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We hereby recommend that the THESIS prepared under
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CHAPTER I

I N T R O D U C T I O N

The subject of adolescent obesity has received more attention from movies, television, magazines, and advertisements than any other nutritional problem in the last few years. Many adults and adolescents have spent money seeking an effective treatment for obesity. However, some primitive and modern societies view corpulence as an indication of affluence. According to Gordon (21), for centuries obesity was regarded as an enviable achievement that indicated prosperity.

Mayer (38) pointed out that in the American society food is abundant for most people, physical work is sometimes unnecessary, and conditions are ideal for an individual to develop the genetic potential to become overweight. However, overeating and failure to exercise encourage the onset of obesity.

Social ostracism and destruction of a positive self-concept perpetuate what Mayer (38) termed the "vicious circle" of obesity. Normal weight individuals frequently have a negative attitude toward overweight persons. The obese became

become hostile, self-indulgent, passive, and highly emotional. Food consumption increases and physical activity frequently decreases. The result is a continuing pattern of obesity.

The psychological impact of obesity on adolescents may result in distortion of the body image as reported by Stunkard and Burt (62). Relations with family members and peers are severely affected with increased body weight. In addition to the psychological impact there are health hazards associated with obesity. Among these are changes in body functions. Mayer (38) has pointed out the increased risk of developing diseases that are associated with obesity.

The purpose of the present study was to investigate factors predisposing to obesity and the problems encountered by overweight adolescents. It is the author's intent that the findings of the present study may be useful in helping overweight adolescents adjust to their problems, and in helping their relatives and peers to understand those problems.

REVIEW OF LITERATURE

Obesity Defined

Kennedy and Foreyt (32) reported that the word obesity is derived from the Latin Obesus which means to devour. According to Spargo and others (58), obesity is defined as a body weight of 20 per cent above normal weight. Ward (67)

contended that obesity is a weight greater than the observed mean weight of a population based on height and age. Mayer (38) defined obesity as an excessive gain of body fat. Foster (16) stated that if 25 per cent or more of the body's weight is fatty tissue, men are overweight, and if 30 per cent of the body tissue is fatty tissue, women are overweight. Bryans (8) found that obesity occurs when there is a build up of adipose tissue and weight to exceed 15 per cent of the normal weight for age, height, and sex. According to Bogar (5), obesity is malnutrition resulting from a disorder in assimilating food. Mayer and Thomas (41) were of the opinion that a powerful regulatory system exists that balances energy intake to energy expenditure. The result of an imbalance in this system is the build up of body fat leading to obesity. Becker (3) defined obesity as having more weight than needed for body build.

Prevalence of Obesity

A recent study published in the Journal of the American Medical Association (50) gave an estimate that 30 per cent of the American adults between 40 and 60 years of age were 20 per cent overweight in 1959. Kennedy and Foreyt (32) estimated that one person in 20 weighed at least 20 per cent above the desirable weight. In 1966, the Metropolitan Life Insurance Company (44), in the publication Four Steps to Weight

Control, estimated that at ages 30-39, one out of every four adults is 20 per cent or more above the desirable weight. Foster (16), in a study conducted in 1969, reported that about 20.0 per cent of the population is overweight (about 10.0 per cent above normal weight), 10.0 per cent is obese (about 15.0 per cent above normal weight), and 3.0 per cent is seriously obese (more than 20.0 per cent above their normal weight). Corbin and Pletcher (12) and Sebrell (57) have re-emphasized the prevalence of obesity in America. McLaren (43) noted that only one in 100 of the obese individuals is overweight due to metabolic disorders and these disorders can often be corrected medically.

Teen-agers who are overweight encounter more problems than other adolescents. A study conducted by Christakis (11) noted that of the 1,495 white female subjects aged 20-60 years, 22 per cent were obese before puberty, 11 per cent as teen-agers, 20 per cent after the age of 20, and 16 per cent of the obesity was associated with pregnancy. Spargo and associates (58) estimated 2,947,000 adolescents of 28,131,000 adolescent Americans as being overweight.

The younger the age at which the individual becomes obese, the fewer the chances of losing weight successfully as the individual matures. An investigation by Bogar (5) revealed that children who are obese at 10 or 12 years of

age will usually become obese adults. Beaton (2) found that some adolescents are difficult to control with respect to diet and physical activity and usually have increased susceptibility to obesity. Hathaway (25), however, found that sometimes obesity corrects itself as the adolescent body matures.

Spindler (59) stated that more teen-age girls are overweight than are teen-age boys. In a study of 6,000 youngsters conducted by Johnson, Burke, and Mayer (30), 9.0 per cent of the boys were obese while 12.5 per cent of the girls were obese. Hathaway (25) supported Spindler's findings that more girls than boys are overweight. In an Iowa study conducted by Hathaway, 19 per cent of the nine-year-old girls were overweight, but the incidence increased to 44 per cent for girls at age 16. At age nine, 8.0 per cent of the boys were overweight, while 19.0 per cent of boys aged 16 were overweight. Canning and Mayer (9) reported obesity among high school seniors from middle class communities as 23.3 per cent for girls and 18.0 per cent for boys. In 1969, Pargman (52) made a study of the incidence of obesity among college students. Fifty-six freshmen, 14 females, and 42 males, or 2.4 per cent of the total sample, were obese. A majority, 95 per cent of those who were obese, were females.

Physical Complications of Obesity

The physical complications that result from obesity are many. Spargo, Heald, and Peckos (58) pointed out that obesity at age 14 may cause a degenerative process in the coronary arteries that may kill by age 44, initiate metabolic disorders of the pancreas and liver, and seriously distort the emotional-psychological balance of the individual.

According to an editorial in The Journal of the American Medical Association (50), obese individuals have a greater than 40 per cent chance of dying from heart disease, a 30 per cent chance of dying from coronary artery disease, and a 50 per cent chance of death from cerebrovascular disease. Kennedy and Foreyt (32) supported these findings. Henschel (26) found that fat interferes with heat exchange between the air and the body, therefore, the obese individual is more susceptible to heat exhaustion than are normal weight individuals. According to Bogar (5), heart disease, low back pain, and even social ostracism are tremendous problems of obesity. All of these factors make obesity in children and adolescents of primary concern.

Factors Contributing to Incidence of Obesity

Modern food habits, attitudes, and advertising are factors that influence the incidence of obesity in teen-agers.

The habits of missing breakfast, eating and drinking between meals, and overindulgence in high-calorie foods, and foods low in nutritive value are common ways of living.

The cultural and social patterns of obesity influence an adolescent's chances for becoming overweight. Many obese adolescents inherit the tendency to obesity from their parents. Obesity progresses from childhood through adolescence.

Sedentary habits, transportation facilities, decreased recreational interests, and spectator sports influence the low expenditure of energy that supports obesity. Many overweight individuals have an imbalance between the amount of energy expended and the amount of food energy consumed.

Hereditary Patterns.--According to Spargo and others (58), parental genes have much to do with initiating obesity in children. Mayer (39) stated there is a 10 per cent chance of becoming overweight when the parents are average in weight, a 50 per cent chance if one parent is obese, and the risk rises to 80 per cent if both parents are obese. Sebrell (57), Burch (7), and Gordon (21) reaffirmed that obesity "runs in families." Mullins (47), in a study of 373 subjects, found that obesity frequently occurred among the relatives of the obese adolescent with 50.0 per cent of the juvenile group having obese fathers, as compared with only 2.0 per cent of the normal

group. In the normal group there was a lower incidence of obesity among all the relatives, and this was most marked in the father and the mother. The investigations of Foster (16) supported these findings. A study conducted by Johnson, Burke, and Mayer (30) revealed that the average weight of the parents of obese girls was above the "ideal" weight as defined by the Metropolitan Life Insurance Company.

