previous modes of treatment in selected adult patients (Levitz, 1973; Stunkard, 1974). The effectiveness of these procedures may be due to the process of indirectly modifying eating habits. Therefore, these techniques may be effective in helping obese subjects learn how to permanently change their eating patterns. Whether
these techniques can be used successfully with obese children is the purpose of this study. What is examined herein is the relative efficacy of a combination of Behavior Modification techniques, Rational Emotive Education and Gestalt Awareness counseling. However, for the purposes of this study, only the Behavior Modification and Rational Emotive Education groups will be statistically compared for the relative effectiveness of the different treatments with respect to weight loss, skinfold measures, and self-esteem.

**Summary**

The literature and the investigator's experience vividly demonstrate the failure of conventional treatment programs in ameliorating the obese condition. This investigation is based on the conviction that the prevention of obesity is best organized in an educational context. It is based on a multi-dimensional model and is an attempt to identify counseling methods which are effective in helping children modify those behaviors which lead them to make the interpretive statement, "I am fat."

**Limitations and Assumptions**

1. The results may not be generalizable beyond the population of students in the inner city school served by the study. The sample is predominately black and female. A detailed description of the sample is given in the methodology section of this study.

2. It is assumed that the human organism is capable of many adjustments in order to maintain energy
balance, and in spite of our experimental manipulations, the equilibrium of caloric intake and body weight resist change (Jorden, 1973).

3. It is assumed that there is a relationship between physical characteristics of a person and self-esteem. Obesity reduces one's physical and sexual attractiveness and makes the youngster depend inordinately on the family relationship for positive feedback, personal contact, and gratification (Kornhaber, 1972).

4. The study was conducted with small numbers of subjects. It would have been more desirable to have larger numbers, however, it is difficult to extract a usefully large sample of minority groups at different economic levels (Ten-State Nutrition Survey, 1972). The problem is further compounded by the fact that the obese resist treatment. Attrition rates in clinics range from 20% to 80% (Stunkard & McLaren-Hume, 1959). Although this is a potential source of invalidity, it is not necessarily the sine qua non of sound experimental design, Hallahan & Cruickshank (1968). reiterate what the present writer gives credence to viz., that in psycho-educational research of a practical nature the opportunity for ideal experimental conditions is a rarity.

5. It is assumed that one counselor can effectively utilize three different forms of weight loss counseling
techniques and maintain the validity of the study.

6. The subjects who received Behavior Modification and Rational Emotive Education weight loss counseling were of pre-adolescent age (10-13 years of age) while subjects receiving Gestalt Awareness weight loss counseling were of Early School Age (5-9 years of age).

Definition of Terms

For the purpose of the study the following definition of terms are added:

**Activity Program** - Because of the relationship between inactivity and obesity, a physical activity program was initiated to provide opportunity for energy expenditure on a regular basis.

**Basic Four Food Groups** - The U.S. Department of Agriculture's Daily Food Guide - used as a basis for choosing a variety of foods that will provide an adequate diet.

**Body Image Hypotheses** - When a person draws a human figure, they draw a picture of themself as they view themself.

**Counselor** - In the model described in this study an educational approach to obesity is taken. The principal role of the counselor in this setting is to teach clients how to analyze their own behavior patterns, and how to devise suitable techniques for changing them. In addition, the counselor also serves as a source of social influence.

**Energy-Imbalance Groups** - The term energy-imbalance was chosen to describe the experimental group of overweight subjects to avoid
any negative connotations associated with being obese.

**Obesity** - There are considerable differences in body build among children. Except in cases of grotesque overweight or dangerous thinness, it is impossible to gauge the presence or extent of obesity by comparing a set of numbers to a table of weights and heights, particularly during early adolescence, when differences in rates of muscular development are considerable. Therefore a child was considered obese only if he or she met the criteria for obesity as established by skinfold thickness (Winick, 1975), height-weight standards for the assessment of body fat (anthropometric chart) and visual observations.

**School at Large Nutrition Program** - Normal nutrition education taught in classrooms by medical dietetics students.

**Self-Esteem** - (a) self-confidence, (b) freedom to express appropriate feelings, (c) liking for one's self, (d) satisfaction with one's attainments, and (e) a feeling of personal appreciation. For the purpose of this study, high self-esteem will be associated with human figure drawings which increase in size from pretest to posttest time, which exhibit happy, smiling expressions, and few erasures.
CHAPTER II
REVIEW OF THE LITERATURE

Introduction

The task of discussing obesity is indeed frustrating whether one considers etiology, epidemiology, or treatment—

There are many presumed etiologies of obesity, encompassing an entire span of philosophies. The classical dynamic view (Bruch, 1973) views overeating as an oral compulsion or fixation at the oedipal stage. The motoric-activity view claims that the obese expend less physical energy than the non-obese (Bullen, 1964; Mayer, 1968). The classical conditioning view states that eating is temporally and contiguously paved with a number of other activities. The operant reinforcement view is that eating is a pleasurable activity and is thus intrinsically rewarding. Yet despite any possible understanding of causality, efforts to effect permanent weight reduction in obese patients have been dismal failures.

Recently, various behavior modification techniques have been hailed as effective means of weight loss in obese adult patients. It is these various methods of weight reduction that will be examined in detail in this study.
Nearly all reports of successful weight reduction have been plagued by the methodological problem of nonstandardized improvement criteria for change. Considerable experimental effort has gone into finding simple objective methods for identifying obese children. These include triceps's skinfold measures, anthropometric charts, and height-weight standards for the assessment of body fat. These research reports were examined for the purpose of gathering data for this study and will be discussed in this chapter. Additionally, research on the use of human figure drawing in measuring self-esteem and the twenty-four hour recall food intake method was reviewed and will be included in the review of the literature.

Counseling Techniques

Although there exists a paucity of research on treatment of childhood obesity, behavior therapy appears to be a promising mode of treatment. This therapy has been successful with adult clients, however, whether these techniques can be successfully used with obese children and adolescents requires further research.

There have recently been a good number of studies dealing with the efficacy of covert sensitization in the treatment of obesity. Covert sensitization was first systematically described by Cautela (1966). The technique, as in classical conditioning, involves the pairing of neutral or pleasant stimuli
with aversive stimuli. But, in covert sensitization the pairings are not overt; no real foods or aversive stimuli are presented. They are all imagined by the patient.

The patient is taught muscular relaxation. When totally relaxed, the person is asked to clearly visualize a specific food. The patient is then instructed to imagine the food being brought closer to their mouth. They are then demanded to switch their visualization to that of vomiting and nausea. Cautela (1966) claims that if the aversive scenes are presented vividly enough so that the patient can clearly imagine them, weight loss will result when the patient avoids those specific foods.

Murray and Harrington (1972) examined the efficacy of covert sensitization with 16 obese female volunteers. Ten subjects completed the covert aversive training of 15 weeks which included 2 to 4 sessions of relaxation training and 10 sessions of aversive training in pairing the imagined foods with imagined noxious scenes. Mean weight loss per subject was 10 pounds, and follow-ups indicated that this weight loss was maintained at 3 and 6 months. It should be noted that there was no motivated control group receiving equal amounts of therapeutic attention to which these results can be contrasted.

Janda and Rimm (1972) examined the efficacy of covert sensitization using both attention-control groups and no-contact control groups. Groups met once weekly for 6 weeks. The
attention-control group was taught relaxation and discussed dietary habits in a non-directive manner. The experimental group received in addition to the covert sensitization routine of relaxation and visualization of nausea vomiting at approach to certain foods, positive covert instructions. That is, they were taught to vividly imagine good scenes and positive feelings for remaining on their diets. The results indicate that the covert sensitization group lost more weight than the controls, although the difference with the attention-controls was not significant statistically. However, in what appears to be a post-hoc analysis of the data, the authors find a high correlation between a sense of discomfort and weight loss. Those who felt discomfort during the covert sensitization training did lose weight and maintained the loss at a 6-week follow-up. The authors stated that this group had vivid images and were probably in a high state of arousal.

Manno and Marston (1972) seized upon the relative efficacy of covert operations and compared weight loss via negative covert reinforcement. Forty-one obese college students were randomly assigned to either one of two experimental groups or to an information-control group. The negative covert reinforcement group, in addition to pairing food with nausea, received instruction in imagining the avoidance of specific foods leading to pleasant feelings as a consequence of refusing to overeat. The information
controls had non-specific discussions concerning dietary habits. Both positive and negative reinforcement subjects showed significantly greater weight loss than the controls at the conclusion of therapy and 3 months later. The positive reinforcement group's weight loss was greater than the loss of the negative group, although this was statistically insignificant.

Other researchers have successfully used covert sensitization as one of the many methods implemented in a weight loss program. These include Stuart (1967), Wollersheim (1970), and Hall (1972).

There are those who question the efficacy of covert sensitization as the sole method of weight reduction. In examining covert sensitization toward selected foods, Sachs and Ingram (1972) found no difference between backward and forward conditioning in amount of weight loss. Backward conditioning involves the use of covert presentation of first the aversive stimuli (vomit or mucus in this case) and then the pleasant stimuli (specific foods). Theoretically, backward conditioning should be ineffective. The fact that both groups in this study report a similar decline in specific foods consumed leads one to suspect a motivational or suggestion factor, and demonstrates the need for stringent controls.
Foreyt and Hagen (1973) in examining the theoretical basis of covert sensitization provide these stringent controls. The weight losses of 39 female college students were compared using covert sensitization, placebo-suggestion, and no treatment. Subjects in the placebo-suggestion condition simply substituted pleasant imageries whenever a scene of nausea and vomiting was utilized in the covert sensitization group. Although both covert sensitization and placebo-control subjects reported decreases in attraction to foods which were covertly presented to them, the authors found no significant differences in weight loss across groups. This then may support the contention that covert sensitization is no more than suggestion from the experimenter to the subject. No other weight loss techniques were presented to either group. Thus, although most contact subjects reported the elimination of target foods from their diets, it would appear that they simply substituted other foods.

It is important to note that covert sensitization or aversive conditioning are by no means dietary habits that alone can lead to weight loss in all individuals. As Ferster, Nurnberger, and Levitt (1962) noted, overt or covert aversive techniques should be means of initiating a self-control regimen. Covert sensitization or aversive conditioning can be used only with certain trouble foods that the subject eats often and is unable to voluntarily remove from their diet. Unless an individual is
a compulsive overeater of certain specific foods, aversive overt or covert conditioning will probably not cause significant weight changes; generally other foods will be substituted for those eliminated. If aversive techniques were to be implemented to a wide range of foods, the possibility of anorexia becomes a real one for the formerly obese.

Covert sensitization does appear to be a valid and effective means of eliminating certain trouble foods from the diet of the obese patient. It can perhaps best be utilized by the "pizza freak" or the "ice cream addict". It is not a cure-all to obesity. However, in that it does successfully change one aspect of dietary habits, covert sensitization can be a powerful tool when used in conjunction with other behavioral methods of control of obesity.

Coverants

Perhaps somewhat similar to Manno and Marston's (1972) use of positive and negative covert reinforcement is the use of coverant conditioning in weight loss. This type of conditioning is discussed by Horan and Johnson (1971). Coverant conditioning refers to the procedures underlying the modification of cognitive behaviors. Four subject groups were examined: (a) a no-contact control; (b) placebo treatment (low calorie diets); (c) scheduled coverant treatment; and (d) experimental coverant treatment. Coverant treatment groups, in addition to being placed on low
calorie diets, were instructed to think of personal negative statements involving the undesirable aspects of being overweight and positive statements involving the desirable aspects of not being overweight. The subjects in the scheduled coverant group were simply told to think of negative-positive pairs of statements at least 7 times daily. The experimental coverant subjects were asked to identify a specific probability behavior (i.e., sitting on a certain chair) and to make the emission of this behavior contingent upon thinking of a negative-positive coverant pair. Over an 8-week period, subjects met only 3 times with the therapist. Results indicate that whereas all groups other than the control lost some weight, only the experimental coverant treatment group's weight loss differed significantly from any other. The authors do note the variability of individual differences in weight loss. Over half of the experimental coverant treatment subjects lost at least a pound a week. Only about 20% of placebo or scheduled coverant subjects reached this weight loss criteria. The lack of follow-up makes it difficult to evaluate the results of this coverant treatment in light of the high recidivism rate evidenced for most weight loss techniques. The amount of patient-therapist contact was minimal. The authors report a decline in the number of coverant pairings used over the 8-week period and a trend correlating the number of coverant pairings used with the amount of weight lost.
Tyler and Straughan (1970) test the efficacy of coverant pairings as a sole method of weight loss in a group of 57 obese volunteers. Subjects assigned to a coverant pair treatment group were taught to visualize a positive-negative pairing immediately preceding a high probability reinforcing event. Thus, for example, every time the phone rang, the subject would visualize themselves on the operating table with the surgeon cutting through layer upon layer of fat. They would then immediately visualize themselves as thin and attractive. Subjects in a breath holding group were instructed to hold their breath when tempted to eat fattening foods. Therapy sessions were devoted to visualizing fattening foods and breath holding practice. A control group was taught basic muscular relaxation. All groups met weekly for 7 sessions. There was dismally little weight loss in any of the groups, with a mean total weight loss for 7 weeks of under one pound for members of the coverant pairings group. It would thus appear that coverant conditioning by itself is not an effective method of weight reduction.

Self-Control

Self-control procedures, in which obese individuals are instructed in reorienting their food related environments, can be seen as stemming from two divergent theories. One, a classical conditioning view, sees the obese as having specifically learned that eating behaviors are related to various environmental cues.
The other, an internal-external control view, sees the obese as generally different from the non-obese in responsivity to internal visceral states and external environmental cues. Whereas the modes of intervention resulting from these theoretical orientations are generally the same, there is a fascinating body of research dealing with the theory.

A substantial body of literature has developed which suggests a difference between the obese and the non-obese, not only in the amount of caloric ingestion, but in the environmental control of eating as well. This research suggests that the obese individual eats as a response to external environmental cues rather than as a response to internal gastric motility.

A pioneer work in the field of internal versus external control of eating behavior was published in 1964 by Stunkard and Koch. These authors correlated the physiological presence of gastric motility with self reports of hunger in groups of obese and non-obese men and women. Although sex differences are noted, the findings indicate that the non-obese report hunger generally only in the presence of gastric motility; the obese, however, frequently report hunger even in its absence. Stunkard and Koch suggest that obesity may be due to a faulty perception of visceral cues.
Following Stunkard and Koch's suggestion, Schachter and his colleagues (Goldman, Jaffa, & Schacter, 1968; Schacter, 1971) conclude that external environmental cues such as the sight, taste, or smell of food are far more potent for the obese than the non-obese. In a review article, Schacter (1971) notes many of the findings of his experiments. Whereas normal weight individuals ate few snacks in an experimental setting on a full stomach, overweight individuals ate the same amount whether or not they had preloaded their stomachs with sandwiches. Obese individuals ate more good tasting and less poor tasting foods than normals, yet the obese ate less when they had to perform some task to get their food (crack the shells of nuts). Varying levels of fear and anxiety did not appear to affect the eating of obese individuals as it did the non-obese.

In a fascinating design, Zeigler (1974) studied the trigeminal system and the lateral hypothalamus of rats and pigeons. Several aspects of hunger and thirst once thought to be controlled by the hypothalamus are controlled by brain circuits. The inputs of these circuits include sensations from the mouth, throat, and stomach as well as information about the state of the body's internal chemical environment. From these circuits come those organized patterns of motor impulses that generate pecking, biting, lapping, chewing, swallowing, or sucking. Oral sensations that pour into these feeding circuits guide and
coordinate our feeding responses and arouse our appetites. Zeigler extrapolates that it may be the smoothness of a chocolate mousse or the crispness of a potato chip that leads to as much overeating as their sweet, salty flavors. Therefore, he concludes that it may not be hunger, but the sensation of food in the mouth that causes an obese individual to nibble all day long. However, he points out that further studies on the trigeminal system and feeding are necessary to help us understand and control excessive eating in human beings.

In a series of studies, Goldman et al. (1968) add support to the theory that physiological correlates of hunger do not influence the obese as much as external cues. Assuming that there are few food related cues in temples on Yom Kippur, a Jewish holiday of fasting and repentance, the authors found that overweight Jewish worshippers went a greater period of time without food and reported fasting to be less of an ordeal than normal weight worshippers. Hypothesizing that dormitory food was of a comparatively low quality and therefore not a very powerful external stimulus, the authors found that more obese college students dropped college dormitory food contracts than non-obese college students. And finally, in examining the meal patterns of overseas airline pilots who frequently change time zones, the researchers found obese pilots more apt to eat by local meal times than by a physiological state of hunger.
Although there appears to be some disagreement, it is likely that in at least some settings, environmental cues to food carry strong valence for the obese. The therapeutic implications of this hypothesis appear evident. Environmental cues that would normally lead one to eat would be identified and controlled. Thus, the obese would be instructed not to leave food in easily accessible areas.

A number of self-control techniques can be seen in a classical conditioning paradigm as well. For example, an individual snacks while watching television. After a number of contiguous and temporal pairings of television and snacking, one behavior will elicit the other. Watching television elicits the chain of behavioral sequences leading to snacking. Utilizing specific self-control techniques, however, the established chain of behavioral sequences leading to the eating response can be lengthened and broken up. Therapeutically, the obese patient is instructed to make eating a solitary activity, extinguishing the classically conditioned bonds between eating and other behaviors. They are allowed to eat at only one place at specific times, without performing any other enjoyable activities. After breaking the conditioned bonds, the concept is that the person can now control themself and their eating behavior.