Guerney (22) found that of the 63 overweight women studied, eight were obese from birth, and four since puberty. Guerney estimated that 19 per cent of the adult cases of obesity exhibited adolescent obesity. Le Marquard (34) supported the fact that obesity may begin at adolescence or at an early period. Many overweight girls studied by La Marquard remained obese after adolescence. Mullins (47) found that 22.0 per cent of the adolescent obese individuals married an obese spouse as compared to 4.0 per cent of a group of individuals who were normal in weight.

According to Asher (1), extreme overweight at any age is a serious problem. Asher studied the clinical history of the onset of obesity and discovered that those who were obese throughout their school years were obese as babies. Bryans (8) stated that the obese have normal birth weight and birth length, but are 1.5 pounds heavier at one year of age than

normal weight individuals of the same length. This difference of 1.5 pounds is statistically significant. An editorial in the British Medical Journal (64) stated that infants overweight during the second six months of the first year of life are likely to be overweight at five years of age.

According to Mayer (38), identical twins are genetically the same individuals. Gordon (21) reported a study of twins who were normal in birth weight but later became obese. The investigator found that identical twins raised together varied 1.0 per cent in body weight, while those raised separately varied by only 3.0 per cent in body weight. Mayer (38) reported a study conducted by Newman concerning the differences in body weight between fraternal twins and identical twins. Fraternal twins varied more in body weight than identical twins. Additional studies conducted by Newman of identical twins, separated since childhood, re-emphasized that both environmental and genetic factors influence body weight.

Mayer and Thomas (41) found that the obese and non-obese differ in physical types. The obese person has a larger skeleton, more muscle mass, and usually shorter, broader extremities than normal weight individuals. Mayer (39) reported that the wrist breadth, ankle breadth, and hand breadth are comparably larger for the obese than the non-obese. Mayer stated that "girls with long, narrow hands

never seem to be obese." The obese have larger arm and calf muscles but with much less muscle tone than normal weight individuals. These studies emphasize the importance of genetic factors in determining obesity susceptibility.

Cultural and Social Patterns.--Goldblatt, Moore, and Stunkard (18) investigated the relationship between social factors and obesity. The survey of 1,660 adults revealed that body weight is consistent with social status. These authors found that almost one out of three obese females were of the lower social class. Low incomes and low educational levels were found to affect nutrition and obesity. In a study of 110,000 people conducted by Weinhaus (68), the incidence of obesity was seven times more common among women of the lowest socio-economic group than among those of the highest socio-economic group.

Goldblatt, Moore, and Stunkard (18) also found a difference in obesity patterns among religious groups. Lutherans, for example, were more often obese, 24.0 per cent, than the Episcopaplians, 3.0 per cent. This study further supports the influence of cultural and social patterns on obesity.

Eating Patterns and Practices.--According to Mayer (39), the types of foods eaten are an important aspect in

weight control. Foster (16) found that foods selected by the obese are the result of family cultures. Families of the obese usually enjoy the rich calorie-filled foods more often than the non-obese families, and these families set eating patterns that produce obese children. Goldman and others (19), and Bryans (8) reaffirmed this fact.

An editorial in the British Medical Journal (64) emphasized the fact that parents need advice on feeding infants because rapid growth of weight in infants is not desirable. The diet of infants should contain large portions of meat, fish, eggs, fruits, and vegetables, but should not contain great quantities of bread, potatoes, cereals, puddings, sweets, and sweetened drinks.

Mayer (40) stressed the fact that the adolescent diet that includes fruits, vegetables and milk is ideal. However, the overweight person is usually the one who is accustomed to large servings of eggs, meats, fried foods, bacon, and carbohydrate foods, all of which contribute extra fat to the total body weight. Leverton (35) was of the opinion that children learn to choose foods that are high in energy value but low in other nutritive values, thereby contributing to the incidence of obesity. Overweight children develop an imbalance between the number of ways foods are used and the times of day foods are used. The increased buying power of children, the extensive number of highly flavored foods

available to children, the permissiveness of parents, and the lack of nutritional knowledge make it easy to learn to select foods low in nutritive value. Leverton (35) contended that there is a fortunate trend toward allowing children to make choices within the Type A pattern for school lunches. Students acquire realistic experiences in making desirable food choices while at school. Often, a la carte service does not offer a good guide for selecting foods in school.

People differ in their orientation to food and eating patterns. Certain orientations produce obesity while others do not. The nutritional knowledge of mothers as well as the employment status may contribute to a positive or negative nutritional orientation of children. A study of 422 children of seventh, eighth and ninth grade levels, conducted by Morse and others (46), indicated that as the educational level of the mothers increased, the nutritional knowledge also increased. Of the 238 mothers participating in the study, 63 combined employment with their homemaking activities. Working mothers and mothers with limited nutritional knowledge may have children who learn to select unbalanced diets. Studies by McLaren (43), and Young and associates (69) supported these findings.

According to Bogar (5), girls are afflicted with malnutrition more often than are boys. Girls reach puberty

earlier than boys, resulting in an increased need for calories at a younger age. There is a rapid decrease in caloric requirements immediately following puberty. This is the critical time when girls should adjust the diet to individual caloric needs. During adolescence, girls have an increased urge to be slender which results in poor dietary selections. Milk is not consumed by some adolescents because it is considered fattening and childish. Foods high in carbohydrate, which do not provide satiety value, are frequently consumed at meal times. The result is more snacking later, often leading to obesity. The investigations of Gallagher (17) reaffirmed these findings.

Epprawright (15) reported that many teen-agers skipped breakfast because of oversleeping, not enough time for dressing, and rushing for a bus. Skipping breakfast means that more snacks are eaten during the day. Maxfield and Konishi (37) found that when the obese do eat breakfast, much larger breakfasts are consumed. A study by Hinton and others (27) revealed that approximately 44 per cent of the girls gave not being hungry as a reason for missing breakfast.

Additional factors influencing the eating habits of girls were studied by Hinton and others (27). Snacks found to be eaten frequently were candy, soft drinks, potato chips, and cookies for the 14-year-olds; soft drinks, ice cream,

fruit, and milk for the 13-year-olds; and ice cream, cookies, cake, candy, and soft drinks for the 12-year-olds. Eppright (15) agreed that teen-age girls have poor diets.

Spargo, Heald, and Peckos (58) reported the results of a summer camp called Seascap, organized for overweight teen-age girls, located at Cape Cod, Massachusetts. Girls in good mental and physical health, and ranging in age from 11 through 18 years participated. Weights ranged from 84 to 170 pounds with a mean weight of 118 pounds. Discussions of the principal food groups and the recommended amounts for each age were planned. The nutritionist related the discussions to personal appearance, clothes selection, and posture. Calories were not discussed because calories are not the problem in obesity. The investigators agreed that portion control is the most important aspect in weight reduction because mastication itself is enjoyable to overweight individuals. There may be a psychological impact when favorite foods are restricted in the diet which could produce inability to control weight. The campers at Seascap were given desserts occasionally which included candy bars and other snacks. The girls were taught how to gradually include these snacks in the diet.

Gallagher (17) reported the need for calories is greater during adolescence, thus the inactive adolescent who continuously eats to supply needed calories soon gains weight.

Twenty-eight obese girls and 28 non-obese girls studied by Johnson and others (30) were compared for caloric intake and energy expenditure. Results showed that obese girls consumed fewer calories than the non-obese. A lower protein intake accompanied lower caloric intake for the obese. The obese, however, were less active than the non-obese. Food intake of obese adults and children may be far above needs and is stored as fat if not used for energy. Leverton (35) suggested that the high energy foods raise a child's energy requirements far above other nutritional needs. Foster (16) related that some people are able to remain thin because they automatically or consciously control the amount of food intake. Mayer (40) is of the opinion that western eating habits that include sitting for three meals a day, and choosing the amount of food to be eaten at a given meal, help to create the need to control food intake.

A study of eating behavior of the obese children by Goldman and others (19) indicated that the urge to eat may be triggered by external stimuli. The non-obese, however, are stimulated by physiological needs based on food deprivation. Schacter (56) stated:

External or nonvisceral cues, such as smell, taste, or the sight of other people eating, and the passage of time affect eating behavior to a greater extent in obese subjects than in normal subjects.

In a study conducted by Nisbett (48), underweight, overweight, and subjects normal in weight had a chance to eat as much food as desired. The overweight subjects ate considerably more when offered more food than did the underweight and normal subjects. When less food was offered, the obese ate as much as or less food than the underweight or normal subjects. Nisbett contended: "These findings suggest that the obese individual will habitually eat everything he is served in a typical meal. His susceptibility to external cues should compel him to clean his plate." A similar study by Schacter and others (56) revealed that the obese subjects eat just as much when the stomach is full as when it is empty.

A study of tasting ability conducted by Nisbett (48) revealed that when food was rated as generally good, the obese ate more than did subjects normal in weight. When, however, the food was rated as generally bad, the underweight subjects ate more than obese subjects or subjects normal in weight. The obese then would seem to have a tasting ability different from that of the non-obese. The overweight may choose to eat more of the best foods and always in the best places. Goldman and others (19) reported that obese students at Columbia University chose restaurants and delicatessens rather than the university dining halls because of the choice of better food. A similar study by Schacter and others (56) indicated that when food appears uninteresting, or eating

food seems unsatisfying, the obese will limit the amount of that food eaten.

According to a study by Hinton and others (27), time influences the eating behavior of the obese. Snacks were consumed more often in the afternoon and evening than in the morning. Johnson and others (30) revealed that both the obese and non-obese had snacks in the afternoon and before going to bed. Hinton and others (27) reaffirmed the finding that snacks are eaten more often in the afternoon and evening than in the morning. Thirty per cent of the obese girls studied by these investigators consumed snacks at these times. Seven or 8.0 per cent of the girls reported skipping noon and evening meals because they were not hungry. When questioned about their enjoyment of meals, 64 per cent reported enjoying breakfast, 89 per cent enjoyed the noon meal, and 86 per cent enjoyed the evening meal.

In a study of 25 obese subjects, Stunkard (61) found 64 per cent reported a night-eating syndrome. Three of 40 subjects indicated binge eating, and 40 obese subjects reported eating-without-satiation. Stunkard explained each syndrome as follows: the night-eating syndrome is characterized by morning anorexia, evening hyperphagia and insomnia; binge eating occurs when enormous food amounts are consumed in a short period of time, and usually occurs at times of

emotional stress; eating-without-satiation means that it is difficult to stop eating once started, and this may not be connected to stress. Maxfield and Konishi (37) also found that the obese eat more during the evening hours. Schacter and Gross (56) reported that on weekdays the eating pattern of the obese is rigid and time bound. On weekends, time has no effect and the obese vary eating times.

Nisbett and Kanouse (49) studied the shopping habits of the obese, to observe differences in amounts of food purchased. Shoppers in a New Haven supermarket were interviewed and observed while marketing. Results indicated that individuals of normal weight bought more groceries as their state of deprivation increased, whereas overweight individuals purchased fewer groceries. These obese individuals bought more groceries if they had recently eaten than if they had not recently eaten. According to Nisbett and Kanouse, "This finding suggests that for the overweight, the process of eating may actually trigger a concern with food."

Activity Patterns.--According to a 1970 editorial found in the British Medical Journal (64), babies differ in energy output. Active babies spend more time crying and kicking and usually continue with an active expenditure of energy. Less active babies sleep and rest more. When a less active baby

becomes an obese child, physical activity continues to decrease.

Bruch (7) studied the physical activity levels of obese children by observing the subjects and interviewing the parents. The children were observed to have a low level of physical activity. Weinhaus (68) noted that children who are overweight do not compete in athletics as well as normal weight individuals. Obese high school girls spend more time in sitting and engaging in nonstrenuous activities. When these girls participate in sports, the activity level is lower than for their non-obese peers. Many girls, including the overweight girls, have written permission from physicians to be excused from participating in physical education at school. Since machines do much of the heavy labor in the home, few obese teen-agers are involved in household chores. Even in rural areas, labor-saving devices decrease energy expenditure for the teen-ager. The primary concern with overweight teen-agers is finding ways to encourage them to spend more time in physical activity and less time sitting.

Goldsmith (20) noted that it is possible for an individual to eat too much and expend too little energy. The balance between caloric value of the food consumed and the energy expended in activity and in maintenance of metabolic processes determines whether the body weight is increased or

decreased. According to Chirico and Stunkard (10), obese subjects prefer sedentary activities. The study revealed that the majority of those who watched television more than 15 hours a week were obese men and women. In another study by Bloom and Eidex (4), overweight and lean subjects were studied by recording the time in bed, time out of bed, and time standing. Results indicated that the overweight spent more time in bed or less time on their feet. Bloom and Eidex remarked:

These results show that the obese spent 21.7 per cent and the lean 36.0 per cent of the day in a position which might raise their energy expenditure above normal. The time standing in comparison to the time out of bed is 17 per cent greater for the lean patients. Thus in a random study without regard to occupation, a group of seven obese subjects were found to spend almost one hour per day longer in bed and significantly less time on their feet each day.

Maxfield and Konishi (37) found that the obese may be less active on weekends than during the week. Mayer and associates (42) reported that the incidence of obesity usually occurred during the winter, a time of little physical activity.

Bryans (8) reported that overweight adolescents enjoy sedentary activities and are interested in reading, music, art, or quiet games rather than strenuous physical activities. According to Bryans, studies of human activity patterns show

that lean people move more quickly, have more purposeless, jerky activities with greater muscle tone than do obese individuals that are quietly expending energy.

Overweight adolescents usually burn fewer calories than their normal weight peers. A balance between exercise and nutrition can control adolescent obesity. Maxfield and Konishi (37) outlined a study that indicated the obese did not consume more calories than non-obese persons but were actually less active. Johnson, Burke, and Mayer (30) also found that the obese may eat less but spend two-thirds less time in physical activities. Bloom and Eidex (4) stated that more calories are burned by the obese than by the non-obese in performing a given task. If the obese lowered total calorie input and increased energy output, obesity would not be a problem. These investigators observed eight obese persons and four non-obese persons while the subjects were walking. Results indicated that the overweight burned more calories per activity than the lean.

In a study of 50 fifth grade students in the fall of 1966 in Toledo, Ohio, Corbin and Pletcher (12) found that the obese are less active than the non-obese with no difference in the amount of fat, protein, or carbohydrate consumed by the two groups. Beaton (2) concluded that obese adolescents are difficult to control with respect to diet and

physical activity and usually have increased susceptibility to obesity. Bray (6) studied 14 grossly obese patients to discover energy expenditure in relation to dietary restrictions. Results indicated that physical activity decreased with decreased intake of food. The body does adapt to caloric restrictions in the diet by decreasing its energy needs.