The maintenance of a diary of food intake can be used to determine variables such as the time of day or specific stress
situations that influence eating as well as to determine caloric intake. In one of the few studies examining specifically the importance of diary maintenance on weight loss, Stollak (1967) found that subjects who kept diaries of food intake and had contact with a therapist, had significantly greater weight loss than subjects in numerous other treatment conditions. With the termination of therapist contact, however, the positive results dissipated.

Bellack, Rozensky, and Schwartz (1973) hypothesized that if the goal of self-control was the breakage of behavioral links leading to eating, then the efficacy of monitoring daily food intake in a diary would be enhanced by recording food intake prior to consumption rather than following consumption. In effect, monitoring before intake would break the stimulus-response chain. A total of 37 adult overweight subjects were taught a number of self-control procedures in 6-weekly group meetings. All subjects received the same information except that one-third were instructed to record food intake immediately prior to actual ingestion, another third were required to record consumption immediately following actual ingestion, and a final third were not told to monitor food intake at all. The results indicate that the prior maintaining group displayed the greatest degree of weight reduction, followed by the non-monitoring group, and finally the post-monitoring group (level of significance was borderline). At
a 6-week follow-up, both pre- and non-monitoring subjects main-
tained weight loss although no differences were significant.
The post-monitoring subjects did not differ significantly from
waiting list subjects at either treatment conclusion or follow-
up. In sum, Bellack et al. (1973) indicate that post-monitoring
of eating behaviors does not add significantly to the efficacy
of other self-control procedures, but that pre-monitoring is
effective as it disrupts the chain of behavioral sequences that
normally leads to eating behaviors.

Ferster et al. (1962) suggest finding alternate responses
to eating. Termed "prepotent repertories", the patient is urged
to find another activity when they feel like snacking. An
example might be in an obese woman washing the floor or calling
her friend when she feels the urge to snack. Wollersheim (1970)
successfully used muscular relaxation as an alternate response
to the desire to eat.

In a study of overweight male college students, Rodin and
Singer (1975) tried to discover whether their general tendency
to overeat might reflect some failure of imagination. They
found that although the fat students liked to daydream as much
as their slender peers, they experienced significantly less
visual imagery in their fantasies. They saw fewer pictures in
the mind's eye. When they tried to summon memories or generate
fantasies, particularly during face-to-face interview with
another person, the fat men tended to shut their eyes. They needed to blank out the external environment before they would come up with a daydream. The experimenters felt that this relative weakness of the inner life might account for the excessive responsiveness to food when it was placed in front of them.

Wollersheim (1970) assessed the efficacy of what she called "focal therapy" as compared to control, positive expectations, and non-specific therapy groups. Included in focal treatment were relaxation as an alternate response to eating, diaries of food consumption, stimulus control of eating, chaining, self-reward, use of ultimate aversive consequence and other supplementary techniques. Results indicate a significant weight loss over a 10-week period.

Operant Reinforcement

Reward, both monetary and social, is one of the oldest techniques used to encourage weight loss in the obese. Rewards can be either internal or external. Thus the adolescent person can tell themselves that when they lose weight they will buy themselves a new bathing suit, or their parents can impose the reward externally, contingent on their behavior. This section will discuss the efficacy of external material and social reinforcement on weight loss and the use of contracts to abet this loss.
Upper and Newton (1971) report the successful weight loss of two schizophrenic patients in a token economy unit. The grossly obese patients were placed on limited calorie diets and were reinforced with tokens and additional ward privileges for a weight loss of three pounds weekly. Ideal weight was achieved and maintained by both patients. Bernard (1968) presented a similar case example where the therapist was able to abet weight loss through the strict environmental controls of the institution. Over a 6-month period, a schizophrenic obese woman lost 102 pounds. During an extinction period, where weight was still monitored but no reinforcements were given, the weight loss continued, but at a slower rate.

Operant reinforcement in institutional settings need not involve tokens and material rewards. Foxx (1972) and Moore and Crum (1969) were both successful in effecting weight loss through the use of the social reinforcers of praise and attention. Moore and Crum (1969) used social approval as reinforcement for daily weight loss in a chronic schizophrenic woman. As a reward for daily weight loss, the patient was allowed to spend 5 minutes with one of the therapists. After 5 months which yielded a total loss of 35 pounds, the social reward was phased to 10 minutes of social praise and attention contingent upon a minimum of a $1\frac{1}{2}$ pound weekly weight loss in an obese, mildly retarded female adolescent to effect a total weight change of 79 pounds.
An ABA design, which included 15 weeks of reinforcement, 15 weeks of extinction, and 10 weeks of reinforcement, indicated the value of social reinforcement for weight change.

It appears that operant reinforcement with the use of either an implicit or explicit contract is an effective tool in fostering and maintaining weight loss. Motivation toward behavior change appears great when the patient is striving toward an external reward. It seems that the type of reward is not as important as the fact that the subject is being rewarded.

School Programs

Collipp (1975) has been working with 17 school districts on Long Island involving 93 different schools and more than 80,000 children. The program was designed to include a physical exercise program and dietary restriction in weight loss. During a 6-week period when 25 children in fourth through sixth grade in an elementary school were exercising daily for an hour, the average child remained within one pound of his starting weight at the end of that period. During a second 6-week period, the nurse prescribed a diet making appropriate adjustments in the diet for each child's food likes and dislikes. During the following 6 weeks, the average child lost 10 pounds in body weight. This strongly suggests that vigorous physical exercise did not have a significant effect on weight, at least during the 6-week period, and the dietary restriction program did help the children...
lose weight.

Hamer (1973) pointed out that treating childhood obesity with energy intake restriction, exercise, and counseling is usually not effective, with only 10-15% responding to treatment. For this reason, he and others believe that prevention is the key to reducing the incidence of obesity in children.

In school age children, nutrition education can be useful in treating and preventing childhood obesity. Children can be taught the relationship between food and energy and what is an appropriate intake for them (Mayer, 1975).

Another area of treatment is decreased intake and increased activity. Of primary importance is not to restrict growth by restricting intake. In grossly obese children intake can be restricted, however, it has been shown that obese children eat somewhat less than non-obese children and increased activity is perhaps what is needed (Mayer, 1975). Mayer reported that a program was initiated in an elementary school requiring 1 hour of supervised activity per day. After four years, 60% of the overweight children were at an appropriate weight for height. However, because of a lack of funding, the program was dropped. A follow-up three years later revealed that almost all of the previously overweight children were overweight again (Mayer, 1975).

For group treatment plans to be effective, they must be directed to the individual in the group. The parents of the
child must be aware of the need for change in the child and supportive of making that change. The changes needed call for careful selection and control of food intake and energy expenditure as well as a positive change in self image. In order to prevent a relapse into obesity, these changes must evolve into permanent habits (Jorden & Levitz, 1975). A series of small changes may prove to be more effective than to present to a child a whole new lifestyle (Schwartz, 1974).

Obesity and Its Evaluation

Investigators are presented with a limited choice of fatness standards. Some of these standards are the Raush-Schumsky values from Cincinnati (Raush, 1968), composite values compiled by Seltzer and Mayer at Harvard (1965), and English standards derived from various school groups and institutionalized patients (Hammond, 1955). The Ten-State Survey (1972) provided fatness information from age one through adulthood and beyond for different socioeconomic groupings. The Ten-State data completed the ages missing from the previous standards and demonstrated the need to define fatness standards in terms of a socioeconomic reference. The survey showed that the 20% weight definition of obesity commonly used for adults was both an inappropriate and unacceptable definition for infants and children (Garn, 1974). Further studies revealed that socioeconomic and
population differences in the level of fatness made a definition of obesity suitable for one group but unsuitable for another. Defining "obesity" as the upper 15% of fatness (i.e. above the 85th percentile Garn, 1974), and taking the Ten-State Survey data as a whole, different proportions of children were obese in different socioeconomic levels.

The exact definition of obesity remains an equivocable one. From the extensive data on hand, ranging from the lowest to the highest levels of fatness, there is not a discontinuity in the fatness distribution representing a separate area of "obesity", nor is there bimodality to indicate who the obese inherently are. Rather, the obese display, in size and development, the characteristics of the continuum. Super obesity cannot easily be related to income. The antecedents leading to super obesity may be different from those that lead to simple statistical obesity (Garn, 1974).

Consumption

In many studies and in everyday practice in the field of nutrition, the solving of certain problems requires the use of methods to study the dietary intake over a period of time. A problem exists when the adequacy of the diet and change in dietary patterns cannot be evaluated due to lack of valid methods of obtaining dietary information. By validity, we mean the ability of a dietary method to measure what the investigator
wishes to describe.

Marr (1971) reported that a variety of methods has been used to collect data on a single individual and on several hundreds of individuals using techniques ranging from detailed weighing of present food intake, to questions recalling dietary intakes covering several years.

Young and Trulson (1960) stated:

A major defect in the collection and processing of dietary data for any purpose lies in the inability to make precise or even approximate statements concerning the validity and reliability of the various procedures in current use (p. 803).

Marr (1971) stated that it is not possible to measure accurately for any length of time the intake of a random sample of free-living individuals. However, such measurements are attempted and it is important, therefore, to determine the validity and reliability of the different methods and whether they are valid enough for their purpose.

Young, et al., studied pregnant women, seventh and eighth grade students, and high school students and found that the 24-hour recall method did not give essentially the same estimate of their nutrient intake for an individual as the dietary history or the seven day food record. The authors concluded that the 24-hour recall and seven day food record can be used interchangably for the study of population groups but not for individual study (Young, et al., 1952).
Campbell and Dodds (1967) questioned groups of older and younger people, and then compared their ability to remember what food they had eaten over a 24-hour period. The authors concluded that the older subjects omitted more than the younger subjects (Marr, 1971).

A nutrition study was conducted by Eads and Meredith (1948) for Public Health Reports. The study explained the methods which should be used in effective collection of dietary data. In the study the authors found that in working with children, it is advisable to secure records from those in the fourth grade and above. Younger children are often unable to report completely or accurately the foods eaten.

Marr (1971) stated that it is clear that absolute validity is not achieved with any dietary survey. Further, there is a loss of accuracy at each stage of dietary assessment as modifications are made in the assessment methods to make them more acceptable to a wider population. Relative validity has been demonstrated using the recall method and it is possible to identify groups of individuals at the extremes of distribution.

Marr concluded that shortened history methods have been shown to be valid enough to separate different levels of intake into broad categories. He added that possibly the history method in which both recall and a current record are included is preferable.
Carroll, Hunter, Schwager, and Scott (1976) conducted observations of sixth grade students to determine the validity of the 24-hour recall. Each of the authors observed a specific student, recording exactly what each student consumed. The following day, the four students were asked to recall their lunch from the previous day. The results showed that these four students could accurately recall their lunch over a 24-hour period.

**Skinfold Measures**

Nearly all reports of successful weight reduction and maintenance in the behavioral literature have been plagued by the methodological problem of nonstandardized improvement criteria (Jeffrey, 1975). Bellack and Rozensky (1975) also urge using dependent variables in weight studies which accurately reflect relevant effects of treatment, are compatible with appropriate statistical analyses, and permit comparisons across different studies.

The skinfold thickness measures provide a practical and objective index of obesity and are readily transformable to percentage in body fat. Collipp (1975) states that the measure of skinfold thickness using a skinfold caliper will enable the investigator to arrive at a good approximation of how fat a child really is. These measures have been correlated with body density and hence with the fat content of the bodies. They are particularly
useful during childhood when lean body weight is constantly rising due to growth of the child.

Franzini and Grimes (1976) report that measures taken at the triceps muscle is the most useful in assessing the fatness of youngsters and helps avoid the many criticisms of the usual height-weight tables to determine overweight.

The bodies of normal, healthy, well nourished individuals may contain up to 25% adipose tissue (U. S. Public Health Service, 1972).

Garn (1974) found that fatness values based on either triceps or subscapular fatfolds tend to be skewed in their distributions; therefore, he recommended the use of medians and percentiles instead of the conventional means and standard deviations. The direction as well as the amount of skewness of fatness varies with chronological age.

Recent research reports of triceps skinfold data have led to questions about the use of this measure. Malina (1966) has demonstrated variations in skinfold values with race and sex, as well as differences by geographic and ethnic grouping. The findings of Raush and Schumsky (1969) have confirmed those of Malina with regard to race, sex, and geographic grouping. Additionally, Raush and Schumsky pointed out certain problems in establishing the triceps skinfold criteria for obesity.
Further objections to the use of the triceps skinfold technique as a tool for identifying the obese can be offered in addition to the above considerations. Briefly, some major objections are: (a) the one-site nature of the measure; (b) that the caliper costs more than fifty dollars; and (c) that the measure is difficult to take and not fully reliable. The Committee on Nutrition of the American Academy of Pediatrics (1968) has emphasized the use of the triceps skinfold measure with height and weight standards for the assessment of body fat.

Body Weights, Lengths, and Heights of Groups

Weight

Body weight should be measured using appropriate beams or balance scales. Scales with nondetachable weights are recommended. Measures of weight are preferably made at a comfortable environmental temperature with subjects unclothed or, in the case of older children, clothed only in underpants or a light cotton gown. Reports should specify the condition of weighing; if any clothing was worn, its approximate average weight should be indicated or a statement made that weight of clothing was deducted from obtained weight records (Committee on Nutrition Advisory, 1974).
Height

Children over 24 months of age may be measured in standing position. Equipment and technique for measuring stature have been described (Owen, 1973). A measuring stick or tape should be fixed to a true vertical flat surface. The child should stand on a horizontal, bare floor or platform with their bare heels almost touching each other, back as straight as possible with the heels, buttocks, and shoulders touching the wall or vertical surface of the measuring device. A block squared at right angles against the wall is then brought to the crown of the head and the measurement is noted.

Height-Weight Tables

Seltzer (1965) and the U. S. Public Health Service (1966) have thoroughly discussed the limitations of height-weight tables. They give an ideal weight range which requires the researcher to choose an endpoint or the median of that range for his calculations. The range is based on gross weight. These tables give a single ideal weight without regard to body type, but they are rarely referred to in weight control literature. Gross weight necessarily includes an individual's muscular composition, skeletal weight, body fat, and water and is therefore susceptible to temporary reductions from the use of diuretics.
Twenty-Four Hour Recall

The 24-hour recall method is an acceptable technique for collecting weight data, however, its value is obviously limited by the ability of the respondents (children) to remember all food items consumed. The dietary component of the Ten-State Nutrition Survey (1968-70) found that 24-hour intakes are more likely to be overestimated than underestimated. This fact does not invalidate use of the 24-hour recall data for comparing intakes of "groups" of persons included in one survey if the assumption is made that erroneous data are randomly distributed among the subsets of the groups.

Human Figure Drawings Drawn by Obese Subjects

In reviewing drawings by obese, compulsive eaters, DiLeo (1973) reports that none of the figures explicitly indicate obesity.

In an article on adolescent obesity, Nathan and Pisula (1970) draw attention to the poor quality of the laboriously drawn human figures. These authors found disparity between intellectual maturity as expressed by the human figure and that derived from well standardized IQ tests; and a disparity between verbal and lower performance IQ on the Wechsler Intelligence Scale for Children (1974).
DiLeo states that children "sometimes" portray a physical deviation but more typically, graphic expression of impairment is more diffusely represented by a small, hesitantly drawn figure with small hands and feet that tell feelings of inadequacy and need for support.

Machover, Hammer, and McElhaney (1949) all maintain that subjects with high self-esteem draw larger figures than those with low self-esteem. Swensen (1968) allows that there is some evidence for this.

In a study conducted by Viney, Aitkin, and Floyd (1974) on women whose bodies had changed recently in the case of pregnancy, with those whose bodies had not changed, demonstrated that the human figure drawing is sensitive to body changes during pregnancy. A significant association was also found between self-esteem and figure drawing measures.

Kaplan (1964) provided evidence that identifies some of the problems of using drawing size as a psychometric device. He found that among 1316 school children, drawings that were deviant in size tended to be unreliable. Children who drew either large or small figures on the DAP tended, one week later, to draw average sized figures. He points out that this instability of deviant size must be kept in mind in analyzing the research on the meaning of the size of the figure drawn.

Two other studies relating figure size to pathology, which could be pertinent to a consideration of self-esteem, did produce
positive evidence. It seems reasonable to suggest that shy children and depressed adults would have low self-esteem and therefore would draw small drawings. Koppitz (1966) found that shy children drew small figures.

Hammer (1958) suggested that drawing size can be related to fantasy self-inflation as well as realistic self-esteem.

To summarize, the size of the drawings does seem to reflect self-esteem and probably fantasized self-inflation but with an inconstancy that is the reflection of the relative lack of reliability of the size of the drawings.

Social, Cultural, and Family Factors in Obesity

The factors that determine individual food habits are varied and complex. Culture may be defined as the way of life of a group of people, usually of one nationality or from a particular locality. Food habits are a deeply rooted aspect of many cultures. The preservation of individual cultures is an important goal of many minority groups today. Culturally determined food practices, which vary from group to group, may meet the basic biological needs that are similar for all people.