In a study by Henschel (26), about 15 per cent of the obese men and 25 per cent of the obese women could not be considered for jobs requiring the ability to move rapidly or climb. Fatigue, stress, and strain result as the individual tries to adjust to work space and machines designed for normal weight persons. Job security is threatened by inability to move with the dexterity of the non-obese.

Effects of Obesity on Personality of Teen-agers

Understanding what causes overweight as well as how the obese feel may help in evaluating the problem. Christakis (11) noted that body image or how an individual views himself and thinks the world views him, may be related to psycho-social factors of importance in the pathogenesis of obesity. Lewis and Doyle (36) characterized the obese as sensitive, anxious, and defensive about being overweight.

Emotional Problems.--Wagonfield and Wolowitz (66) reported that members of TOPS (Take Off Pounds Sensibly) view obesity as an emotional problem. Suczek (63) stated that extreme obesity is associated with internal psychological problems accompanied with distress, while mild obesity is related to denial of anxiety and few personal difficulties as recognized by the individual. An editorial found in The Journal of the American Medical Association (50) reported that obese individuals are often hostile, frustrated, or severely depressed. A study by McLaren (43) revealed that one of three popular misconceptions about the obese is that they are happy people. Actually, they are very unhappy and remain so until they lose weight. Becker (3) reaffirmed McLaren's findings:

Contrary to the popular impression of the jovial obese person who just loves to mix with people, most overweight children and adults show retardation in their ability to maintain social contacts. They are often lonely people although sometimes superficially gregarious and at times even charming. They suffer considerable anxiety and conflict in regard to many aspects of their interpersonal relationships. This is usually accompanied by more or less unconscious self-hate, self-contempt, and self-rejection.

As pointed out by Weinhaus (68), the obese are often ridiculed with such names as "fatty," "tubby," and other similar terms. The cruelty the obese experience continues into adolescence when girls who are slightly overweight are often called unpleasant names by peers.

Self-Concept or Self-Image.--Stunkard and Burt (62)

revealed some of the attitudes and psychological differences between the adult and juvenile obese. The adolescent often has a poor self-image that is difficult to correct after maturation. Unfavorable comments from parents and peers may critically disturb the body image.

Gallagher (17) emphasized that the period of adolescence brings rapid growth, continuous body changes, and changed psychological views. A need for acceptance by peers is expressed by the desire to look nice to others, and to be recognized by others. Kline and others (33) were of the opinion that the prevention of childhood obesity could prevent adult obesity. These investigators planned a program for obese Negro girls designed to increase their self-confidence, and teach nutrition along with physical grooming. The girls indicated interest, and actual self-improvement was apparent in the physical, social, and emotional behavior. When adolescents are not interested in appearance they usually feel that no hope remains for their appearance. Many obese boys, and especially obese girls, have an obese "in group" of friends and tend to isolate themselves from their slender peers. Obese individuals seem to admire thin people and show contempt for fat people.

In a similar study, Canning and Mayer (9) studied the attitudes of obese high school and junior high school girls toward obesity. The obese students showed concern about weight problems. In responding to "the real reason that boys did not ask her out," 32 per cent of the obese answered that weight and figure were the problems compared to only 13 per cent of the non-obese who gave this response. The obese are obsessed with overweight and methods of controlling weight.

Some colleges use obesity as one of the criteria for admission. Both the overweight and slim apply to colleges but the obese are less frequently accepted. Canning and Mayer (9) noted that the obese high school student is capable of academic achievement equal to that of the student of normal weight, but the obese college applicant to the "prestige" school meets rejection because of conscious or unconscious bias on the part of the college admissions officer or high school guidance counselor who is aware of such prejudices and therefore suggests that his advisee apply elsewhere.

Mayer (38) discussed tests given to 100 obese girls attending summer camps at Cape Cod, Massachusetts. These tests were compared to similar tests given to non-obese girls from nearby camps. In the word association test administered by Monello and Mayer (45), obese girls showed extreme sensitivity

to such words as calories, diet, reducing, fattening, fat, heavy, and overweight. Since mass media constantly remind individuals that obesity is undesirable, these responses may be due to social pressure.

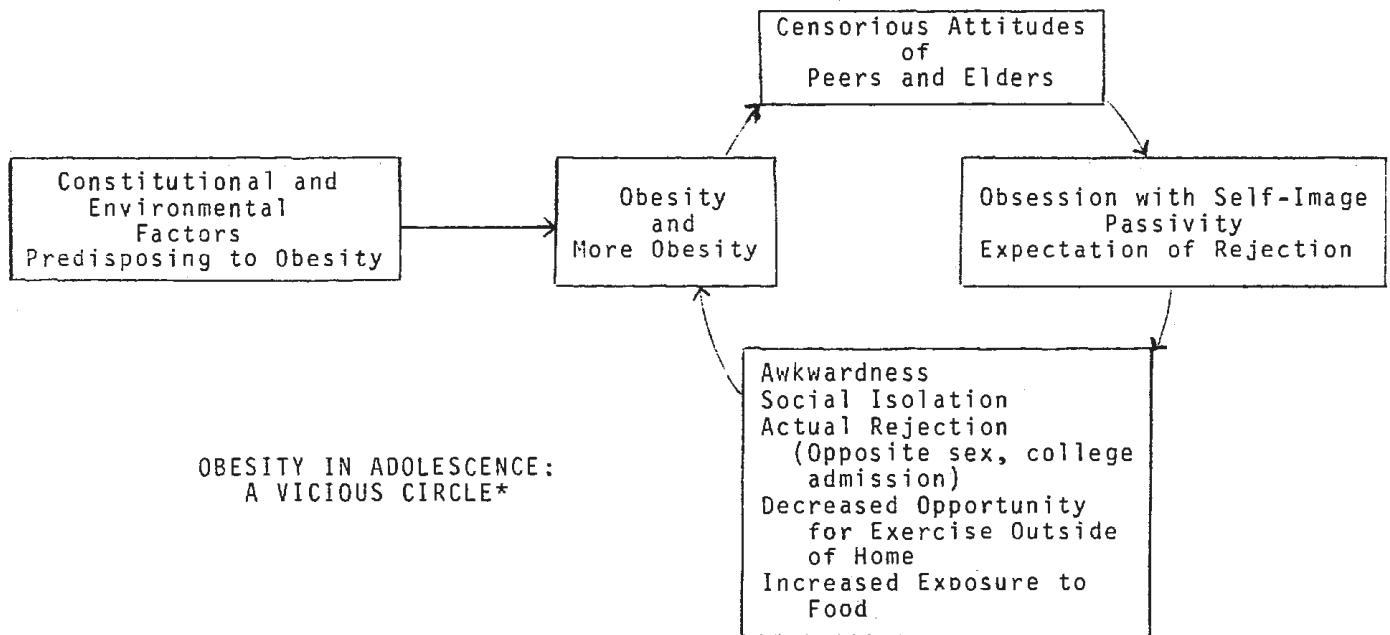
Responses to the sentence completion test revealed that the obese girls were passive, while the normal weight girls gave active responses. Passivity was interpreted by Mayer (38) to express lack of self-assertiveness, and initiative. Another test using incomplete sentences further emphasized the poor self-concept of the obese. The sentences, "When I am feeling bad, I . . .," and "When my mother left, I . . .," revealed that the obese again answered passively using the words "cry, sleep, sit, sulk, and feel lonely." The normal weight individuals, however, used such active phrases as "work harder, try my best, talk to someone, visit friends, and clean my room."