Individuals belong to various social groups. The organization of society with its many structures and accompanying value systems, plays an important part in the acceptance or rejection of food patterns (Mitchell, Rynberger, Anderson & Dibble, 1976).
Rising food costs and food shortages have had their impact on the food patterns of many American families. Although there is still a tremendous variety of foods available in supermarkets, increased prices make the selection of food for the family a real challenge.

The 1968-70 Ten-State Nutrition Survey (1972) found simple relationships between socioeconomic level and either size or developmental status. The largest proportion of children at the lowest percentiles for size and the lowest percentiles for skeletal and dental development are from the poorest families. With increasing per capita income, increasing household income, and increasing incomes relative to need, boys and girls are systematically taller and heavier, with greater circumferences (including head advanced in skeletal maturity, dental development, and in such desired constants as fat-free weight and skeletal mass).

The generalizations hold, within ethnic and racial groupings, though at somewhat different levels for blacks, whites, and Meso-Americans (Young, Hagan, Tucker, & Foster, 1952).

Other researchers have reported a high correlation between social class and obesity (Moore, Stunkard, & Poole, 1972). In adults a negative correlation has been shown to exist between social class and obesity, particularly in women. In New York City, obesity was 7 times more prevalent in the lowest class than in
the highest social class (Collipp, 1975).

**Family Line Aspects of Obesity**

In the United States it has been repeatedly shown that, while
the number of obese children born to parents of normal weight is
relatively low (3% to 7% of the average, depending on the area),
this proportion soars up to 40% if one parent is obese and up
to 80% if both parents are obese. The studies of Withers (1973)
in England comparing the prevalence of obesity in "naturally
acquired" children and in children adopted soon after birth re-
vealed the same high order of correlation for obesity in parents
and their naturally acquired children, as was seen in the United
States, but no correlation between weight of adopted children
and that of their foster parents.

Families and entire households were included in the Ten-State
Survey (1972). Complete family-line analyses of fatness (comparing
parents and their children, and siblings to each other) were
undertaken. The results showed clearcut parent-child similar-
ities in fatness. The parents were categorized as lean, medium,
or obese (based on their fatness percentile) and the various
parental combinations were compared. When both parents were
obese the children tended to be obese. To avoid having the
sibling similarities in fatness and the remarkably consistent
parent-child resemblances in fatness taken as simple proof of
the genetic hypothesis, there are considerable similarities in
fatness between spouses; these increase through the fourth decade (Ten-State Survey Data, 1968-70). Taken together, these findings suggest that the level of fatness may be more acquired because of family eating and exercising habits than genetically inherited.

Bruch (1940) showed that the obese were frequently the youngest or only child in the family or that they were products of unwanted pregnancies.

Kahn (1970) found that in a group of obese children in a New York ghetto, a history of separation from the mother was nearly 4 times more frequent than control children. Separation anxiety could therefore be another possible cause of obesity.

**Personality Factors**

Many studies have attempted to identify certain distinguishing personality characteristics of the obese. There appear to be mixed evidence on whether obese persons are emotionally disturbed but psychologically sound. Since there is no conclusive evidence in the area of classical personality traits of the obese, only a few studies will be mentioned.

Wunderlich (1974) compared responses of 23 super-obese subjects with standardization groups for the California Psychological Inventory. This test is designed to measure social interaction in non-psychiatrically disturbed populations. The subjects were grossly overweight according to Metropolitan
Life Insurance Tables. The mean weight of the 13 female subjects was 263 lbs. (averaging 117.51% overweight) and mean weight of the 10 male subjects was 341 lbs. (averaging 97% overweight). Scores of super-obese females were high on dominance and psychological-mindedness. Male subjects did not score high on any scale. Super-obese females scored lower than the normative group on responsibility, socialization, communality, and femininity. Male subjects scored low on capacity for status, sociability, social presence, sense of well being, socialization, communality, achievement via conformance, tolerance, and intellectual efficiency. Only on socialization and communality did both male and female subjects score low.

This study was unique due to the extraordinary obesity of the sample as well as the nature of the test employed. Also, due to the fact that 20 of the subjects were hospitalized for a 2-month program of weight reduction, it cannot be determined whether data were affected by the hospitalization itself without adequate controls (i.e., test scores of a hospitalized group of normal weight subjects). The subjects' mean scores, while significantly different from those of the standardization group, were within one standard deviation of the normative group on all scales except socialization for the females and communality and intellectual efficiency for the males. This finding, while supporting the hypothesis that there is no common response-profile
among super-obese persons, does identify some personality traits one may expect to find in the obese.

Another study by Glass, Lavin, Hench, et al. (1969) considered the specific characteristic of persuasibility. The study attempted to determine whether an individual's weight is related to his acceptance of a variety of persuasive appeals. Subjects were 65 males and 51 females, ages 16-25 years. Metropolitan Life Insurance Company norms were again used to establish percent weight deviation. Each subject was given a persuasion test on which they were first persuaded in one direction, then in another on the same set of four issues. A total persuasibility score ranging from 0-24 was assigned to each subject, representing their response to questions on the test. A high score reflected greater tendency to be persuaded on the issues.

The results presented in Figure 2 show that overweight and underweight subjects were more easily persuaded than were normal weight subjects.

<table>
<thead>
<tr>
<th>Weight of Subject, Number in Group</th>
<th>Mean Persuasibility score</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>underweight (N=44)</td>
<td>10.00</td>
<td>3.98</td>
</tr>
<tr>
<td>normal weight (N=39)</td>
<td>7.56</td>
<td>3.91</td>
</tr>
<tr>
<td>overweight (N=33)</td>
<td>9.55</td>
<td>2.97</td>
</tr>
</tbody>
</table>

Figure 2. Persuasibility of Subjects
This study provides strong evidence for the hypothesis that overweight individuals are in general more easily persuaded than normal weight individuals. This finding is consistent with the notion that obese individuals, in contrast to normal weight individuals, are more responsive to external cues.

Another area of inquiry has been investigation of psychological and behavioral factors that distinguish between remediability and irremediability of the obese. Quereshi (1972) examined data collected on a group of chronically obese humans to ascertain the degree to which remediability of obesity could be predicted from a number of psychological factors. Chronically obese were defined as having considerable difficulty with weight reduction over several years and weighing over 200 lbs. Between 1968-71, 180 female members of TOPS Clubs (Take Off Pounds Sensibly) across the United States and Canada who were chronically obese were selected for a metabolic research program. Subjects were given psychological tests, rating scales, and inventories. Comprehensive medical and biographical data were also collected by means of periodic physical examinations and by administering a questionnaire that included over 200 items relating to previous health record, biosocial characteristics, personal habits and routines, and family history. Twenty-six variables representing the following behavioral and biosocial background were selected: (a) family constellation, (b) eating and sleeping patterns and
preferences, (c) personal, social and physical characteristics, and (d) medical history with regard to weight reduction or weight gain.

Data were also available on the Michel Adjective Eating Scale (MARS, Quereshi, 1972), which measured four relatively independent factors labelled as unhappiness, extraversion, self-assertiveness, and productive persistence. Each subject rated herself, her mother, her father, and her spouse (or a past or present boyfriend) on the MARS. Though data involved multiple predictors and multiple criteria, the study focused on those variables that represented control or remediability of obesity.

Variables such as high preference for cake, overweight mother, and number of meals eaten in a day made substantial negative contribution to success in controlling chronic obesity while variables of amount of food eaten at breakfast, preference for chocolate candy, marriage, liking ice cream, eating snacks between meals, and amount of food eaten at lunch contributed positively to degree of success in achieving desired level of reduction in weight. Results of the MARS indicated that the way female subjects viewed themselves and their fathers was related significantly to remediability of obesity. Perception of the father as productive, persistent, and relatively happy correlated positively with remediability. Success in obesity control related positively to perception of mother as productive and persistent as well as self-assertive. However, perception of father as well as self as
high on productivity and persistence but low on self-assertiveness was the most important contributor to predictability of success in weight control.

The author concludes that a high preference for cakes, an overweight mother, and number of meals eaten per day may be predictive of failure in controlling chronic obesity. Amounts of food eaten at breakfast, liking chocolate candy, and being married may be predictive of success in obesity control. Also, remediability seemed to be related significantly to the obese person's perception of appropriateness of culturally stereotyped, sex-related roles of parents.

In another study, the same author further investigated factors which distinguish between remediability and irremediability of the obese. Quereshi used two subject groups in this study, the first one being the same 180 female TOPS members in the previously mentioned study. The other group of subjects were 98 female members of KOPS (Keep Off Pounds Sensibly) in the greater Chicago area. KOPS are members of TOPS who reach ideal weight within 5% and maintain it for 6 months or more. KOPS subjects were administered the MARS on which they rated themselves, their mothers, their fathers, and their spouses or boyfriends, just as TOPS subjects had done. Other data on possible variables were age, education, and socioeconomic status. Results for the TOPS subjects were those used in the previously mentioned
study. A multiple discriminant analysis of data was performed in order to determine exact contribution of MARS factors to discriminate between people in TOPS and KOPS.

Self ratings indicated that TOPS subjects perceived themselves as generally unhappy, nervous, tense, and dissatisfied. TOPS women rated themselves significantly higher on unhappiness and extraversion than did KOPS women. The author suggests that the obese consider themselves outgoing and friendly but that their perception of themselves does not necessarily mean they actually are, since previous research on obese females evidenced traits such as passivity and withdrawal accompanied by feelings of rejection.

Quereshi believes the more realistic and psychologically meaningful picture of the obese is furnished by formulation of the self-concept based on his simultaneous consideration of traits of two factors tested by the MARS. Factor one, unhappiness, represents such characteristics as fatigue, loneliness, repression, nervousness, tension, depression, being troubled, uncertain of self, discouraged, self-conscious, anxious, and dissatisfied. Factor two, extraversion, encompasses aspects such as tolerance, talkativeness, outgoingness, enthusiasm, sympathy, sociability, excitability, affection, adventurousness, popularity, cheerfulness, and credulity. He further elaborates that the high ratings on these two sets of characteristics probably indicate
that obese females, despite their attempts to gain approval of others by means of friendliness and congeniality, perceive themselves as lonely and rejected.

In addition to contrast between TOPS and KOPS subjects on self-ratings, ways in which the two groups perceived their mothers also reliably differentiated them. TOPS women perceived their mothers as much more extraverted, productive, and persistent than did KOPS women. TOPS subjects also regarded the achievement of their mothers as being at a level much higher than that of their own perceived attainment in contrast to the ratings of mothers by KOPS subjects on the same characteristics. The author concludes that irremediably obese subjects seem to reject the emulation of their mothers' degree of productivity and persistence or consider it unattainable. The studies were by no means conclusive and were limiting in the fact that they only included female subjects, a majority probably being of middle class socioeconomic status.

There are definite personality types in which obesity is more commonly found (Graff, 1965). Whether obesity develops as a result of the type of personality or whether the personality develops out of the patient's self-concept or image as a result of the obesity, is not clear. The tie-in of obesity and emotional disturbances is not completely clear at this time.
Summary

Although information about obesity increases continually, the basic understanding of the mechanisms controlling the excessive deposition of adipose tissue remain elusive. Whether the cause is psychologic, physiologic, or metabolic or a combination of these factors, once an increase in adipose tissue mass occurs, it is extremely difficult to remove the excess. The literature has revealed that whether the treatment involves psychotherapy, self-help groups, or exercise programs, researchers have been (a) unable to cause many adults to lose weight, and (b) unable to sustain the weight loss for more than a year. Behavior techniques have proven to be more effective in weight maintenance than the best results reported in the medical literature (Leon, 1976), however, one is not justified in concluding that these specific techniques are the final answer to the treatment of obesity.
CHAPTER III

METHODOLOGY

General Procedures

The following general procedures were used to investigate the 6 research questions:

1. A pilot study was conducted. The goal of the nutrition program in this study was to instill in the subjects a sense of value for their health and nutritional, psychological, and social well-being. The program was divided into two thrusts: the first being the School-at-Large Program, and the second, the Energy-Imbalance Group. The portion of the program dealing with the School-at-Large was more preventive in nature and normal nutrition was taught. The thrust of the second program was the Energy-Imbalance Group. The objectives for this thrust were to assess the needs of selected subjects by obtaining height weight, and skinfold thickness. In addition, school records were examined to determine any underlying problems.

2. Potential subjects who had taken part in the pilot nutrition study were screened to make certain they met the criteria of obesity, as primary presenting...
disorder, with no signs of outstanding medical disorders.

3. The subjects were divided into two age groups, and were randomly assigned to three different counseling treatment groups.

4. Data collected from the sample consisted of height, weight, and skinfold measures, human figure drawings, and 24-hour recall food intake information.

5. Analyses performed on the data were ANOVA, chi-square, Pearson Product Moment correlation, Sign tests, Two tailed t tests, and descriptive statistics.

Subjects

The present investigation involved 51 obese subjects, all of whom were black. They ranged in age from 5 to 13 years old. For this study, the subjects were placed in one of two age groups. The age groups were segregated because there is evidence that age correlates with the dependent variables (Hirsch & Kittle, 1970). The mean chronological age of the adolescent group was 12 years. Females outnumbered the males in both age groups. The actual weights ranged from 55 to 230 pounds. None of the subjects were participating in any other weight control program at the time of the study.

Over half of the subjects were from low socioeconomic, single parent families; in the majority of these families the father was
not present in the home. The low socioeconomic classification was based on the eligibility of the subjects in the family for free school lunch (approximately 75% of the subjects were eligible). The 51% of the mothers who were employed were service workers. The subjects were not randomly selected, but may be considered representative of a large, urban, lower income, black, obese population.

The obese control subjects were students who had participated in the energy-imbalance segment of the pilot study but were unable to participate in this study.

Matching for age was correct within the year but not the same month.

The non-obese control subjects were chosen at random from children attending Kent School, which serves the same socioeconomic segment of the obese study population.

A sixth group of subjects were identified as being obese and received only nutrition education. They were utilized to examine the long-term effects of basic nutrition education on weight loss.

Sampling Procedures

The sample was drawn from pupils at Kent Elementary School. Sample pupils had been part of the investigator’s two-year effort at educating the entire student body regarding nutrition. Pertinent
facts about the nutrition program are as follows. The goal of
the school-wide nutrition program was to instill in the subjects
a sense of value for their health and nutritional, psychological,
and social well being (see Appendix A).

An Energy-Imbalance Group was part of the pilot nutrition
program. The term Energy-Imbalance was chosen to describe the
group of overweight subjects to avoid any negative connotations.
The objectives for this thrust were:

1. To assess the needs of selected subjects by obtaining
   height, weight, and skinfold thickness, and an initial
   interview.

2. To determine any underlying problems that the sub­
   ject had by checking school records.

A total of 29 subjects were screened and served as a core
group for this research study.

The present study evolved from the pilot study. Subjects
for this study were selected on the basis of willingness
to cooperate and availability. They were all black and predomin­
ately from low-income families. All of the subjects had taken
part in the School-at-Large Nutrition Program just described.
To obtain the subjects, it was necessary to get the
permission of each set of parents (or guardians) of the
subjects. An example of the letter of permission
is given in Appendix C. After permission was obtained, the needs of these selected subjects were assessed by obtaining height, weight, skinfold thickness, and an initial interview. The subjects were screened one at a time and approximately 20 minutes to one-half hour was allotted per student. The interviews were conducted by senior medical dietetics students from The Ohio State University. A client information sheet was also filled out at this time. An example of this sheet is given in Appendix B.

The purpose of this sheet was to obtain information concerning the subject's food habits, parents' income level, and other pertinent information relating to the subject's obesity. Each subject was required to have a complete physical examination to determine any underlying problems that they may have (see Appendix D). This information was placed in a folder which was started for each individual subject and contained their growth chart (see Appendix E).

A total of 34 subjects met the criteria of obesity being the primary presenting disorder with no signs of outstanding medical disorders. Twenty-six subjects agreed to take part in the summer energy imbalance program, however, only 24 of these subjects were able to participate in the experimental weight reduction program due to scheduling conflicts and vacations.
A standard form explaining the research was drafted (see Appendix F) and given to each subject to take home. Parents who gave their permission signed for form and gave it to the investigator.

The group of 24 subjects was divided into two groups on the basis of age. Subjects under 10 years of age were put in the Early Age Group. Subjects between the ages of 10 and 13 years of age were put in the Pre-Adolescent Age Group. The subjects were divided in this manner due to social and physiological differences.

The Pre-Adolescent Group consisted of 16 subjects; 14 females and two males. The names of the subjects were placed in a hat and drawn out until half the names were selected. This resulted in two Pre-Adolescent Groups of equal size. For treatment group assignment purposes these groups were designated Group One and Group Two (see Table 2).

The Early School Group consisted of eight subjects ranging in age from 5 to 9 years of age. The group consisted of five boys and three girls. For treatment group assignment purposes this was designated Group Three (see Table 2).

Obese Control Group Four consisted of five obese subjects of pre-adolescent age who were unable to participate in the present study due to summer vacation conflicts.

Obese Control Group Six was made up of students from the Kent School Population who met the criteria for obesity but did not participate in the energy imbalance pilot study due to lack of parental consent.
Obese Control Group Seven consisted of five obese subjects of early childhood age who were unable to participate in the present study due to summer vacation conflicts.

The Non-Obese Control Group consisted of students who were randomly selected from the Kent School population.