Both groups of overweight and normal weight persons participating in the study conducted by Mayer (38) were shown pictures of family scenes. The obese interpreted a picture of a woman passing a jar to a boy as a boy receiving cookies from the mother. The non-obese girls interpreted the same picture as a boy getting his own cookies.

In the Mayer study (38), the obese girls did not identify other pictures as obvious family scenes. The overweight

girls appeared to block the family concept because of existing conflicts within their own family circles. In describing a woman and girl scene the obese labeled it as just that, a woman and a girl, while the non-obese labeled this scene as a mother and a daughter. Mayer was of the opinion that the mentioning of the family scene may be associated with unpleasant emotions and indicated the existence of more conflicting attitudes toward the family than was evident for the non-obese. Some members of the non-obese group did associate negative emotions with the family concept, but the obese girls seemed to be more extreme in the association. Mayer stated that the obese girls more frequently live in homes in which they are made to feel guilty because they are overweight. The family then is not a source of acceptance for overweight individuals. Obese adolescents attempt to isolate or withdraw themselves from the family concept. When the obese experience rejection or isolation with family members as well as peers, the resulting behavior is withdrawal.

Mayer (38) summarized the continuous cycle leading to withdrawal in the schematic figure shown on the following page. The factors predisposing to obesity are adversely affected by the attitudes of peers and family members, poor self-concept caused by rejection, social isolation, and increased need for food. Mayer contended that the only



*Schematic representation of the factors affecting obesity in adolescence as illustrated by Mayer (38).

recourse for the obese is to perpetuate the condition which created the situation in the first place.

Eating Patterns and Emotions.--The intake of food is influenced by emotional problems. Weinhaus (68) recorded the following comments by some obese adults who overeat: "Sometimes when I stand at the icebox gorging myself on cold mashed potatoes--you know how they taste--I hate myself;" "The only pleasure I get in life is food, the way I feel, I would rather die than to give up eating." Schacter (55) was of the opinion that obesity may result "from a failure to differentiate between hunger feelings and feelings of anxiety created by emotional stress."

Mullins (47) reported that the obese react to nervous tension and worry by increased food intake. Mild and severe cases of stress cause increased food intake. Stunkard (61) re-emphasized that obesity is influenced by emotional depression. Since the obese experience the night-eating syndrome, the majority of the calories are consumed during periods when depression is more marked. Johnson and others (30) reported a case of a slim husband and an obese wife in which the husband lost 13 pounds in weight and the wife gained 26 pounds before their worry ended. According to Stunkard (61), differences in psychological and endocrine factors explain why some people gain weight and others lose weight during periods of grief or

emotional trauma. Mullins (47) noted that a high percentage of the juvenile obese answered "yes" when asked if appetite increased when nervous or worried. Becker (3) stated:

Excessive eating becomes a form of acting out unconscious conflicts which can find no other solution or expression. They frequently feel a deadness, an emptiness, and a lack of interest in living. They seek self-gratification desperately through compulsive eating and have little confidence in their ability to develop self-expression along some creative lines.

According to Burch (7), mothers play dominant roles in the emotional and nutritional development of family members. Mothers or fathers may exert parental pressures that cause children to overeat. As children mature, parents may condemn the obesity of adolescence produced and influenced by earlier pressures in childhood.

Implications for Helping the Obese

Implications from the studies of adolescent obesity are that personality development has to be understood as a background for determining the etiology of obesity before heredity, physical activity, and food selection patterns are considered. Mayer (39) identified the obese as composing a minority of the people in the United States but a group having serious problems in gaining peer recognition. This minority consists of hundreds of thousands of obese boys and girls who look significantly different from their slender peers.

Mayer (38) stated that

Interpreting personality traits observed among obese adolescents to be a result of their obesity, rather than a cause seems even more valid when one remembers that obese young people in the United States are under constant pressure to become something they are not.

As pointed out by Mayer (38), it is a catastrophe for genes to predispose obesity for adolescents, for parents to exert psychological pressures, for food to be freely available, for popularity to be so important, and for society to ostracize the confused obese adolescent.

Mayer (39) suggested that one solution to the problem of obesity is smaller and more frequent meals rather than three meals a day with snacks. Since most snacks are eaten at night, this investigator found that an after-dinner snack is permissible. Positive assurance from the parents in the selection of good snack foods is of great importance.

According to Mayer (38), adolescents are extremely susceptible to food fads and nutritional quackery. However, overweight adolescents should not be allowed to take reducing pills or go on reducing diets unless a physician is consulted. Many girls go on diets deficient in protein and iron that predisposes the condition often associated with anemia.

Although the amount of food intake is important in controlling adolescent obesity, the adolescent needs help with

emotional problems and continuous encouragement to attain greater physical activity. Studies revealed that both overweight and normal weight individuals often consume the same amount of calories, but the obese exercise less frequently. The problem then is motivating the physical activity level of the obese. Mayer (38) reported a study of several hundred obese children who were reduced by increased physical activity levels.

From the extensive studies of Mayer (38), it is apparent that parents must be counseled in the problems of overweight adolescents. Spargo, Heald, and Peckos (58) offered a two-day seminar to parents of the obese girls in a study conducted at Seascap, Massachusetts. The seminar suggested that love from the parents, listening to problems, and insuring respect as important for readjusting the self-image of overweight individuals.

STATEMENT OF THE PROBLEM

This study was focused on the overweight adolescent. The period of adolescence brings rapid growth and physical changes that strongly affect the emotional development of teenagers. When adolescence is complicated by obesity, the emotional problems increase and may continue throughout life.

Lack of knowledge concerning actual causes of obesity leads to many misconceptions. Little emphasis is placed on

acquainting adolescents with sufficient knowledge of the problem.

The present study was designed to determine and evaluate causes and effects of adolescent obesity. A study of factors related to the prevalence and some of the contributing factors of obesity may be useful in helping overweight adolescents to adjust to their problems. Specific purposes of the study were:

- 1) To determine differences between overweight and normal weight individuals in eating patterns, types of foods preferred, and frequency of food consumption.
- 2) To investigate differences between the obese and non-obese in patterns and types of activity.
- 3) To compare personality traits and self-image patterns of overweight and normal weight individuals.
- 4) To analyze certain of the factors investigated in relation to family background patterns and sex differences.

CHAPTER II

P R O C E D U R E

The overall objective of the present study was to determine and evaluate some of the factors contributing to adolescent obesity.

Specific purposes were:

- 1) To determine differences between a group of obese and non-obese adolescents in eating patterns, types of foods preferred, and frequency of food consumption.
- 2) To investigate differences between overweight and normal weight individuals in patterns and types of activity.
- 3) To compare personality traits and self-image patterns of the obese and non-obese.
- 4) To analyze certain of the factors investigated in relation to family background patterns and sex differences.

The sample, which included 61 adolescent boys and girls, aged 13 to 15 years, enrolled in two classes of Language Arts and one class of Homemaking, was chosen for the following reasons:

- 1) Observations revealed that many adolescent students in the community were overweight.

- 2) Snacks and meals eaten at school by adolescents indicated that many preferred starches and sweets.
- 3) Adolescents with weight problems were observed to have fewer social contacts in class.
- 4) Observations of classroom activities indicated that overweight adolescents participated in fewer physical activities.

Each student completed a questionnaire form, "Survey of Self-Concepts and Eating and Activity Patterns of Teen-Agers," designed to contain information about food habits, self-concepts, physical activities, and personal background information. The questionnaire consisted of the following four parts:

- Part I Eating Patterns and Practices
- Part II Self-Image Index
- Part III Activity Patterns and Practices
- Part IV Personal Background Information

In Part I of the questionnaire form, the students checked the method of preparation best liked for a list of vegetables, meats, and fruits commonly consumed. The students indicated the frequency of consumption of a list of snack foods by checking one of three categories: "frequently," "sometimes," and "never." The time of day during which snacks were eaten was recorded. The foods eaten for breakfast, lunch, and dinner for the preceeding day were listed. The students

checked "yes" or "no" responses to a list of questions concerning breakfast, lunch, and dinner eating habits.

Part II examined the self-concept of each student. Columns of "frequently," "sometimes," and "never" were checked by students to indicate feelings about themselves, their family members, and their friends.

Information about adolescent activity patterns and practices was secured in Part III of the survey form. Students checked a list of activities frequently performed around the house.

Personal background information concerning the number of family members, type of family dwelling, and number of overweight family members was obtained through the use of Part IV. Students checked "yes" or "no" responses for information concerning occupational status of the mother.

The students were informed that the questionnaire was not a test. Each student was assigned a number in order to keep the information confidential. The school nurse and a nurse from Bishop College of Dallas weighed, and measured the height of each student participating in the study.

Data were evaluated statistically. Differences between overweight and normal weight individuals in eating patterns,

activity patterns, and emotional problems were examined for possible relationships.

A copy of the survey form follows.

S U R V E Y O F S E L F - C O N C E P T S A N D
E A T I N G A N D A C T I V I T Y P A T -
T E R N S O F T E E N - A G E R S

PART I: EATING PATTERNS AND PRACTICES

Check the column which most nearly describes your eating patterns and practices. This is not a test.

How Do you usually like the following foods prepared?

Food	Method of Preparation Best Liked						
	Baked	Fried	White Sauce	With Butter	With Bacon	Raw	Boiled
<u>Vegetables</u>							
Potatoes							
Carrots							
Green beans							
Turnip greens							
Broccoli							
Hominy							
Okra							
Squash							
Onions							
Black-eyed peas							
Lima beans							
Spinach							

Food	Method of Preparation Best Liked					
	Baked or Roasted	Fried	Stewed or Boiled	Sand-wiches	Broiled	Other
<u>Meats</u>						
Ground meat						
Steak						
Chicken						
Bacon						
Liver						
Bologna						
Beef						
Pork						
Tuna						
Ham						
Food	Method of Preparation Best Liked					
	Raw	Cooked	Sugar Added	Other		
<u>Fruits</u>						
Apple						
Avocado						
Peach						
Tomato						
Raisins						
Prunes						

Food	Method of Preparation Best Liked			
	Raw	Cooked	Sugar Added	Other
<u>Fruits</u>				
Strawberries				
Orange				
Pineapple				
Cantaloupe				
Watermelon				

Please check (x) if you eat these foods for snacks.

Snacks	Frequently	Sometimes	Never
Candy			
Fruits			
Popcorn			
Fritos			
Pizza			
Ice cream			
Cake			
Pie			
Hamburger			
Hot dogs			
Sandwiches			
Potato chips			

Snacks	Frequently	Sometimes	Never
French fries			
Soft drinks or Kool-Aid			
Cookies			
Sweet rolls or doughnuts			
Malts or shakes			
Fresh vegetables			
Cheese			
Crackers			
Milk			

1. How many times a day do you usually eat between meals?

2. When do you eat snacks?

Between breakfast and lunch Yes _____ No _____

In the afternoon Yes _____ No _____

After evening meal Yes _____ No _____

Before going to bed Yes _____ No _____

3. If you eat between meals at about what time(s) of day do you eat?

Time

Morning _____

Afternoon _____

Evening _____

4. How many soft drinks do you usually have each week?
(Circle)

0 - 1 - 2 - 3 - 5 - 6 - 8 - 9 - 10

or more _____

5. List all food eaten yesterday and indicate how much you ate.

Food	Amount

Check (X) the blank space to indicate the type of bread you usually eat.

Biscuits _____ Muffins _____ Corn bread _____
Rolls _____ White bread _____ Whole wheat bread _____

Check (X) the blank space to indicate the type of prepared or cooked cereal you usually eat.

Rice _____ Oatmeal _____ Grits _____ Cream
of wheat _____

Ready-to-eat cereal (list kind) _____

Answer these questions according to your usual eating pattern.

Breakfast	Yes	No
Do you eat fruits for breakfast?		
Do you eat the breakfast served at school?		
Do you eat breakfast on these days?		
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Do you miss breakfast for any of these reasons?		
Would rather groom than eat?		
Would rather sleep than eat?		
Not hungry?		
Not enough time?		
Not enough energy?		
Afraid of gaining weight?		

Answer these questions according to your usual eating pattern.

Lunch	Yes	No
Is a noon meal prepared in your home?		
Do you eat the plate lunch served at school?		
Do you eat the same kinds of foods at school that you eat at home?		
Do you take your own lunch to school?		
Do you eat lunch on Saturdays? On Sundays?		
Do you eat salads for lunch?		
Do you eat fruits for lunch?		
Is a green or yellow vegetable served with your lunch?		
Do you eat more than one dessert at lunch?		
Do you eat lunch at the same time everyday?		

Answer these questions according to your usual eating pattern.

Dinner	Yes	No
Is an evening meal prepared in your home?		
Do you eat salads for dinner?		
Do you eat fruits for dinner?		
Is a green or yellow vegetable served with your dinner?		
Would you prefer potatoes rather than green vegetables to eat with meat?		

Dinner	Yes	No
Do you eat more than one dessert at dinner?		
Do you eat dinner at the same time everyday?		
Which days of the week do you eat dinner?		
Sunday		
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		

PART II: SELF-IMAGE INDEX

These are questions that will help us know more about you.
This information will be useful in planning class activities.

Question	Frequently	Sometimes	Never
Do you have trouble making friends			
With girls?			
With boys?			
Do you get along with			
Father?			
Mother?			

Question	Fre- quently	Some- times	Never
Sister(s)?			
Brother(s)?			
Do you eat everything on your plate?			
Do you eat because the food is there?			
Do you eat when you are depressed?			
Do you eat when you feel nervous?			
Do you eat when you are upset?			
Are you hungry at mealtime?			
Are you hungry between meals?			
Do you think you are overweight?			
Do you ever feel depressed?			
Do you ever feel lonely?			
Do you enjoy being with others?			
Do you admire very thin people?			
Are most of your friends about your same weight?			
Do you feel guilty when you eat too much?			
Do you enjoy meeting new people?			
Do you have skin problems?			

How would you rate your personality?

Outgoing_____

Average_____

Timid_____

Indicate how you would rate your personal appearance.

Very attractive_____ Attractive_____ Average_____

Unattractive_____ Very unattractive_____

How do you think boys rate you in personal appearance?

Very attractive_____ Attractive_____ Average_____

Unattractive_____ Very unattractive_____

How do you think girls rate you in personal appearance?

Very attractive_____ Attractive_____ Average_____

Unattractive_____ Very unattractive_____

Indicate how happy you are.

Extremely happy_____ Happy_____ Average_____

Unhappy_____ Very unhappy_____

Check (X) these answers.

Statement	Fre- quently	Some- times	Never
I get upset easily.			
I feel unsure of myself.			
I feel lonely.			
My feelings are easily hurt.			
I do not make friends easily.			
I feel awkward.			
I am afraid I will not succeed in life.			
I like to be alone.			