The names of the three treatments - Behavior Modification, Rational Emotive Education, and Gestalt Awareness were also listed on slips of paper and put in a hat. The slips of paper were drawn from the hat one at a time and assigned to a treatment group. Behavior Modification was drawn first and members of Group One were assigned to that treatment. Rational Emotive Education was drawn second and Group Two was assigned to that treatment. Gestalt Awareness was the last to be drawn and was assigned to Group Three, the Early School Age Group.

Observers and Monitors

The Principal of Kent School was contacted by the investigator for his permission to use the school. A subsequent meeting to explain the nature of the study was held with an instructor and four senior medical dietetics students from the Ohio State University, and an occupational therapist from ECCO. Each expressed a willingness to participate in the study.

Observers for the study included four senior medical dietetics students and their supervisor from the Allied Medical School at The Ohio State University. Their role in the study was to collect the height, weight, skinfold, and food intake data and
assist the investigator in interpreting it. An Occupational
Therapist with three years of experience in working with learning
disabled students at Kent Elementary School conducted the
exercise program.

Monitors for this study included a Child Clinical Psychol­
ogist from The Children's Hospital, Columbus, Ohio, who met with
the investigator one hour weekly for counseling supervision. A
School Psychologist and Evaluation Specialist from the Columbus
School System made unannounced on-site visitations to supervise
and evaluate the manner in which the research study was being
conducted. Consultation for the study was provided by a Pedi­
atrition from The Children's Hospital who specializes in pedi­
atric nutrition and is eminent for his research in the field.

Instrumentation

The Draw-a-Person Test, skinfold, height and weight mea-
sures, and Twenty-four hour recall were given to each subject at the
beginning and at the end of the experiment.

Draw-a-Person

The Draw-a-Person was described in detailed manner in
Chapter II. To reiterate, Machover (1949) stated the human figure
drawn by an individual who is directed to draw a person relates
to the impulses, anxieties, conflicts, and compensations char­
acteristic of that individual.

Machover (1949), Hammer (1958), Koppitz (1966), Lewinsolm
(1964), McElhaney (1969), all maintain that subjects with high
self-esteem draw larger figures than low self-esteem subjects.

The specific measures selected were the height of the figures, and the width of its waist and breast. The height may reflect self-esteem while waist width may reflect the particular change of body image due to weight gain or loss.

Another variable, number of erasures, may be seen as indicating lack of self-confidence. Bodwin and Bruck (1960) found that the number of erasures differentiated between adolescents with high and low self concepts. Fewer erasures were correlated with high self concepts.

In his original presentation of human figure drawings as a projective technique, Machover (1949) maintained that the body can be extended, altered, and enhanced by clothing. Thus, clothing was selected as a predictor variable; the relevant predictor was defined by tight form fitting clothing as opposed to loose flowing clothing.

Gray and Pepitone (1964) has suggested that a smiling figure is drawn by a subject who sees itself as happy and friendly. The findings of Gray and Pepitone (1964) show that high self-esteem is associated with positive emotional tone in figure drawings. The drawings of the figures were presented to two independent judges who did not know to which group the subjects belonged. These judges were instructed to sort the drawings into piles for each of two criteria. For the first variable, clothing, the categories were described as "loose" as compared with tight-fitting; agreement between judges occurred in 90% of
the cases. For the variable of mood, the categories were "smiling, warm, happy", in opposition to "non-smiling, cold, unhappy", the classifications of the judges were identical in 95% of the cases. In the few cases of discrepant judgments, the classifications of the second judge was selected arbitrarily for analysis.

The measures of the size of the figures were made in inches. Height was represented by the length of a line drawn parallel to the side of the page, from the levels of the highest to the lowest points of the page used by the subject. Width of waist and breast measurements were represented by the lengths of a line drawn parallel to the top of the page. This line extended across the narrowest portion of the trunk for the waistline and across the widest portion of the trunk above the waist for the breast width.

**Skinfold Measures**

These measures provide an objective index and are transformable to percentage of body fat. These measures were taken at the tricep muscle site with the Lange Skinfold Caliper, manufactured by Cambridge scientific Industries. Skinfold norms were taken from Winick (1975). A copy of this table may be seen in Appendix G.

These measurements were taken by four trained medical dietetics students and their supervisor. The measure is difficult to take and not fully reliable. Therefore, in an attempt to
increase reliability, each subject's skinfold was taken by two trained observers. When considerable variability occurred between the two observers, a third measure was taken by the supervisor and a mean measurement was recorded.

**Body Weight**

Body weight was measured using Toledo scales with nonde-attachable weights and recorded on an Anthropometric Chart (The Children's Medical Center).

**Height**

Platform scales with a movable rod were used for measuring. Each subject was weighed and measured by five trained observers. Interrater reliability for the trained observers for height and weight observations were high. The reliability coefficients exceeded .90.

**Daily Food Diary**

This instrument was used to collect information concerning the type of food, the time and location the food was consumed, and the mood the subject at the time of consumption (see Appendix H). The data obtained from this instrument was analyzed using A Daily Guide to Food Needed by Children and their Families, U. S. Department of Health, Education, and Welfare (1966).

The Basic Four is a guide; it is not considered to be a precise tool for the selection or evaluation of diets, however, it is a way of checking food choices (Leverton, 1973).
Information on the validity and reliability of this instrument is not available as this was a pilot study.

**Twenty-Four Hour Recall**

Each subject was given a 24-hour recall interview by a medical dietetics student on Wednesday of the pre-treatment period and Wednesday of the last week of treatment. The recall included information concerning the type of food, the time and location the food was consumed. The amount of food was determined by the estimation of the size of portions as compared to standard food models (e.g., cups, spoons, (see Appendix I).

The investigator and the dietetics students analyzed the 24-hour recall data and rated them using the U. S. Department of Agriculture's Daily Food Guide, with its Basic Four groups—the milk group, meat group, the bread-cereal group, and the vegetable-fruit group. The pre and post test data were analyzed for each food group and the observations for each subject were classified into either Class One, meaning the subject met the minimum daily requirement for the food group, or Class Two, meaning the subject did not meet the minimum daily food requirement for that group.

**Procedure**

The investigator met with the subjects individually and told them that they would be attempting new methods of weight
control. Each subject was told that he would be randomly assigned to one of three groups and that each group would be doing different activities. They were encouraged not to discuss group activities outside of the group setting.

Certain features of the treatment were consistent for all groups (see Table 1). All subjects were instructed in the maintenance of a Food Diary. During the time that they were not in a counseling group, they were participating in 4-H Club activities which included growing vegetables, learning to prepare low-calorie meals and snacks, and each received a ribbon and pin for active participation. In addition, all subjects received instructions from an Occupational Therapist in the value of increased energy expenditure to abet weight reduction and participated in a daily 1 hour activity program to improve gross motor skills and to instill in the children a positive attitude toward physical activities. Thursday afternoons were spent swimming at the YMCA.

The Columbus Department of Recreation furnished the children with free, nutritious, cold-pack lunches and all subjects were required to eat lunch at the school site.

The first day of the study the subjects were individually weighed and measured. The measurements were taken early in the morning as such measurements are preferably made at a comfortable environmental temperature. The subjects wore light clothing and were instructed to remove their shoes. The subjects were

Insert Table 1 about here
## TABLE 1
General Experimental Design

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Week 1</th>
<th>Weeks 2-5</th>
<th>Week 6</th>
<th>Week 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Subjects</td>
<td>Treatment Subjects</td>
<td>Experimental Procedure</td>
<td>All Subjects</td>
<td>All Obese Control Subjects</td>
</tr>
<tr>
<td>Participated in School at Large</td>
<td>Individual Folders Growth Chart</td>
<td>Behavior Modification</td>
<td>Skinfold</td>
<td>Height</td>
</tr>
<tr>
<td>Program 1975-76</td>
<td>Physical Exam Weight</td>
<td>Height</td>
<td>Rational Emotive Education</td>
<td>Weight</td>
</tr>
<tr>
<td>Discussion of:</td>
<td>Exercise Program 4-H Club</td>
<td>Draw a Person</td>
<td>24-Hour Recall</td>
<td></td>
</tr>
<tr>
<td>A. Four Food Groups</td>
<td>Weight Goal Interview Food Intake Record</td>
<td>Gestalt Awareness Activities</td>
<td>24-Hour Recall</td>
<td></td>
</tr>
<tr>
<td>B. Nutrients in Food</td>
<td>Photograph Parental Permission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Dental Health</td>
<td>Filmstrip--Too Much of a Good Thing Self Portrait Free Lunch Draw a Person Test Weekly Weight Check</td>
<td>Obese Control (Basic Nutrition Education) Non-Obese Control</td>
<td>Obese Control Subjects</td>
<td></td>
</tr>
</tbody>
</table>
instructed to stand on the platform with their bare heels almost touching each other, and back as straight as possible. A movable measuring rod was then used to measure his/her height. The height and weight were then recorded on the anthropometric chart. The subjects were then weighed every Tuesday for a five week period.

The subjects were being weighed and measured, the investigator took color photographs of each subject.

Skinfold measures were taken on the second day. The subjects were measured individually and were asked to remove their shirts and blouses if they hindered getting an accurate tricep measurement. The subjects were shown the calipers and given a brief demonstration of how they worked. These measurements were repeated at the end of the five week treatment period and at the 14 week follow-up and recorded on their individual data sheets.

The third day of the study the subjects were brought together in a group and each was presented with a blank sheet of white 11 inch by 8 inch paper in a standard orientation, and a pencil with an eraser. Each subject was then taken out individually and asked to draw a person. The only restriction on drawing was that it had to be a full length person.

On the final day of the pretest period, the subjects viewed a filmstrip called, "Too Much of a Good Thing". The filmstrip emphasized the basic four food groups and the importance of personal responsibility in choosing a well balanced diet and the effects of food intake on a person's health. All of the
subjects then went outside in the grass near the school to paint a self-portrait, followed by lunch. Before leaving, the subjects were given their group time and assignment for the first weeks of counseling treatment.

General Approach to Treatment

Behavior Modification

The subjects met for 1 hour a day, three days per week. Each subject met with a medical dietetics student and was assisted in setting a weight goal to work toward. The subjects were given a selection of terminal rewards which they could achieve by earning points and were asked to record this information along with the weight goal. A chart was constructed which contained their name and the following categories in which they could earn points: Homework, Self-Control, Physical Fitness, Weight Loss, and Accuracy of their Reports.

Each subject was given a Self-Control Sheet. Specific aspects of this report were examined in detail each morning during the group, analyzing the numbers of times, settings, activities, and moods in which eating was occurring. The subject recorded on the group chart, the correct number of points it had earned (self-control procedures, Ferster et al., 1962; Stuart, 1967; Stuart & Davis, 1972). The subjects divided themselves into pairs. If both partners earned 350 points and achieved the
minimum weight loss goal of 5 points, they not only got their own reward but also their partners. In this way they were able to support one another and reward one another in a positive way (see Appendix J; Mahoney, 1974).

Subjects were weighed weekly and given 0 points for weight gain, 1 point for 1/2 pound loss, and 2 points for a 1 pound loss. Failure to lose weight was received with only the comment, "You'll do better next week".

One-half hour of every treatment session was spent in relaxation training (see Appendix K). The use of coverants - personalizations of the consequences of eating behaviors was practiced (Horan & Johnson, 1971) and the subjects were requested to perform a coverant pair immediately preceding food intake. The subjects were taught to vividly imagine good scenes and positive feelings for remaining on their diets and to imagine negative scenes concerning the undesirable aspects of being overweight. In addition, the subjects were told to think of these negative-positive scenes whenever they were tempted to overeat or eat a forbidden snack.

Rational Emotive Education

The subjects were taught Man's Irrational Assumptions (Ellis, 1962), and extended this concept by formulating their own list about their irrational assumptions about eating. Each subject made a chart or mobile of these irrational beliefs about
eating and placed them in the area in which they most frequently ate.

The students met as a group for 1 hour, 3 days per week. The lessons covered the following topics: Where Feelings Come From; The Art of Challenging Irrational Beliefs Through Self-Questioning and Action; Self-Concept Circle; How People Learn; Demands and Desires; Defining and Examining Teasing and Name Calling; The Child's Right to Protest; and Does the Rational Person Like Everyone? (Knaus, 1974).

The subjects were taught that over eating was a self-defeating behavior (Ellis, 1962). Each lesson was followed up by homework assignments which related to their eating habits (see Appendix L). Rational Emotive Education group meetings focused heavily on interpersonal relationships and questions of self-acceptance. Social and psychological problems related to obesity were addressed. An attempt was made not to deal specifically with methods to alter eating behavior but an attempt was made to change the subjects perceptions and beliefs about food and the events that maintained their self defeating eating patterns.

The subjects had weekly weight checks. No comment was made to the subjects if they gained or lost weight, however, the observer reported the weekly weight to the subject. Food intakes were recorded by the subjects the first and last two weeks of their treatment. This task was considered part of their homework
Gestalt Awareness

Subjects in this group counseled with the medical dietetics students to set individual weight goals and make a plan to decrease energy consumption. The group met for 1 hour, 3 days per week. These subjects were given the 11:00 A.M. time because lunch was at 12:00 P.M. The last 5 minutes of each treatment session was spent concentrating on body sensations which relate to being hungry (Bruch, 1974). They were instructed to eat their lunch in a group and in a location which was separate from all of the other subjects who were participating in the program. They were told to keep their mind on eating and were only permitted to talk about the feel and taste of the food they ate. The subjects were instructed not to put additional food into their mouths until each bite was gone (Perls, 1969).

The emphasis in this group was to teach the subjects to select and assimilate from their environment what is needed for their own sustenance and growth.

Treatment sessions for this group of subjects focused on the four areas suggested by Bruch (1974).

1. Increasing the subjects' awareness of food intake was implemented by having them eat in the manner described earlier and the following awareness exercises: I have to - I choose to - and I need - I want
Stevens, 1973).

2. Learning to eat when hungry was dealt with in the following exercises: communication within-demand and response, listening to yourself, and yes-no situations (Stevens, 1973).

3. Meeting needs for attention was explored in the following exercises: self-chosen (reversal of an event in their life); and cocoon (Stevens, 1973).

4. Teaching the child to be active when restless was explored in the following exercises: dealing with art, movement, and sound (Stevens, 1973).

Each subject was weighed weekly and given the results. The weekly weigh-ins were followed by a group discussion which centered around feelings about their progress, and what they wanted to do as a result of this knowledge. Because of their age, these subjects were not able to keep their own food records.

When school started in the fall, the investigator contacted the subjects to remind them about being weighed, measured, and having another skinfold measure taken.

Research Design and Data Analysis

The subjects were divided into seven groups. The general research design and experimental procedures for each group are portrayed in Table 2. The experimental design is that of a modified pretest-posttest control group design (Campbell &

**Insert Table 2 about here**
### TABLE 2

**Number of Subjects in Each Group and the Order of Experimental Procedure**

<table>
<thead>
<tr>
<th>Group n</th>
<th>Pretest</th>
<th>Treatment</th>
<th>Posttest</th>
<th>Follow-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Week 1</td>
<td>Week 2</td>
<td>Week 7</td>
<td>Week 14</td>
</tr>
<tr>
<td>One 8</td>
<td>Height, Weight</td>
<td>Behavior Modification</td>
<td>Height, Weight, Skinfold</td>
<td>Height, Weight, Skinfold Measures</td>
</tr>
<tr>
<td></td>
<td>Skinfold Measures, Human Figure Drawings</td>
<td>(Pre-Adolescent Group)</td>
<td>Measures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food Intake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two 8</td>
<td>Height, Weight</td>
<td>Rational Emotive Education</td>
<td>Height, Weight, Skinfold</td>
<td>Height, Weight</td>
</tr>
<tr>
<td></td>
<td>Skinfold Measures, Food Intake, Human Figure Drawings</td>
<td>(Pre-Adolescent Group)</td>
<td>Measures</td>
<td></td>
</tr>
<tr>
<td>Three 8</td>
<td>Height, Weight</td>
<td>Gestalt Awareness Therapy</td>
<td>Height, Weight, Skinfold</td>
<td>Height, Weight</td>
</tr>
<tr>
<td></td>
<td>Skinfold Measures, Food Intake, Human Figure Drawings</td>
<td>(Early School Age Group)</td>
<td>Measures</td>
<td></td>
</tr>
<tr>
<td>Four 5</td>
<td>Height, Weight</td>
<td>Obese Control</td>
<td>Height, Weight</td>
<td>Height, Weight</td>
</tr>
<tr>
<td></td>
<td>(Pre-Adolescent Group)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Five 23</td>
<td>Bosnia-Obese Control</td>
<td></td>
<td>Human Figure Drawings</td>
<td></td>
</tr>
<tr>
<td>Six 17</td>
<td>Height, Weight</td>
<td>Obese Control (Nutrition Education Only)</td>
<td>Height, Weight</td>
<td>Height, Weight</td>
</tr>
<tr>
<td>Seven 5</td>
<td>Height, Weight</td>
<td>Obese Control (Early School Age Group)</td>
<td>Height, Weight</td>
<td>Height, Weight</td>
</tr>
</tbody>
</table>
Descriptive statistics were utilized to answer the research question, "What effect does counseling have on weight loss?" Height-weight ratios were computed for each subject who received counseling treatment.

Height-weight ratios for Groups One, Two, and Three (see Figure 1) for the spring of 1976, June, 1976, July, 1976, and the fall of 1976 were plotted on a graph to help describe changes in weight per unit of height over a long-term period of time. Tables were also used for comparative and descriptive purposes.

Two standard one-way analyses of variance were performed to answer the second research question, "Are there differences in weight loss among students who are given Behavior Modification, Rational Emotive Education, and Gestalt counseling and students who received no weight loss counseling?" F tests reaching the .05 probability level were considered significant.

The third research question was, "Are there self-concept changes as measured by human figure drawings for students receiving weight loss counseling?"

Three sign test analyses were performed to compare pretest to posttest changes in mood, clothing, and number of erasures exhibited on the human figure drawings. Three one-way analyses of variance were performed on Groups One and Two, and three t test analyses on Group Three to compare pretest and posttest changes in height, waist, and breast size measures exhibited in the human figure drawings.
A one-way analysis of variance was performed on Groups One and Two, and a t test analysis on Group Two (see Table 18) to answer the research question, "Are there differences in changes in skinfolds among groups of subjects who receive different types of weight loss counseling?" Alpha was set at the .05 probability level.

The fifth research question was, "Are there changes in the food habits and eating practices of students before and after weight loss counseling as measured by the proportion of the basic four food groups reported as included in their diet for a 24-hour period?" To address this question, chi-square analyses were performed on Groups One, Two, and Three to compare changes from pretest to posttest in milk consumption, bread consumption, fruit and vegetable consumption, meat consumption, and snack food consumption.

The final research question was, "What are the long term effects of basic nutrition education on weight?" Descriptive statistics were utilized to address this question. Height-weight ratios of obese subjects in Group Six (see Figure 8) were computed and plotted on a graph to show changes in weight per unit of height over time.

A Pearson Product Moment Correlation was calculated as part of a subsequent analysis to address the question, "Are there significant correlations of mood between measurements of height, waist, and breast size of draw-a-person figures for obese subjects at posttest and pretest time?"
A two-tailed $t$ test was performed to assess the differences between the mean measurements of the height, waist, and breast measures of the human figure drawings of Groups One, Two, and Three to Group Five (see Table 19).
CHAPTER IV
RESULTS AND DISCUSSION

Introduction

In developing and carrying out this research study, an attempt was made to generate results that would be of interest to persons working in the general field of nutrition education. However, the overriding concern in this study was to generate information that could be of assistance to individuals involved with the task of counseling obese children. The following presentation of the results and their implications hopefully reflects this concern.

The present study investigated the effects of three counseling methods on weight and skinfold measures, self-esteem, and food consumption of obese, black, elementary school children.

As part of the Kent School Nutrition Project (Manchester, 1974), data were collected on a sample of 71 elementary school pupils. The data collected on the sample included measures of reported food intake, self-concept, weight, and skinfold measures.

The data collected on the sample were used to answer the following research questions:

1. What effect does counseling have on weight loss?
2. Are there differences in weight loss between students who are given Behavior Modification, Rational Emotive Education, and Gestalt Awareness counseling and students who received no weight loss counseling?

3. Are there self-concept changes as measured by human figure drawings for students receiving weight loss counseling?

4. Are there differences in changes in skinfolds among groups of students who receive different types of weight loss counseling?

5. Are there changes in the food habits and eating practices of students before and after weight loss counseling as measured by the proportion of the basic four food groups reported as included in their diet for a 24-hour period?

6. What are the long term effects of basic nutrition education on weight?

The first research question is:

What effect does counseling have on weight loss? Long-term follow-up measures were available on 11 obese subjects who participated in the summer program counseling treatment and 6 obese subjects who did not participate in the summer program but were part of the Energy Imbalance Group described in the pilot study. Table 3 shows a comparison of the obese participants to the obese non-participants (April-May, 1976 - September, 1976). Eight of
the 11 participants remained stable or lost weight. Half of the non-participant subjects gained weight and none lost weight.

All of the subjects were available for weigh-ins again in October, 1976. Table 3 also shows a comparison of obese participants to obese non-participants in the summer counseling treatment program (April-May, 1976 - October, 1976). Eight of the obese participants gained weight, one subject lost weight and two subjects retained stable.

**TABLE 3**

Comparison of Participants to Non-Participants in the Summer Program (April-May, 1976 - October, 1976 April-May, 1976 - September, 1976)

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Obese Participants</td>
<td>Obese Non-Participants</td>
</tr>
<tr>
<td>Stable</td>
<td>6</td>
</tr>
<tr>
<td>Loss</td>
<td>2</td>
</tr>
<tr>
<td>Gain</td>
<td>3</td>
</tr>
</tbody>
</table>

A comparison of the data in Table 3 shows what could be called a rebounding effect. When the counseling intervention was interrupted for a period of three months, the larger portion of the obese participants regained even more weight than was originally lost.
In contrast, the larger portion of the obese non-participants remained stable with only two subjects gaining weight and one subject actually losing weight. Figure 3 shows the changes in weight per unit of height of the obese participants, from spring 1976 to fall 1976.

Insert Figure 3 about here

In summary, there appeared to be consistent differences in the weight changes of those subjects who participated in the counseling treatment program as opposed to those who did not. The results of this study clearly confirm that a greater portion of the subjects who participated in the counseling treatment program regained their weight. These findings suggest that short term counseling treatment may have a negative impact on weight reduction. Several possible reasons for this were explored.

Stunkard (1972) reiterated his assessment of outpatient therapy for obesity. "Most obese persons will not stay in treatment for obesity. Of those who stay in treatment, most will not lose weight, and of those who do lose weight, most will regain it." The results of this study confirm the latter part of Stunkard's statement. Furthermore, according to LeMagen (1971) many obese persons seem particularly vulnerable to overdependency on the therapist and the inordinate regression that may occur during therapy. Psychotherapy of obese patients may require years to insure enduring results.

According to Hamilton (1973), the regulation of body weight weight depends on elaborate, but only partially understood,
Pretest | Treatment | Posttest

| A.O | 3.5 | 3.0 | 2.5 | 2.0 |


Note. Symbols stand for individual subjects.

Figure 3. Height-Weight Ratios of Counseling Treatment Participants
control mechanisms. In his experiments on animals, regulation depends on the control of both input and expenditure or output of energy. When these controls operate effectively, equilibrium is achieved and body weight is regulated. If, however, the controls are faulty or the usual channels through which they operate are blocked, the maintenance of equilibrium is disrupted and either gain or loss of weight occurs.

Freedman, Kaplan, and Sadock (1976) suggest that whatever effectiveness therapeutic intervention may have, results in large part from their monotony, when the intervention ends and the person returns to their normal fare, incentives to overeat are multiplied.

The second research question is:

Are there differences in weight loss between students who are given Behavior Modification, Rational Emotive Education, and Gestalt Awareness counseling and students who received no weight loss counseling?

A standard one-way analysis of variance was performed on the dependent variable weight change between the Behavior Modification, Rational Emotive Education, and Pre-adolescent Obese Control Groups. This analysis eliminated the data from four subjects for whom pre and post treatment weight measures were not available. The results are summarized in Table 4.
### TABLE 4

ANOVA of Weight Change Measures by Counseling Groups

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>97.73</td>
<td>48.86</td>
<td>3.06</td>
</tr>
<tr>
<td>Within Groups</td>
<td>16</td>
<td>255.43</td>
<td>15.96</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>353.16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis of variance performed on the dependent variable "weight change" revealed a non significant $F$ ratio. The probability is high that one could accept the null hypothesis of no difference for the latter variable.

Figure 4 presents the means of the post-experimental changes in weight measures for the Behavior Modification and Rational Emotive Education experimental conditions examined in this research. There were no significant differences in weight loss as a function of these counseling treatments, however, the Behavior Modification Group manifested a greater mean weight loss than did the Rational Emotive Education Group at the end of the treatment period.
Figure 4. Means of the Posttest Changes in Weight
Both treatment groups demonstrated more weight loss than did the Pre-adolescent Obese Control group at the end of the 14-week period. The means and standard deviations of the weight change scores are presented in Table 5.

**TABLE 5**

Means and Standard Deviations of Weight Change Scores

<table>
<thead>
<tr>
<th>Counseling Group</th>
<th>Group Size</th>
<th>Group Means</th>
<th>Group Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior Modification</td>
<td>7</td>
<td>-0.28</td>
<td>2.69</td>
</tr>
<tr>
<td>Rational Emotive Education</td>
<td>7</td>
<td>0.00</td>
<td>3.10</td>
</tr>
<tr>
<td>Pre-adolescent Obese Control</td>
<td>5</td>
<td>5.0</td>
<td>5.2</td>
</tr>
</tbody>
</table>

The mean weight change measures of the Gestalt Awareness group were compared to those of the Early School Age Obese Control group. These findings after t test analysis, are presented in Table 6.

The Gestalt Awareness counseling when compared with the Obese Control group, was found to have significantly influenced weight changes ($t = 9.345, p < .00002)$. While the obese subjects who received Gestalt Awareness counseling continued to gain weight, they gained significantly less than the Obese Control subjects.
TABLE 6

Analysis of Mean Change Scores for the Gestalt Awareness Group and the Early School Age Obese Control Conditions

<table>
<thead>
<tr>
<th>Counseling Group</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestalt Awareness</td>
<td>.83</td>
<td>1.72</td>
<td>*-3.45</td>
<td>9.0</td>
</tr>
<tr>
<td>Obese Control</td>
<td>7.00</td>
<td>3.98</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .00002

Collipp (1975) stated that obesity which develops in the younger age group (i.e., before 9) has a somber prognosis in terms of eventual weight reduction. He further suggests that for those in the pre-pubertal group, teaching good nutrition habits and encouraging exercise may be enough therapy, with more systematic and directive treatment being prescribed if the expected thinning does not take place. The findings of this study support those reported by Collipp (1975) in that it appears that counseling intervention at an early age significantly decreases the amount of weight gained by the subjects.

Table 7 presents a summary of the means and standard deviations of the weight change scores of the Gestalt Awareness Group and the Obese Control Group.
TABLE 7
Means and Standard Deviations of Weight Change Scores of the Gestalt Awareness Group and the Obese Control Group

<table>
<thead>
<tr>
<th>Counseling Group</th>
<th>Group Size</th>
<th>Group Mean</th>
<th>Group Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestalt Awareness</td>
<td>6</td>
<td>.833</td>
<td>1.72</td>
</tr>
<tr>
<td>Obese Control</td>
<td>5</td>
<td>7.00</td>
<td>3.98</td>
</tr>
</tbody>
</table>

Discussion

The results of the comparison of the Behavior Modification and the Rational Emotive Education Counseling groups are similar to those of Penick, Filion, Fox and Stunkard (1971). They compared the weight loss, over a three month period, of persons in a Behavior Modification Group with persons treated with traditional group therapy. Due to subject variability, the overall weight loss differences between the two groups were generally not statistically significant.

Because energy intake requires ingestion, one approach to weight reduction is to reduce energy input by directly altering eating behavior. Recently, the techniques of Behavior Modification have been used in attempts to modify eating behavior by decreasing the amount and/or caloric content of food (Jorden et al., 1973).
Perhaps this approach would have been more successful if the investigator had provided the subjects with recipes and menus of lower calorie foods (Asher, 1975).

It appears that weight loss counseling is effective in slowing down the weight gaining process particularly in children under nine years of age. However, the fact that the Early School Age Gestalt Group continued to gain weight points to the need for further research with the pre-pubertal group in finding weight loss counseling techniques which will cause weight reduction. Whether Behavior Modification or Rational Emotive Education techniques can be used successfully in causing weight reduction in obese pre-pubertal children will require further research and experience.

The third research question is:

Are there self-concept changes as measured by human figure drawings for students receiving weight loss counseling?

The body image can be extended, altered, or enhanced by clothing (Machover, 1949). The human figures drawn by the subjects in this experiment were examined at pretest and posttest time. Each human figure drawing was rated as to whether it exhibited tight or loose clothing. A figure was rated (1) indicating loose clothing if the clothing extended beyond the body boundaries. The
clothing was rated (2) indicating tight clothing if the clothing remained within the body boundaries. Of the 13 subjects who dressed their figures, 50% of the subjects drew figures which exhibited tight clothing and 50% drew figures which exhibited loose clothing at pretest time. At posttest time approximately 36% of the subjects drew figures exhibiting loose clothing and approximately 64% drew figures exhibiting tight clothing. A sign test analysis was performed to measure the changes in the clothing exhibited on the drawings at pretest time and the clothing exhibited at posttest time. The results are summarized in Table 8.

TABLE 8

Differences Between Posttest and Pretest Rating of Looseness of Clothing

<table>
<thead>
<tr>
<th>Changes</th>
<th>Number of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Changes</td>
<td>3</td>
</tr>
<tr>
<td>Positive Changes</td>
<td>4</td>
</tr>
<tr>
<td>No Change</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
</tr>
</tbody>
</table>

aLoose = 1
Tight = 2
Of the 13 subjects included in the analysis, four subjects who exhibited loose clothing at pretest time exhibited tight clothing at posttest time. Three subjects who exhibited tight clothing at pretest time, exhibited loose clothing at posttest time and six subjects exhibited no change. There was no significant difference between the clothing exhibited on the human figure drawing from pretest to posttest time. Therefore one can conclude that weight loss counseling had no effect on the body image of the subjects as measured by the tightness or looseness of clothing exhibited in their human figure drawings.

Gray and Pepitone (1964) have demonstrated that high self-esteem is associated with positive emotional tone in human figure drawings and that a "happy expression" in a figure drawing is a valid criterion of absence of psychopathology. Each human figure drawing was examined by the investigator at pretest and posttest time and rated. A smiling, warm, happy figure was rated (4) as opposed to a "non-smiling, cold, unhappy figure" which was rated (3). Of the 16 subjects for whom data was available, 60% exhibited unhappy faces at pretest time. However, at posttest 93% of the subjects exhibited happy faces and there was no subject who drew a happy face at pretest time that showed an unhappy face at posttest time. A sign test analysis was performed on the human figure drawings from pretest to posttest time. The results are summarized in Table 9.
TABLE 9

Differences Between Posttest and Pretest Rating of Mood

<table>
<thead>
<tr>
<th>Changes</th>
<th>Number of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Changes</td>
<td>0</td>
</tr>
<tr>
<td>Positive Changes</td>
<td>8</td>
</tr>
<tr>
<td>No Change</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

$P < .008$

*Happy Mood = 4*

*Unhappy Mood = 3*

Of the 15 subjects included in the analysis 8 subjects changed from drawings exhibiting unhappy expressions to drawings exhibiting happy expressions and none of the subjects who drew positive expressions at pretest time changed to negative expressions at posttest time. There was a significant difference ($p < .008$) in changes from negative emotional expressions to positive emotional expressions from pretest to posttest time. It appears that weight loss counseling had a significant systematic effect on the mood exhibited on the human figure drawings.

Adolescents with high self-concept have been found to exhibit fewer erasures in their human figure drawings than those adolescents with low self-concepts (Bodwin & Bruck, 1960). The number
of erasures for both the pre and posttest figures were recorded unobtrusively by the investigator to form dichotomous categories of no erasures and one or more. An examination of the data revealed that the number of subjects who exhibited no erasures at pretest time increased at posttest time. A sign test analysis was performed to measure the differences between the post and pretest rating of the number of erasures recorded during the drawing of the human figures. The results are summarized in Table 10.

TABLE 10

Differences Between Posttest and Pretest Rating of Erasures

<table>
<thead>
<tr>
<th>Changes</th>
<th>Number of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Changes</td>
<td>8</td>
</tr>
<tr>
<td>Positive Changes</td>
<td>4</td>
</tr>
<tr>
<td>No Change</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

Observe that only four subjects made positive changes and eight made negative changes. The findings were not significant, therefore, it does not appear that counseling treatment had a significant effect on the self-concept of the subjects as measured by the number of erasures exhibited in their human figure drawings.
In summary, there was not a significant difference in the changes of the type of clothing or number of erasures exhibited on the human figure drawings from pretest time to posttest time. There was, however, a significant difference in the changes of mood. The subjects drew significantly happier figures at posttest time. According to Gray and Pepitone (1964) this is a valid criterion of absence of psychopathology. Swensen (1968) demonstrated that positive emotional tone in human figure drawings was associated with high self-esteem. Therefore, it is concluded from this data that counseling treatment had a significant effect on self-esteem as measured by the variable, mood.

A standard one-way analysis of variance was performed on the changes of breast size exhibited in the human figure drawings of the subjects receiving Rational Emotive and Behavior Modification Counseling. The results are summarized in Table 11.

**TABLE 11**

ANOVA of Breast Size Measures Exhibited by Counseling Groups

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1</td>
<td>.15</td>
<td>0.15</td>
<td>.68</td>
</tr>
<tr>
<td>Within Groups</td>
<td>5</td>
<td>1.07</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>1.22</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
There were no significant differences at the .05 level. The results suggest that the two experimental conditions had no significant effect on the changes of breast size of human figure drawings from pretest to posttest time.

Figure 5 presents the means of the posttest changes in breast size measures for two of the experimental conditions examined in this research. An examination of Figure 5 suggested that the human figure drawings of the subjects who experienced Rational Emotive counseling reported smaller changes in breast size than those who experienced the Behavior Modification counseling. The larger breast sizes which were exhibited on the human figure drawings of the Behavior Modification group are associated with pleasant moods.

Insert Figure 5 about here

TABLE 12
Means and Standard Deviations of Breast Change Scores Exhibited on Human Figure Drawings

<table>
<thead>
<tr>
<th>Counseling Group</th>
<th>Group Size</th>
<th>Group Means</th>
<th>Group Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior Modification</td>
<td>4</td>
<td>.42</td>
<td>.53</td>
</tr>
<tr>
<td>Rational Emotive Education</td>
<td>5</td>
<td>.12</td>
<td>.33</td>
</tr>
</tbody>
</table>
Figure 5. Means of the Posttest Changes in Breast Size
A standard one-way analysis of variance was performed on the changes in waist size of human figure drawings exhibited by the Behavior Modification and Rational Emotive counseling groups at posttest time. The results are summarized in Table 13.

The results suggest that the weight loss counseling treatments did not have a significant effect on changes in body image from pretest to posttest time as measured by the waist size changes in the human figure drawings.

TABLE 13

ANOVA of Waist Size Measures by Counseling Groups

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Group</td>
<td>1</td>
<td>.01</td>
<td>.01</td>
<td>.02</td>
</tr>
<tr>
<td>Within Group</td>
<td>8</td>
<td>4.76</td>
<td>.59</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>4.77</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 6 presents the means of the posttest changes in the waist size measurements for the two experimental conditions examined in this research.

It is suggested by Machover (1949) that waist width may reflect a change of body image. An examination of Figure 6 suggested that students who experienced the Behavior Modification

[Insert Figure 6 about here]
Figure 6. Means of the Posttest Changes in Waist Size Measurements
counseling exhibited greater changes in waist size than those receiving Rational Emotive counseling, thus a greater change in body image.

Table 14 presents the means of standard deviations of post-test waist change scores.

**TABLE 14**

Means and Standard Deviations of Waist Change Scores

<table>
<thead>
<tr>
<th>Counseling Group</th>
<th>Group Size</th>
<th>Group Means</th>
<th>Group Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior Modification</td>
<td>6</td>
<td>.08</td>
<td>.54</td>
</tr>
<tr>
<td>Rational-Emotive Education</td>
<td>6</td>
<td>-.49</td>
<td>.74</td>
</tr>
</tbody>
</table>

According to Bruch (1973) of the various emotional disturbances to which obese are subject, only two are specifically related to their obesity. The first is overeating and the second is a disturbance in body image.
The obese person whose body image is disturbed characteristically feels that his body is grotesque and loathsome and that others view it with hostility and contempt. This feeling is closely associated with self-consciousness and impaired social functioning. In addition, Bruch (1973) points out that this disorder is confined to those who have been obese since childhood. Atkins et al. (1958) found that larger waist sizes in adults were associated with happy mood which in turn is associated with high self-esteem. Although the results were not significant, the trend toward larger waist sizes demonstrated by the Behavior Modification group is encouraging and is supported by the findings of preliminary studies (Stunkard, et al., 1970) which show that Behavior Modification has demonstrated greater effectiveness in the treatment of obesity when compared with other psychotherapies.

The results are comparable to those reported by Mayer (1975). He found that in a program initiated in an elementary school requiring one hour of activity per day, after four years, 60% of the overweight children were at an appropriate weight for height. However, the program was dropped, a three year follow-up revealed that almost all of the previously overweight children were overweight again.

A standard one-way analysis of variance was performed on the height changes exhibited in the human figure drawings of those subjects receiving Behavior Modification and Rational Emotive counseling
at posttest time. The results are summarized in Table 15.

Although the height of the human figure drawings executed by the Behavior Modification counseling group were somewhat higher than those of the subjects who experienced Rational Emotive counseling, they were not significantly different. There is thus little evidence that weight control counseling effects self-esteem as measured by these comparisons.

**TABLE 15**

ANOVA of Height Measurements of Human Figure Drawings by Counseling Groups

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1</td>
<td>10.43</td>
<td>10.43</td>
<td>.77</td>
</tr>
<tr>
<td>Within Groups</td>
<td>9</td>
<td>122.09</td>
<td>13.56</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>132.52</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Self-esteem is said to be reflected in figure size. Figure 7 shows the posttest changes in height measures for 2 of the experimental conditions examined in this study.

An examination of Figure 7 suggested that students who experienced the Behavior Modification counseling drew slightly taller figures at posttest time than those who experienced...
Figure 7. Means of the Posttest Changes in Height Measurements
Rational Emotive counseling. It appears that those who experienced the Behavior Modification counseling had a more positive change in the concept of self than the subjects associated with the Rational Emotive Education, since the larger magnitude of height measurements are related to positive self-esteem. A summary of the means and standard deviations of height change scores for the Behavior Modification and Rational Emotive Education Groups are presented in Table 16.

**TABLE 16**

Means and Standard Deviations of Height Change Scores

<table>
<thead>
<tr>
<th>Counseling Group</th>
<th>Group Size</th>
<th>Group Means</th>
<th>Group Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior Modification</td>
<td>6</td>
<td>2.0</td>
<td>2.00</td>
</tr>
<tr>
<td>Rational-Emotive Education</td>
<td>5</td>
<td>-1.74</td>
<td>5.04</td>
</tr>
</tbody>
</table>

Three t tests were carried out between the mean changes of breast size, waist size, and height of the human figure drawings exhibited by the Gestalt Awareness counseling group from pretest to posttest time. An examination of the data summarized in Table 16 revealed that none of the t tests were significant at the .05 level.
TABLE 17
A Summary of the t Tests Carried Out on the Mean Changes of the Height, Waist, and Breast Size Measures Exhibited on the Human Figure Drawings by the Gestalt Awareness Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>df</th>
<th>Mean Change Score</th>
<th>Standard Deviation of Difference</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waist</td>
<td>3</td>
<td>-0.16</td>
<td>.38</td>
<td>-1.2</td>
<td>NS</td>
</tr>
<tr>
<td>Height</td>
<td>3</td>
<td>-2.16</td>
<td>.71</td>
<td>-1.37</td>
<td>NS</td>
</tr>
<tr>
<td>Breast</td>
<td>3</td>
<td>-0.06</td>
<td>.06</td>
<td>-.48</td>
<td>NS</td>
</tr>
</tbody>
</table>

Discussion

In summary, with the exception of the subjects in the Behavior Modification group, the second human figure drawing was almost always of smaller total size than was the first. The decrease in draw-a-person size from pretest to posttest was not significant, however. It would appear that changes in self-esteem and perceived body size are neither causes nor effects of weight loss. It would seem that traditional intervention, stressing changes in self-esteem, is not necessary to effect weight loss in a group of obese elementary school children.

The fourth research question is:

Are there differences in changes in skinfolds among groups of students who receive different types of weight loss counseling?

The analysis of variance performed to examine the effect of counseling treatment on skinfold measures of subjects who received
Behavior Modification and Rational Emotive counseling is presented in Table 18.

**TABLE 18**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1</td>
<td>5.25</td>
<td>5.25</td>
<td>.22</td>
</tr>
<tr>
<td>Within Groups</td>
<td>10</td>
<td>239.65</td>
<td>23.96</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11</td>
<td>244.91</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis reveals no significant difference in skinfold measures between the two treatment groups at the termination of treatment \( F(1,10) = .22 \), see Table 18. This analysis eliminated the data from 5 subjects who were not available for both the pre and post-experimental skinfold assessment.

A \( t \) test analysis was performed on the mean change in skinfold measures of the Gestalt Awareness group at posttest time. Although the skinfold measures showed a slight increase (see Figure 8) there were no significant findings, \( t = 1.13, p > .05 \).

Figure 8 presents the means of the post-experimental changes in skinfold measures for the three experimental conditions examined in this research.
Figure 8. Means of the Posttest Changes in Skinfold Measures.
Table 19 presents the means and standard deviations of the posttest changes in skinfold measures.

**TABLE 19**

Means and Standard Deviations of Changes in Skinfold Measures

<table>
<thead>
<tr>
<th>Counseling Group</th>
<th>Group Size</th>
<th>Group Means</th>
<th>Group Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior Modification</td>
<td>7</td>
<td>2.86</td>
<td>5.20</td>
</tr>
<tr>
<td>Rational Emotive Education</td>
<td>5</td>
<td>4.20</td>
<td>4.38</td>
</tr>
<tr>
<td>Gestalt Awareness</td>
<td>4</td>
<td>.25</td>
<td>1.25</td>
</tr>
</tbody>
</table>

Discussion

While the changes in skinfold measures were not significant, there were differences in accumulation of body fat. The Behavior Modification group manifested less accumulation of body fat than did the Rational Emotive Education group at the end of the treatment period.

Lean body weight is constantly rising due to the growth of the child. This trend is encouraging in light of the fact that prevention of an increase in the number of fat cells in the young child can be enormously important in preventing obesity in adulthood.
It is clear that the number of fat cells does not increase in adult obesity, but the size of the fat cells does (Hirsh & Knittle, 1970).

The fifth research question is:

Are there differences in food habits and eating practices of subjects before and after weight loss counseling as measured by the proportion of the basic food groups included in their diet for a 24-hour period?

**Milk Consumption**

Of the 22 students who reported milk in their diet for the pretest and posttest report of food consumption, 15 met the minimum daily milk requirement in their diet at pretest time and 16 met the minimum daily milk requirement in their diet at posttest time.

These findings are similar to the findings reported in the Ten State Nutrition Survey (1972). It was found that diets consumed by black children contained less calcium (milligrams per 1,000 Keal) than those consumed by white children (see Table 20).

**Fruit and Vegetable Consumption**

Twenty-two subjects reported fruit and vegetables in their diet for the pretest and posttest report of food consumption. Of the 22 students, only 5 met the minimum fruit and vegetable requirement at pretest time and 6 met the minimum requirement at posttest time (see Table 20).
Meat Consumption

A breakdown of whether or not subjects met the minimum daily requirement for meat in their diet for the pretest and the posttest report of food consumption showed that of the 22 subjects, 15 met the minimum daily requirement of meat at pretest time and 15 met the minimum requirement for meat in their diet at posttest time. Approximately 32% of the subjects did not meet the minimum daily requirement of meat consumption at pretest time, however, this percentage dropped to approximately 27% at posttest time. One subject who met the daily meat group requirement at pretest time did not meet the daily meat group requirement at posttest time. Two subjects who didn't meet the daily meat group requirement reported consuming the required minimum amount at posttest time. There were 5 subjects who did not report meeting the daily minimum requirement for meat consumption at pretest or posttest time (see Table 20).

Nutrient intake is influenced by family income or ethnicity. Meat is one of the more expensive food items. This factor could influence the meat consumption of children from lower socioeconomic levels. When per capita income, sex, and age were held constant, black children had somewhat lower median intakes of energy and most nutrients than did white children (Ten State Nutrition Survey, 1972).
Bread Consumption

A breakdown of whether or not subjects met the minimum daily bread consumption requirement in their diet for the pretest and posttest 24-hour report of food consumption showed that 14 of the 22 subjects met the minimum requirement for bread in their diet at pretest time and 12 met the minimum bread requirement at posttest time. One possible explanation for this finding is that eating bread is often associated with weight gain. This belief may have influenced their bread consumption (see Table 20).

Snack Food Consumption

A breakdown of whether or not subjects reported snack foods in their diet for the pretest and posttest food consumption showed that of the 21 subjects, 12 reported snack foods in their diet at pretest time and 10 reported snack foods in their diet at posttest time. Four subjects who reported having snack foods in their diet at pretest time reported not having snack foods in their diet at posttest time. (see Table 20).

Discussion

In summary, there appears to be a positive relationship between weight loss counseling and food consumption. Table 20 gives the basic food groups and the percentage of subjects who met the minimum daily requirement at pretest time and posttest time. With the exception of the bread group, the percentage of subjects who met the minimum daily requirement increased at posttest time. There was also a positive trend toward snack
reduction. Approximately 10% more of the subjects reported not having empty caloric snacks at posttest time as opposed to pretest time. In Chapter III it was mentioned that the subjects were taught how to choose appropriate low calorie snacks. It was believed that this type of intervention would result in fewer obese subjects choosing empty calorie snacks. While the chi-square statistic is not significant ($p > .10$) it is at a near significant level. Therefore, the evidence for conclusions regarding the influence of weight loss counseling on snack choices cannot be drawn in the nature of an either continuum of probability.

TABLE 20

Percentages of Obese Subjects Who Met the Minimum Daily Food Consumption at Pretest Time and Posttest Time

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Pretest Yes</th>
<th>Posttest Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat</td>
<td>68.18</td>
<td>72.73 a</td>
</tr>
<tr>
<td>Fruit and Vegetable</td>
<td>22.73</td>
<td>27.27 a</td>
</tr>
<tr>
<td>Bread</td>
<td>66.67</td>
<td>57.14</td>
</tr>
<tr>
<td>Milk</td>
<td>66.18</td>
<td>72.73 a</td>
</tr>
</tbody>
</table>

*a = Increased*
As in other conditions the success or failure in treatment is directly related to treatment (Bruch, 1974). These research findings indicate that although the subjects' food habits changed in a positive direction, according to the Basic Four guidelines used to measure the food consumption, undernutrition still exists at a significant level among this obese population. The findings lend support to a statement made by Fredda Gensberg Fellner:

"...It may well be that although undernutrition is the most frequently discussed nutritional disorder, obesity is the primary form of malnutrition encountered in the United States..." (Gensberg-Fellner, 1974).

The sixth research question is:

What are the long term effects of basic nutrition education on weight?

Long term weight measures were obtained on 17 obese subjects who participated in the Kent School Basic Nutrition Education Program for a year or more but did not receive weight loss counseling. Eleven of the subjects began the program in the Spring of 1975, and 6 of the subjects began the program in the Fall of 1975. Height-weight ratios were computed for each subject and plotted on a graph (see Figure 9). The results indicate that 16 out of the 17 obese subjects continued to gain weight per unit
Figure 9. Long Term Effects of Nutrition Education on Weight Measures

Note. Symbols represent individual subjects.
of height. There was a general trend toward an increase in weight. Nutrition Education alone did not appear to have a major impact on lessening the number of subjects who continued to gain weight. These findings support the validity of some of the hypotheses made by Bruch (1974) and Hamar (1973) which are as follows:

... Obesity in childhood and adolescence is not a uniform condition; it may be associated with a wide range of emotional and personality disturbances. Recognition of these factors is necessary for a more realistic and potentially more effective treatment approach (Bruch, 1974).

Hamar reports:

... For group treatment plans to be effective they must be directed to the individual in the group. The parents of the child must be aware of the need for change in the child and supportive of making the change. The changes needed call for careful selection and control of food intake and energy expenditure as well as a positive change in self-image. In order to prevent a relapse into obesity these changes must evolve into permanent habits (Hamar, 1973).

Results of Subsequent Data Analysis

Attrition

For the purposes of this study attrition was defined as attending less than 2 of the 15 counseling treatment sessions after agreeing to be in the study. Of the 24 subjects originally in the study, 3 dropped out to move to another area of town.

Table 23 gives a breakdown by counseling treatment group of the average number of sessions attended by the subjects in the sample.


TABLE 21  
Attendance and Attrition by Group

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Attrition</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior Modification</td>
<td>8</td>
<td>0</td>
<td>14.13</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Rational Emotive</td>
<td>8</td>
<td>1</td>
<td>13.00</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Gestalt Awareness</td>
<td>8</td>
<td>2</td>
<td>14.90</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>

In examining the attrition rates across treatment groups, it was noted while none of the 8 Behavior Modification Subjects dropped out, 1 dropped out of the Rational Emotive Education Group, an attrition rate of 12% and 2 dropped out of the Gestalt Awareness Group, an attrition rate of 25%. Stunkard (1972) reported that attrition rates vary between 20% and 80%. The results of this research do not confirm his statement.

One of the more important findings of this study is the high rate of attendance between all of the groups. For any form of therapeutic intervention to be successful, it must attract and maintain attendance so that its principles can be taught and implemented. One possible explanation for the high rate of attendance is that putting the counseling treatment in an
educational framework which includes other nutrition centered activities increases the attractiveness of the treatment.

A two-tailed $t$ test was carried out between the overall combined means of breast size, waist size, and height measures exhibited in the human figure drawings of Groups One, Two, and Three and the Non-Obese Control Group Five. The difference between the combined height means of the treatment groups and the Non-Obese Control Group was not significant. Comparable $t$ tests between the combined means of breast size measures and waist measures were significant (breast size, $t = 3.4$, $p < .05$; waist size, $t = -10$, $p < .002$).

There appeared to be no consistent differences between the heights of the human figures drawn by the obese subjects and those of neutral control population. However, the obese subjects drew significantly smaller breasts and waists than the Non-Obese Control Group. These findings compare to the DiLeo (1973) findings that showed that none of the figures drawn by obese compulsive eaters indicated obesity. The human figures drawn by the obese subjects in this study seem to reflect unrealistic body size when compared to the Non-Obese Control population. The obese subjects in this study perceived their bodies as being significantly smaller than the non-obese control population.

Table 17 gives a summary of the results of the $t$ tests carried out on the combined means of the three treatment groups and the Non-Obese Control Group.
TABLE 22

A Summary of the t-Tests Carried Out on the Combined Means of the Height, Waist, and Breast Size Measures of the Three Treatment Groups and the Non-Obese Control Group

<table>
<thead>
<tr>
<th>Measurement in Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Mean of Non-Obese Control Group = 5.5</td>
</tr>
<tr>
<td>Mean of Treatment Groups = 6.1</td>
</tr>
<tr>
<td>Standard Deviation of Treatment Groups = 2.1</td>
</tr>
<tr>
<td>Standard Deviation of Non-Obese Control Group = 2.2</td>
</tr>
<tr>
<td>( t = 1.43 )</td>
</tr>
</tbody>
</table>

| Waist                  |
| Mean of Non-Obese Control Group = 1.0 |
| Mean of Treatment Group = .64 |
| Standard Deviation of Treatment Groups = .18 |
| Standard Deviation of Non-Obese Control Group = .60 |
| \( t = -10.00 \) |
| \( p < .001 \) |

| Breast                 |
| Mean of Non-Obese Control = 1.0 |
| Mean of Treatment Group = .83 |
| Standard Deviation of Treatment Groups = .26 |
| Standard Deviation of Non-Obese Control Group = .55 |
| \( t = -3.40 \) |
| \( p < .05 \) |
A Pearson Product Moment correlation was calculated to see if there were significant correlations of mood and measures of height, waist, and breast size of human figure drawings for obese subjects at posttest and pretest time. A summary of the pretest results is presented in Table 23.

TABLE 23

Correlations of Mood, and Measures of Height, Waist, and Breast Size Measures of Human Figure Drawings for Obese Subjects at Pretest Time

<table>
<thead>
<tr>
<th></th>
<th>Mood</th>
<th>Height</th>
<th>Waist</th>
<th>Breast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood</td>
<td>1.00</td>
<td>-.25</td>
<td>.14</td>
<td>-.11</td>
</tr>
<tr>
<td>Height</td>
<td>1.00</td>
<td></td>
<td>.83*</td>
<td>-.18</td>
</tr>
<tr>
<td>Waist</td>
<td></td>
<td>1.00</td>
<td></td>
<td>-.44</td>
</tr>
<tr>
<td>Breast</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Significant at the .05 level

There appears to be a consistent relationship between waist size measures and height. These findings are supported by Viney et al., (1974) who reported that larger waist sizes were associated with taller human figure drawings.
A summary of the posttest results of the correlations of mood and measures of height, waist, and breast size measures of human figure drawings is presented in Table 24.

**TABLE 24**

Correlations of Mood, and Measures of Height, Waist, and Breast Size Measures of Human Figure Drawings for Obese Subjects at Posttest Time

<table>
<thead>
<tr>
<th></th>
<th>Mood</th>
<th>Breast</th>
<th>Waist</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood</td>
<td>1.00</td>
<td>.63</td>
<td>-.30</td>
<td>-.38</td>
</tr>
<tr>
<td>Breast</td>
<td>1.00</td>
<td>-.48</td>
<td>.32</td>
<td></td>
</tr>
<tr>
<td>Waist</td>
<td></td>
<td>1.00</td>
<td>.09</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

There did not appear to be any significant correlations of mood and measure of height, waist, and breast size measures at posttest time.

In general, the results indicate that the correlations of mood and measures of height, waist, and breast size measures were not significant at pre or posttest times. Self-esteem is said to be reflected in figure size. For the subjects in this sample, the height was significantly correlated with waist size.
at pretest time, however, none of the other indexes of self-regard were found to be predicted.

If figure size represents level of self-esteem, then the comparative sizes of the breasts, waist, and height on posttest human figure drawings did not demonstrate a positive change toward higher self-esteem.
CHAPTER V
SUMMARY AND CONCLUSION

Introduction

Obesity that begins early in childhood is resistant to treatment. Practitioners have long been faced with the dilemma of how to effectively treat obese individuals so that weight reduction occurs and this loss is maintained over a long period of time. The present study investigated the effects of three counseling methods on weight, skinfold measures, self-esteem, and the reported food consumption of black, obese, urban elementary school children.

It was felt that this investigation would be of particular importance because:

1. It is essential to locate potential sufferers of obesity and prevent this condition. The effects of counseling treatment programs conducted in public school settings are unknown. This information is needed for effective program planning.

2. The effects of the knowledge base obtained by children in nutrition classes on their dietary practices is not clearly understood.
3. Childhood and adolescent obesity are critical in determining adult weight problems and self-image disturbances. There are few studies which have dealt directly with these stages of obesity.

There were six research questions:

1. What effect does counseling have on weight loss?

2. Are there differences in weight loss among students who are given Behavior Modification, Rational Emotive Education, and Gestalt Awareness counseling and students who received no weight loss counseling?

3. Are there self-concept changes as measured by human figure drawings for students receiving weight loss counseling?

4. Are there differences in changes in skinfolds among groups of students who receive different types of weight loss counseling?

5. Are there changes in the food habits and eating practices of students before and after weight loss counseling as measured by the proportion of the basic four food groups reported as included in their diet for a 24-hour period?

6. What are the long term effects of basic nutrition education on weight?
Data were collected on a sample of 71 black, urban public school children who ranged in age from 5 to 13 years of age. They were assigned to seven groups. The subjects who ranged in age from 10 to 13 years old were randomly assigned to two pre-adolescent groups. Group One was given Behavior Modification weight loss counseling, Group Two was given Rational Emotive Education weight loss counseling, and a pre-adolescent control group made up of obese subjects who were unable to participate in the counseling treatment program. Interaction and main effects of these three groups were studied in an analysis of variance design. Group Three was an early school age group consisting of subjects ranging in age from 5 to 9 years. These subjects were given Gestalt Awareness counseling. An early school age obese control group (Group 7) was made up of obese subjects ranging in age from 5 to 9 years who did not participate in the counseling treatment program. T test analyses were utilized to compare and study these groups. Group Five was made up of 23 non-obese subjects chosen at random from the school population. A sixth group of subjects were identified as being obese but had only received nutrition education. This group was utilized to examine the long term effects of basic nutrition education on weight.

Findings with regard to the effect of counseling on weight loss revealed that a high portion of subjects regained their weight after counseling treatment was interrupted. Even though
the subjects were instructed to keep on losing weight; all one of them returned to their pretest weight or higher within three months after counseling treatment.

Findings with regard to the effectiveness of Behavior Modification, Rational Emotive, and Gestalt Awareness counseling on weight change were not significant. The subjects who received Behavior Modification counseling demonstrated slightly greater weight changes and drew somewhat larger human figure drawings than those subjects receiving Rational Emotive counseling. Thus, the results of the research with weight loss in children in pre-adolescent age groups compare quite favorably with those reported by researchers of general behavioral techniques of weight reduction with adults and college students (Jorden & Levitz, 1973). This trend supports the validity of some of the hypotheses of previously mentioned experimental studies which state that Behavior Modification counseling is superior to other counseling treatments in effecting weight loss (Penick, Filion, Fox & Stunkard, 1971).

It appeared that all three treatment methods were successful in helping the obese subjects maintain their weight. No treatment subject lost or gained more than five pounds during their five week treatment period. The Early School Age Control Group
gained significantly (< .00002) more weight than the Gestalt Awareness Group indicating that counseling treatment before the age of 10 years is significantly more effective than no treatment at all in effecting weight loss or maintenance. It was pointed out earlier, that there was a trend for the relative efficacy of counseling to decrease over time. This study shows that a knowledge of time needed to achieve new equilibrium may have important implications for the treatment of obesity.

The Sign Tests for changes in the number of erasures and looseness of clothing were not significant. However, the Sign Test for the variable "mood" showed a significant increase in the number of subjects who exhibited happy faces on their human figure drawings at posttest time as opposed to those who exhibited unhappy faces at pretest time. An examination of the data revealed that no one who drew a happy face at pretest time drew an unhappy face at posttest time. Quereshi (1972) based his formulation of self-concept on traits of two factors tested by MARS (see Chapter II). Of importance to this study is factor one, unhappiness. He found that unhappiness in obese subjects represents such characteristics as fatigue, loneliness, repression, nervousness, tension, depression, uncertainty of self, self-consciousness, and dissatisfaction. Gray and Pepitone (1964) reported that high self-esteem is associated with positive emotional tone in human figure drawings. DiLeo (1973) suggests
that drawings by young children are representations and not re-
productions, that they express an inner and not a visual realism.
He further suggests that drawings make a statement about the
child himself and less about the object. In view of these findings,
it appears that counseling treatment had a positive effect on
self-concept as measured by the variable "mood" and that a sig-
nificant number of subjects saw themselves as being happier and
friendlier at posttest time than at pretest time.

It is notable that the waist and breast size measures of the
human figure drawings exhibited by the obese subjects were sig-
nificantly smaller than those of the non-obese control group at
posttest time. Spearing (1912) found that children do not try
to draw what they actually see, but what they can remember, and
that it is only later that they will be influenced by what is
seen and by suggestion, instruction, and direction. In light of
these research findings, the significantly smaller waist and
breast size measures exhibited in the human figure drawings of
the obese subjects indicate that a large portion of the obese
subjects have not accepted the reality of their obesity. Change
was discussed in depth in Chapter I, however, in review,
acknowledging obesity is difficult unless a person has already
begun to change. The full realization of "fatness" is a severe
ego "insult" and one must have a new source of strength to
endure it (Heald, 1975; Mayer, 1975).
Further, it is notable that the heights of the human figure drawings exhibited by the obese subjects were not demonstratively different from pretest to posttest time, nor were they demonstratively different from the non-obese control group at posttest time. No significant correlations were found between the variables of mood, height, waist size, or breast size measures on the human figure drawings exhibited at posttest time.

There is, in fact, little evidence of the effects of the counseling treatments indicated in the groupings of obese children on self-esteem as measured by the pre and posttest changes in the waist size, breast size, number of erasures, and mood of the human figure drawings.

Findings with regard to the differences in changes in skinfolds among the subjects who received Behavior Modification counseling and Rational Emotive Education were not significant. A trend was indicated in favor of Behavior Modification. The t test for mean change of skinfold at posttest time was not significant for the Gestalt Awareness group, however, there was an increase in the skinfold measures at posttest time.

A significant number of subjects did not meet the recommended daily minimum requirement of bread, milk, or meat at pretest or posttest time. This may be the result of studying a fairly homogeneous population or may be due to an entirely different set of factors. Other researchers (Ten State Nutrition Survey,
A significant number of subjects did not meet the recommended daily minimum requirement of bread, milk, or meat at pretest or posttest time. This may be the result of studying a fairly homogeneous population or may be due to an entirely different set of factors. Other researchers (Ten State Nutrition Survey, 1972) have suggested that there may be socioeconomic factors associated with lower food consumption; as was discussed in Chapter II, these factors may or may not translate into food behavior. It was encouraging, however, to note that the percentage of subjects meeting the daily minimum requirements of food consumption increased in the meat, milk, and fruit and vegetable groups. There was also a trend toward snack reduction, suggesting that weight loss counseling may have had a positive effect on the food consumption of the subjects.

At this point, there are many unanswered questions raised by this research regarding the effects of counseling on food consumption. The success of studies such as these is highly dependent on the development of accurate measurement tools. Such tools are necessary if there is to be any success in unraveling the effects of nutrition education, family, culture, media, and economy on food habits of individual family members.

It is a well known fact that eating is a learned behavior and that dietary practices of adults become instilled in their
children (Mitchell, 1976). The investigator was unable to elicit parental support for this research. In order to implement effective changes in food habits of children, parental support seems essential.

Basic nutrition education did not appear to have a major impact on lessening the number of obese subjects who continued to gain weight. There was a general trend toward weight increase per unit of height in obese subjects who only participated in nutrition education.

Sources of Error

There are two potential sources of error in the investigation: nonrandomization and the size of the treatment population. These are the most serious limitations of the present study and is a limitation shared by much laboratory experimentation, to what degree can the findings be generalized? In a candid discussion of nonsystematic departures from random sampling, Scott and Wertheimer (1962) claim that research projects which meet the conditions of random selection of sampling units exactly and can prove that the conditions have been met are remarkable exceptions rather than typical examples. "By far the largest portion of empirical studies are performed on samples which do not, strictly speaking, satisfy the assumptions of the statistical theory of interference" (Scott & Wertheimer, 1962). These authors point out that an almost inveritable source of departure
from random sampling occurs in the failure of some subjects to be studied. Human subjects may refuse, be too sick, or not at home. This fact is particularly true in research similar to the present one, where the investigator must get permission from schools and parents. Every time a parent says that his/her child may not participate.

The present sample was drawn from consenting families in an available school, and thus cannot be assumed representative of all obese subjects. Scott and Wertheimer (1962) clearly state that, regardless of nonrepresentative sampling, if

...a sizeable number of readily available subjects perform in an essentially identical fashion with respect to the attributes one is studying, then it seems appropriate to presume, in the absence of specific reasons to the contrary that a randomly selected sample would behave the same (p. 218).

Because the present study is unique in that it has taken contemporary work on obesity with adults and combined with work on childhood obesity, the best approach is the cautious one in generalizing only to the sample or to other samples which are highly similar. If subsequent research on different populations corroborates these findings, then one may place more subjective confidence in the generality of the results.
Recommendations

While a presentation of a comprehensive set of recommendations for nutrition education and the prevention of obesity goes beyond the scope of this dissertation, some suggestions can be made. These suggestions are based on the present study and literature that was reviewed in preparing the dissertation. These suggestions are as follows:

1. An attempt be made to introduce normal nutrition education to the parents and students in the public schools. This would include teaching them how to classify foods, balanced meal patterns, reasons for the inclusion of certain foods in the diet and alternatives to empty calorie snacks.

2. It is suggested that rapid and forceful intervention early in the development of obesity be undertaken. The work of Hirsch and Knittle (1970) shows the critical phases in childhood when hyperplasia occurs.

3. In light of the findings in this study, additional studies are clearly indicated to explore and perfect methods for implementing the use of behavior modification in preventing obesity in children.

4. The results of the present study suggest that short-term counseling is not effective in the treatment of childhood obesity and that it is necessary to make a
long range commitment to intervention programs with children. The investigator suggests a 4 to 5 year time span.

5. The final suggestion is general in nature. It is suggested that future investigations of childhood obesity prevention should focus on early identification, and long-term psychologic and physiologic aspects of food intake and energy expenditure that operate in defense of body weight.

It is hoped that the results of this investigation will be of assistance in improving nutrition education in the public schools and in designing future treatment programs for the prevention of obesity.
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APPENDIX A

KENT SCHOOL NUTRITION PROGRAM
GOALS AND OBJECTIVES
SEPTEMBER 1975 - MAY 1976

The overall goal of the program is to instill in the children a sense of value for their health and nutritional, psychological and social well-being. The program is divided into two parts; the school-at-large and an energy-imbalance group.

The objectives of the school-at-large portion of the program are as follows:

1. The students will demonstrate an awareness of the relationship between food and health by being able to satisfactorily answer questions following classroom presentations.

2. Teachers will reinforce principles presented in classroom sessions.

This portion of the program will yield priority to the energy-imbalance group.

The objectives of the energy-imbalance group are as follows:

1. Assess the needs of selected children by obtaining height, weight, skin folds and individual interviews.

2. Determine any underlying problems the children may have by checking school records.

3. Develop an understanding of the relationship between food/energy and health through the establishment of food knowledge base and individual confrontation.

4. The students will demonstrate rational food attitudes by making appropriate food choice.

5. The student will demonstrate rational activity levels by participating in physical activities.
5.1 The students will develop better skills in basic gross-motor skills through participation in organized age appropriate group games.

5.2 The students will learn physical activities they can do at home.

5.3 The students will be able to increase their self esteem via accomplishment of activities.

6. Students will demonstrate interest in health in relation to self-image by growing closer to their ideal weight for height and by being satisfied with it.
## CLIENT INFORMATION SHEET

<table>
<thead>
<tr>
<th>NAME:</th>
<th>AGE:</th>
<th>GRADE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDRESS:</td>
<td>PHONE:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HEIGHT</th>
<th>WEIGHT</th>
<th>SKINFOLD</th>
</tr>
</thead>
</table>

### ACTIVITY

### FOOD PREPARATION

### FOOD LIKES

### FOOD DISLIKES

<table>
<thead>
<tr>
<th>SCHOOL BREAKFAST</th>
<th>SCHOOL LUNCH</th>
</tr>
</thead>
</table>

### REFERRAL:  
- LAST YEAR  
- TEACHER  
- SELF

### MULTIPLE HEALTH PROBLEMS:

### ADDITIONAL COMMENTS
As you know, Kent School has begun a program to teach sound health practices and to instill in the students a sense of value for their health. We realize that the families of the students need to be involved in this program. We will be discussing the following topics:

a) Of what are foods made?
b) How much food do I need?
c) How much activity do I need?
d) How much rest do I need?

If we can be of service to you in reinforcing sound health practices, please let us know.

Sincerely,

Larry Wiles
Louise Dickman
Dear Parent,

As a part of the Kent School nutrition program this summer your child will be involved in various physical activities. The program will include activities such as softball, basketball, volleyball, table tennis, exercises, and hopefully swimming. The activity group will meet at least three mornings a week for regular activities and hopefully one afternoon for swimming. The activities will be directed by an occupational therapist from the ECCO Family Health Center.

Before your child can participate in the activities aspect of this program, the attached medical form must be completed and returned to the school. This is to ensure your child has no health problems for which we should limit his physical activity. Additional information is necessary for records at ECCO. You will be contacted regarding this within the next week.

We look forward to having your child in our nutrition program this summer.

Sincerely,

Nancy Willard, O.T.R.
Occupational Therapist
ECCO Family Health Center
COLUMBUS PUBLIC SCHOOLS
MEDICAL RECORD

Note: All children entering the Columbus Public Schools are urged to have medical and dental examinations. This information is confidential and becomes a part of the pupil's cumulative record.

NAME
SCHOOL
ADDRESS
BIRTHDATE

This section may be completed by the nurse, teacher, or physician.

HEALTH SCREENING

<table>
<thead>
<tr>
<th>Height</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Acuity</td>
<td>R</td>
</tr>
<tr>
<td>Hearing Acuity</td>
<td>R</td>
</tr>
</tbody>
</table>

DISEASE HISTORY

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Rubella</td>
<td>Polio</td>
</tr>
<tr>
<td>Mumps</td>
<td>Rheumatic Fever</td>
</tr>
<tr>
<td>Chickenpox</td>
<td>Scarlet Fever</td>
</tr>
<tr>
<td>Asthma</td>
<td>T.B. Contact</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Whooping Cough</td>
</tr>
</tbody>
</table>

This section should be completed by the family physician. Please note any emotional disorders which may influence the pupil's progress.

IMMUNIZATION REQUIREMENTS

In 1969 the State Legislature passed Section 3313.671 of the Revised Code of Ohio, which requires children of school age to be immunized against diphtheria, whooping cough, tetanus, polio, smallpox, rubella, and rubella.

| Smallpox | Rubeola | Rubella |
|---------------------------------|----------|
| Successful | Basic Series | Dates |
| Oral Poliomyelitis | | |
| Other immunizations given but not required | |

MEDICAL EXAMINATIONS

<table>
<thead>
<tr>
<th>Head and Neck</th>
<th>Orthopedic</th>
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<td>Heart</td>
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<td>Abdomen</td>
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<tr>
<td>Extremities</td>
<td>Neurological</td>
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<td>Other</td>
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<tr>
<td>Tuberculin Date</td>
<td>Positive</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Please check the PHYSICAL EDUCATION PROGRAM advised.

1. Regular program of physical education.
2. An adopted program of physical education consisting of only certain of the following activities. Please underline the suitable activities for this pupil.

TEAM ACTIVITIES

<table>
<thead>
<tr>
<th>Basketball</th>
<th>Softball</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Hockey</td>
<td>Speed-Away</td>
</tr>
<tr>
<td>Pool Games</td>
<td>Touch Football</td>
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<tr>
<td>Relays</td>
<td>Volleyball</td>
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</tbody>
</table>

INDIVIDUAL ACTIVITIES

<table>
<thead>
<tr>
<th>Archery</th>
<th>Golf</th>
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<tbody>
<tr>
<td>Badminton</td>
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<td>Bowling</td>
<td>Handball</td>
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<td>Horseshoes</td>
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<td>Casting</td>
<td>Physical Fitness</td>
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<tr>
<td>Dancing</td>
<td>Shuffleboard</td>
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<tr>
<td>Fencing</td>
<td>Swimming</td>
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</table>

<table>
<thead>
<tr>
<th>Table Tennis</th>
<th>Tennis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track</td>
<td>Tumbling &amp; Stunts</td>
</tr>
<tr>
<td>Weight Lifting</td>
<td>Wrestling</td>
</tr>
</tbody>
</table>

3. A period of rest (lying down) or quiet table games.
4. Specific corrective activities for this pupil are advisable.
   Please specify:

OTHER RECOMMENDATIONS AND COMMENTS

Date

Signature of Physician M.D.

From HS-34
APPENDIX F

THE OHIO STATE UNIVERSITY

CONSENT TO SPECIAL TREATMENT OR PROCEDURES FOR MINORS

Protocol No._____

Date_______ Time_______ a.m.

I consent to the performance upon ___________________________________________ born ___________________________________________ the following treatment or procedures: ____________________________

- Problem solving in nutrition
- Group counseling (1) Rational Emotive Education or (2) Behavior Modification or (3) Awareness through feelings, art, music, sounds, and taste

of which part ___________________________ is an experimental (product) (procedure).

This is done as part of an investigation entitled Kent Elementary Eating Habit Program.

This treatment or procedure is to be done by, or under the direction of Dr. Malcolm Holter ___________________________________________ who is authorized to use the services of others in the performance of this procedure.

1. Nature and purpose of the procedure or treatment: To help the child acknowledge his weight problem, cope with this imbalance in a reasonable way, and correct the underlying cause.

2. Other possible methods of treatment: Provision of diet information only.

3. Known risks involved: Guilt and shame if unable to reach his desired weight goal.

4. Possible benefits to the patient: Self-control, learning to solve problems, improvement in the child's attitude and behavior, improved food habits and better health.

STATEMENT OF CONFIDENTIALITY: I understand that the confidentiality of my response will be observed in a manner consistent with the goals of the project and my individual right to privacy.

The above have been explained to me and I understand them. I understand that any further questions I may have concerning the procedure described will be fully answered. Finally, I understand that I am free to withdraw my consent and stop participation in the project at any time. My signature represents a free and voluntary act.

Witness

Signed (parent or person authorized to consent for patient)

Signed (patient)

______________________________

(Investigator)

PA-030
## APPENDIX G

### SKINFOLDS (TRICEPS)

<table>
<thead>
<tr>
<th>Age</th>
<th>Males 85%tile</th>
<th>Males 15%tile</th>
<th>Females 85%tile</th>
<th>Females 15%tile</th>
<th>Male Obese Median</th>
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<th>Female Obese Median</th>
<th>Female Lean Median</th>
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</table>

# Daily Food Diary

Please write down everything you eat or drink.

<table>
<thead>
<tr>
<th>Time</th>
<th>What food you ate/drank</th>
<th>How much you ate/drank</th>
<th>Where you ate</th>
<th>What you were doing</th>
<th>Mood</th>
<th>Eating alone or with whom</th>
</tr>
</thead>
</table>

**NAME**

**DATE**
APPENDIX I

NAME:
BIRTHDATE:
GRADE:
HEIGHT:
WEIGHT:
SKINFOLD (TRICEPS):
MEDICAL INFORMATION:

FAMILY BACKGROUND:

M F B___ S___

Parents employed?

Who does the cooking?

ACTIVITIES:

After school -
Weekend activities -
Transportation to/from school -

FAVORITE FOODS:

How often are these foods eaten?

24 HOUR RE-CALL

Time King Amount Brand Where
<table>
<thead>
<tr>
<th>MILK</th>
<th>AMOUNT</th>
<th>TYPE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>BREAD, CEREAL</td>
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<td></td>
</tr>
<tr>
<td>FRUIT</td>
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<tr>
<td>VEGETABLE</td>
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<td></td>
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<tr>
<td>MEAT, CHEESE, EGGS</td>
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<tr>
<td>FATS</td>
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<tr>
<td>DESSERTS</td>
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<tr>
<td>SNACKS</td>
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<tr>
<td>BEVERAGES</td>
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<td></td>
<td></td>
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<tr>
<td>SUPPLEMENTS</td>
<td></td>
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</tr>
</tbody>
</table>

**COMMENTS:**

Why are you overweight?

What do you think you need to do differently?

What do you think we can do for you?
APPENDIX J

KENT SCHOOL REWARD POINT SYSTEM

Homework

1. Turned in and completed (meals included) 1 pt.
2. Estimation of accuracy 1 pt.

Follows good eating habits based on following criteria 10 pts.

1. Avoids eating when lonely, depressed, bored, angry, tired, etc.
2. Avoids high calorie or forbidden foods
3. Avoids other activities while eating (T.V., phone, reading, physical activity)
4. Avoids eating during preparation
5. Eats only when seated at dinner table
6. Eats only 1 serving of all foods at one time
7. Eats appropriate snacks - low calorie - (apples, oranges, bananas, other fresh fruit, carrots or celery sticks, diet pop) or no snacks at all

Physical Appearance

1. Maintains present weight 1 pt.
2. Gain in weight 0 pts.
3. Lose 1/2 pound/week 2 pts.
4. Lose 1 pound/week 5 pts.
5. Participates in daily exercise 2 pts.
6. Any reduction in body measurement 5 pts. (waist, hips, thighs, arms, chest)
APPENDIX E

A RELAXATION TRAINING SCRIPT

by Arlene S. Koeppen

INTRODUCTION

Today we're going to do some special kinds of exercises called "relaxation exercises". These exercises help you learn how to relax...when you're feeling uptight and help you get rid of these butterflies-in-your-stomach kinds of feelings. They're also kind of neat, because you can do some of them in the classroom without anybody noticing.

In order for you to get the best feelings from these exercises, there are some rules you must follow. First, you must do exactly what I say, even though it may seem kind of silly. Second, you must try hard to do what I say. Third, you must pay attention to your body. Throughout these exercises, pay attention to how your muscles feel when they are tight and when they are loose and relaxed. And, fourth, you must practice. The more you practice, the more relaxed you can get. Does anyone have any questions?

Are you ready to begin? Okay. First, get as comfortable as you can in your chair. Sit back, get both feet on the floor; and just let your arms hang loose. That's fine. Now close your eyes and don't open them until I say so. Remember to follow my instructions very carefully, try hard, and pay attention to your body. Here we go.

HANDS AND ARMS

Pretend you have a whole lemon in your left hand. Now squeeze it hard. Try to squeeze all the juice out. Feel the tightness in your hand and arm as you squeeze. Now drop the lemon. Notice how your muscles feel when they are relaxed. Take another lemon and squeeze it. Try to squeeze this one harder than you did the first one. That's right. Real hard. Now drop your lemon and relax. See how much better your hand and arm feel when they are relaxed. Once again, take a lemon in your left hand and squeeze all the juice out. Don't leave a single drop. Squeeze hard. Now relax and let the lemon fall from your hand. (Repeat the process for the right hand and arm).

ARMS AND SHOULDERS

Pretend you are a furry, lazy cat. You want to stretch. Stretch your arms out in front of you. Raise them up high over your head. Way back. Feel the pull on your shoulders. Stretch
higher. Now just let your arms drop back to your side. Okay, kittens, let's stretch again. Stretch your arms out in front of you. Raise them over your head. Pull them back, way back. Pull hard. Now let them drop quickly. Good. Notice how your shoulders feel more relaxed. This time let's have a great big stretch. Try to touch the ceiling. Stretch your arms way out in front of you. Raise them way up high over your head. Push them way, way back. Notice the tension and pull in your arms and shoulders. Hold tight, now. Great. Let them drop very quickly and feel how good it is to be relaxed. It feels good and warm and lazy.

SHOULDER AND NECK
Now pretend you are a turtle. You are sitting out on a rock by a nice, peaceful pond, just relaxing in the warm sun. It feels nice and warm and safe here. Oh-Oh! You sense danger. Pull your head into your house. Try to pull your shoulders up to your ears and push your head down into your shoulders. Hold tight. It isn't easy to be a turtle in a shell. The danger is past now. You can come out into the warm sunshine, and, once again, you can relax and feel the warm sunshine. Watch out now! More danger. Hurry, pull your head back into your house and hold tight. You have to be closed in tight to protect yourself. Okay, you can relax now. Bring your head out and let your shoulders relax. Notice how much better it feels to be relaxed than to be all tight. One more time, now, Danger! Pull your head in. Push your shoulders way up to your ears and hold tight. Don't let even a tiny piece of your head show outside your shell! Hold it. Feel the tenseness in your neck and shoulders. Okay. You can come out now. It's safe again. Relax and feel comfortable in your safety. There's no more danger. Nothing to worry about. Nothing to be afraid of. You feel good.

Jaw
You have a giant jawbreaker bubble gum in your mouth. It's very hard to chew. Bite down on it. Hard! Let your neck muscles help you. Now relax. Just let your jaw hang loose. Notice how good it feels just to let your jaw drop. Okay, let's tackle that jawbreaker again now. Bite down. Hard! Try to squeeze it out between your teeth. That's good. You're really tearing that gum up. Now relax again. Just let your jaw drop off your face. It feels so good just to let go and not have to fight that bubble gum. Okay, one more time. We're really going to tear it up this time. Bite down. Hard as you can. Harder. Oh, you're really working hard. Good. Now relax. Try to relax your whole body. You've beaten the bubble gum. Let yourself go as loose as you can.
FACE AND NOSE

Here comes a pesky old fly. He has landed on your nose. Try to get him off without using your hands. That's right, wrinkle up your nose. Mark as many wrinkles in your nose as you can. Scrunch your nose up real hard. Good. You've chased him away. Now you can relax your nose. Oops, here he comes again. Right back in the middle of your nose. Wrinkle up your nose again. Shoo him off. Wrinkle it up hard. Hold it just as tight as you can. Okay, he flew away. You can relax your face. Notice that when you scrunch up your nose that your cheeks and your mouth and your forehead and your eyes all help you, and they get tight, too. So when you relax your nose, your whole face relaxes too, and that feels good. Oh-oh, this time that old fly has come back, but this time he's on those wrinkles. Hold it tight now. Okay, you can let go. He's gone for good. Now you can just relax. Let your face go smooth, no wrinkles anywhere. Your face feels nice and smooth and relaxed.

STOMACH

Hey! Here comes a cute baby elephant. But he's not watching where he's going. He doesn't see you lying there in the grass, and he's about to step on your stomach. Don't move. You don't have time to get out of the way. Just get ready for him. Make your stomach very hard. Tighten up your stomach muscles real tight. Hold it. It looks like he is going the other way. You can relax now. Let your stomach go soft. Let it be as relaxed as you can. That feels good - so much better. Oops, he's coming this way again. Get ready. Tighten up your stomach. Real hard. If he steps on your stomach and it is hard, it won't hurt. Make your stomach into a rock. Okay, he's moving away again. You can relax now. Kind of settle down, get comfortable, and relax. Notice the difference between a tight stomach and a relaxed one. That's how we want it to feel - nice and loose and relaxed. You won't believe this, but this time he's really coming your way and no turning around. He's headed straight for you. Tighten up. Tighten up hard. Here he comes. This is really it. You've got to hold on tight. He's stepping on you. He's stepped over you. Now he's gone for good. You can relax completely. You're safe. Everything is okay, and you can feel nice and relaxed.

This time imagine that you want to squeeze through a narrow fence and the boards have splinters on them. You'll have to make yourself very skinny if you're going to make it through. Suck your stomach in. Try to squeeze it up against your backbone. Try to be as skinny as you can. You've got to get through. Now relax. You don't have to be skinny now. Just relax and feel your stomach being warm and loose. Okay, let's try to get
through that fence now. Squeeze in your stomach. Make it touch your backbone. Get it real small and tight. Get as skinny as you can. Hold tight, now. You've got to squeeze through. You got through that skinny little fence and no splinters. You can relax now. Settle back and let your stomach come back out where it belongs. You can feel really good now. You've done fine.

LEGS AND FEET

Now pretend that you are standing barefoot in a big, fat mud puddle. Squish your toes down deep into the mud. Try to get your feet down to the bottom of the mud puddle. You'll probably need your legs to help you push. Push down, spread your toes apart, and feel the mud squish up between your toes. Now step out of the mud puddle. Relax your feet. Let your leg muscles be completely relaxed. It feels good to be this relaxed. Back into the mud puddle. Squish your toes down. Hard. Try to squeeze that mud puddle dry. Okay. Come back out now. Relax your feet, relax your legs, relax your toes. It feels so good to be relaxed. No tenseness anywhere. You feel kind of warm and tingly.

CONCLUSION

Stay as relaxed as you can. Let your whole body go limp and feel all your muscles relaxed. In a few minutes I will ask you to open your eyes, and that will be the end of this session. As you go through the day, remember how good it feels to be relaxed. Sometimes you have to make yourself tighter before you can be relaxed, just as we did in these exercises. Practice these exercises every day to get more and more relaxed. A good time to practice is at night, after you have gone to bed, and the lights are out and you won't be disturbed. It will help you to go to sleep. Then, when you are a really good relaxer, you can help yourself relax here at school. Just remember the elephant, or the jawbreaker, or the mud puddle, and you can do our exercises and nobody will know. Today is a good day, and you are ready to go back to class feeling very relaxed. You've worked hard in here, and it feels good to work hard. Very slowly, now, open your eyes and wiggle your muscles around a little. Very Good. You've done a good job. You're going to be a super relaxer.

The above exercises can be utilized with the child sitting in a chair and/or lying on the floor.
Relaxation exercises designed especially for children can help them to become aware of the feelings of body tension and provide skills to reduce it. Children can be taught how to reduce their muscle tension, and this seems to reduce anxiety as well. Once children develop the skills, they can relax without instructions from a trainer and thereby implement a higher degree of self-control. If successful mastery of relaxation skills works like successful mastery of academic skills, then perhaps a case could be made for improved self-concept as well.
APPENDIX L

HOMEWORK FORM

A
Activating event
Give a brief description of the event or situation you were involved in just prior to experiencing the negative emotion at C. (Example = Overeating)

}\n
B_1
Rational belief
Your preference, wish, desire or bias regarding the event A. What you told yourself you liked or disliked about A.

B_2
Irrational belief
What you added to B_1. What you told yourself A should have been: what you, in your thinking, demanded regarding A.

C
Consequence or emotion
Give a brief description of the feeling or negative emotion (guilt, shame, anxiety, depression, or hostility) that you experienced after the event A.

D
Disputing
In what way is B_2 true? What evidence do you have to prove this? In what way is your B_2 statement an over generalization of B_1?
SUD...Subjective Unit of Discomfort
Rate the % of upsetness you experienced; 0% equals utter calmness and 100% equals total panic or complete breakdown.

Did you become upset about your upsetness?
If so, diagram this in an A-B1 B2-C framework on the reverse side of this sheet.

After event A
After filling out this form