Statement	Fre- quently	Some- times	Never
I am afraid others will make fun of me.			
I feel I have to make excuses for my actions.			
I need more energy to keep up with my friends.			
I do not feel at ease at parties.			
I wish others would invite me to their home.			
I talk more than I listen.			
I feel left out of activities.			
I never have the chance to be a leader.			
I fight with my brothers and sisters.			
I feel that I am different.			
I would like to date frequently.			
I wish I had more friends.			
I wish others would choose me for their teams.			

PART III: ACTIVITY PATTERNS AND PRACTICES

Check (X) the column which most nearly describes your activities.

Question	Fre- quently	Some- times	Never
Do you participate in physical education at school daily?			
Do you ever do these things:			
Bowling			
Dancing			
Exercising			
Tennis			
Bicycling			
Skating			
Running			
Taking long walks			
List other activities			

Do you exercise during the week when away from school?			
Do you enjoy exercise?			
Do you exercise on Saturday or Sunday?			
Would you rather rest in bed than be active?			

How many hours do you spend in bed?

Six hours or less _____

Seven to eight hours _____

Nine to ten hours _____

Indicate the amount of time spent sitting:

	<u>Time</u>
In class	_____
Watching television	_____
Listening to radio or records	_____
Eating	_____

What chores do you frequently (at least five times a week) do around the house? (Check your answers.)

_____ Make beds	_____ Iron clothes
_____ Sweep floors	_____ Wash clothes
_____ Mop floors	_____ Fold clothes
_____ Vacuum	_____ Hang clothes
_____ Dust	_____ Clean own room
_____ Wash dishes	_____ Cook
_____ Mow lawn	_____ Grocery shop
_____ Rake lawn	_____ List others
_____ Water lawn	_____
_____ Empty wastebaskets	_____

PART IV: PERSONAL BACKGROUND INFORMATION

Please check (X) the answers to the following questions to help us know more about you and your family.

Grade Level _____ Age _____

How many people live in your house?

_____ Mother	_____ Cousin
_____ Father	_____ Aunt
_____ Brother(s)	_____ Grandmother
_____ Sister(s)	_____ Grandfather
_____ Uncle	

In what type housing do you live?

_____ Apartment	_____ House
_____ Duplex	_____ Other (list)

Is your family?

_____ Renting
_____ Paying on house
_____ Living in a house owned by your parents
_____ Obtaining free rent

Are there any members of your immediate family who are overweight?

_____ Mother	_____ Cousin(s)
_____ Father	_____ Aunt(s)
_____ Brother(s)	_____ Grandmother
_____ Sister(s)	_____ Grandfather
_____ Uncle(s)	

Education--highest grade completed. (Circle)

	Elementary	1	2	3	4	5	6
Father	Junior and Senior High	7	8	9	10	11	12
	College	1	2	3	4	5	6
	Elementary	1	2	3	4	5	6
Mother	Junior and Senior High	7	8	9	10	11	12
	College	1	2	3	4	5	6

Does your mother work outside the home?

Yes _____

No _____

Full time _____

Part time _____

CHAPTER III

P R E S E N T A T I O N O F D A T A

The purpose of the study was to investigate some of the differences in eating habits, activity patterns, and personality traits of normal weight and overweight adolescents. The sample included boys and girls enrolled in eighth grade Language Arts and Homemaking classes in the James Madison High School.

Specific purposes of the present study were:

- 1) To determine differences between the two groups in eating patterns, types of foods preferred, and frequency of food consumption;
- 2) To investigate differences between the two groups in patterns and types of activity;
- 3) To compare personality traits and self-image patterns of the two groups; and
- 4) To analyze certain of the factors investigated in relation to family background patterns and sex differences.

The James Madison High School is a composite junior-senior high school with an enrollment of 1,879 students. One per cent of the enrolled students were either white Americans, or Mexican American, and 99 per cent were black Americans. The school is located in a low socio-economic area of Dallas, Texas.

The community surrounding Madison High School is composed of predominately black American families, some Mexican American, and very few white American families. A 1968 survey conducted by the James Madison High School Professional Advancement Committee reported that the annual income for the majority of the families ranged from \$5,200-\$7,000. Welfare agencies supplemented the income for approximately 1.0 per cent of the families surveyed, and approximately 2.0 per cent of the families received income from either social security or other agencies.

FAMILY BACKGROUND INFORMATION

The personal data factors concerning the participating students in the present investigation were as follows: age, size of the family, family composition, type of dwelling, overweight family members, educational level of the father and mother, and occupation of the mother. Of the 90 questionnaires distributed, 70 were returned with 61 of these usable. The family background information provided by the present study is similar to information obtained in a previous survey of the James Madison High School community. The author has made frequent references to the study conducted by the James Madison High School Professional Advancement Committee.

Sixty-one eighth grade students, 13-15 years of age, comprised the study group. Of the 61 individuals participating in the study, 22 were boys and 39 were girls. The age and sex distribution of the study group is shown below:

<u>Age Level</u>	<u>Participants</u>		<u>Total Number</u>
	<u>Boys Number</u>	<u>Girls Number</u>	
13	8	17	25
14	11	20	31
15	3	2	5
Total	22	39	61

The size of the families in the study ranged from a household of two family members to a family of eight. The total number of persons in the 61 families was 295. The average family size for the present study was 4.8, which is similar to the 5.0 average found by the Professional Advancement Committee (29) in the 1968 survey of the community. A summary of household size groupings follows:

<u>Family Members</u>	<u>Families</u>	
	<u>Number</u>	<u>Per cent</u>
Two or three	9	14.8
Four or five	34	55.7
Six or seven	17	27.9
Eight or more	1	1.6

Families of the present study were classified as those composed of both a husband and wife with children, a mother with children, a father with children, or grandparent(s) with children. Of the 61 families studied, 57.4 per cent were composed of a mother and father with children; 37.7 per cent, a mother with children; 1.0 per cent, a father with children; and 3.3 per cent, grandparent(s) with children. The community survey conducted by the James Madison Professional Advancement Committee (29) revealed that 54.2 per cent of the families of the community were composed of a mother and father with children; 37.6 per cent, a mother with children; 3.4 per cent, a father with children; and 4.8 per cent, children living with other relatives. The present study and the 1968 community survey confirmed that the greater proportion, over half of the families of the community, had both a mother and a father living in the home. The majority of the remaining families were living in a home headed by the mother.

The total number of adults in the 61 families was 118. Of these, 58 were mothers and 31 were fathers. Grandmothers, grandfathers, aunts, uncles, and cousins accounted for the

remaining adults. The distribution of adult family members as reported by the students is shown below:

<u>Family Members</u>	<u>Homes of Participants</u>	
	<u>Number</u>	<u>Per cent</u>
Mother	58	95.1
Father	31	50.8
Grandmother	9	14.8
Grandfather	6	9.8
Aunt	6	9.8
Uncle	4	6.6
Cousin	4	6.6

A total of 177 children was reported for the families of the study. The number of children ranged from one to six children per family. The mean number of children per family was 2.9. The number of children per family is summarized as follows:

<u>Number of Children</u>	<u>Families</u>	
	<u>Number</u>	<u>Per cent</u>
1	9	14.8
2	10	16.4
3	28	45.9
4	7	11.5
5	6	9.8
6	1	1.6

The participants responded to a question concerning the type of family housing. Classifications used to indicate the type of dwelling were apartment, duplex, house, or other. A

total of 47.5 per cent of the families lived in a house and the majority of the remaining families lived in apartments. In comparison, the survey of the community conducted by the Professional Advancement Committee of the James Madison High School (29) revealed that 61.0 per cent of the families lived in single family dwellings, 12.2 per cent lived in an apartment, and 3.2 per cent lived in a housing project. The present study and the 1968 community survey agree in that the majority of the families lived in a house or an apartment. A summary of the responses concerning the type of dwelling is shown below:

<u>Type of Dwelling</u>	<u>Families</u>	
	<u>Number</u>	<u>Per cent</u>
Apartment	21	34.4
Duplex	10	16.4
House	29	47.5
Other	1	1.6

Of the 61 families in the present study, 60.7 per cent were renting the family dwelling, 23.0 per cent were paying on a house, and 16.4 per cent owned the dwelling. None of the families reported obtaining free rent. Of the 500 families participating in the 1968 survey (29), 39.6 per cent owned a home, and 57.8 per cent were renting. A large percentage of the families of the community rented the family dwelling as shown both by the present study and the 1968

community survey. The method of obtaining the family dwelling can be seen as follows:

<u>Method of Obtaining Dwelling</u>	<u>Families</u>	
	<u>Number</u>	<u>Per cent</u>
Renting	37	60.7
Paying on house	14	23.0
Owned home	10	16.4

Of the 295 family members represented in the present study, 86 were reported to be overweight. Of this group, 56 were overweight adults, and 30 were overweight children. A summary of the reported number of overweight family members follows:

<u>Family Members</u>	<u>Overweight Individuals in Families</u>	
	<u>Number</u>	<u>Per cent</u>
Adults (N=118)	56	65.1
Children (N=177)	30	34.9

The overweight family members, as reported by the participants, ranged from one to six individuals per family. Of the 61 families included in the present study, 32.8 per cent had one overweight family member; 19.7 per cent had two overweight family members; and 11.5 per cent had three

overweight family members. The distribution of overweight family members as reported by the participants follows:

<u>Number of Overweight Individuals in Family</u>	<u>Families</u>	
	<u>Number</u>	<u>Per cent</u>
0	18	29.5
1	20	32.8
2	12	19.7
3	7	11.5
4	1	1.6
5	1	1.6
6	2	3.3

One question in the survey dealt with the educational level (highest grade completed) of the father and the mother. Indications were that the responses given by the participants were not valid. Therefore, these data were not included in this report. Educational information secured in the survey of 500 families conducted by the Professional Advancement Committee (29) revealed that 231 of the fathers had completed elementary school, 89 had finished high school, and 38 graduated from college. Of the mothers participating in the survey, 304 completed elementary school, 74 graduated from high school, and 65 attended college. These data indicate that most of the fathers and mothers had completed the elementary school level, slightly more fathers than mothers had completed high school, and more mothers than fathers had attended college.

Information on the employment status of the mothers revealed that of the 58 mothers included in the sample, 48.3 per cent were employed full time outside the home, and 31.0 per cent were full time homemakers. The 1968 survey (29) revealed that among occupations reported for the mothers, cook, maid, waitress, cafeteria help, and seamstress were the most common occupations. Occupations of the fathers, as reported by the survey, included cook, waiter, and construction worker. A summary of the employment status of mothers participating in the study follows:

<u>Employment Status</u>	<u>Families</u>	
	<u>Number</u>	<u>Per cent</u>
Full time homemaker	18	31.0
Employed	40	69.0
Full time	28	48.3
Part time	12	20.7

EATING PATTERNS AND PRACTICES

All participants in the study did not answer each item of the survey form. Information concerning eating patterns and practices of the adolescents were obtained from responses to questions pertaining to the best liked method of preparation for vegetables, meats, and fruits. The frequency of consumption of snack foods, and the breakfast, lunch, and dinner eating patterns were other items for which data were obtained.

Participants in the study group checked the method of preparation best liked for a list of 12 vegetables frequently consumed. The vegetables listed were potatoes, carrots, green beans, turnip greens, broccoli, hominy, okra, squash, onions, black-eyed peas, lima beans, and spinach. The methods of preparation listed on the survey form were baked, fried, with white sauce, with butter, with bacon, raw, and boiled. Individuals participating in the study ranked boiled as the most frequently preferred method of preparation for green beans, turnip greens, broccoli, hominy, okra, black-eyed peas, lima beans, and spinach. Fried was the method of preparation most preferred for potatoes, and squash. Onions and carrots were preferred as raw vegetables. Preferences for vegetables are shown in Table I.

Ground meat, steak, chicken, bacon, liver, bologna, beef, pork, tuna, and ham were meats listed on the questionnaire. The methods of preparation included baked or roasted, fried, stewed or boiled, sandwiches, broiled, and other. Fried was the method of preparation best liked for ground meat, steak, chicken, bacon, liver, pork, and ham. Sandwiches were preferred for bologna, tuna, and ham. Beef was best liked as roasted. Responses to preferences for meat are shown in Table II.

Fruits listed in the questionnaire included apple, avocado, peach, tomato, raisins, prunes, strawberries, oranges,

TABLE I

METHODS OF PREPARATION FOR VEGETABLES BEST LIKEDBY 61 ADOLESCENTS

Food	Method of Preparation Best Liked						
	Baked	Fried	White Sauce	With Butter	With Bacon	Raw	Boiled
<u>Vegetables</u>							
Potatoes	16	51	3	14	4	5	13
Carrots	4	1	0	3	0	28	11
Green beans	3	0	0	11	7	0	44
Turnip greens	2	1	0	0	10	0	45
Broccoli	2	3	0	6	1	0	25
Hominy	0	5	1	3	0	1	17
Okra	2	12	0	3	0	0	19
Squash	3	11	1	4	1	1	6
Onions	0	12	0	0	2	24	6
Black-eyed peas	2	1	1	2	9	0	43
Lima beans	1	0	0	0	2	0	26
Spinach	5	0	0	6	2	0	40

TABLE II

METHODS OF PREPARATION FOR MEATS BEST LIKED
BY 61 ADOLESCENTS

Food	Method of Preparation Best Liked					
	Baked or Roasted	Fried	Stewed or Boiled	Sand- wiches	Broiled	Other
<u>Meats</u>						
Ground meat	18	42	8	13	12	4
Steak	23	39	4	13	13	4
Chicken	16	58	8	13	11	3
Bacon	4	52	0	9	2	0
Liver	1	35	0	9	0	1
Bologna	4	31	1	39	2	5
Beef	26	17	7	11	5	2
Pork	11	42	3	15	5	3
Tuna	3	2	1	47	4	2
Ham	22	31	3	37	3	0

pineapple, cantaloupe, and watermelon. Students checked plain, cooked, with added sugar, or other as methods of preparation best liked. For each fruit listed, a higher number of students checked plain as the method of preparation preferred than checked any other type of preparation listed. Table III shows the preferences as to the best liked methods of preparation for fruits.

Students checked a list of 21 foods frequently consumed as snacks. Columns of "frequently," "sometimes," and "never" were used to record responses. Items frequently consumed by one-half or more of the students, in descending rank order, were as follows: hamburger, 85.2 per cent; sandwiches, 75.4 per cent; soft drinks, Kool-Aid, or milk, 72.1 per cent; hot dogs, 68.9 per cent; French fries, 67.2 per cent; potato chips, 65.6 per cent; cookies, 52.5 per cent; and sweet rolls or doughnuts, 47.5 per cent. Ten per cent or more of the students never ate pizza, cheese, and fresh vegetables as snacks. The snacks frequently consumed by participants in the present study were similar to those reported by Hinton and associates (28) for adolescents. These investigators listed candy, soft drinks, potato chips, cookies, ice cream, fruit, milk, and cake as frequently consumed snacks. A summary of snacks consumed by the adolescents participating in the present study is shown in Table IV.

TABLE III

METHODS OF PREPARATION FOR FRUITS BEST
LIKED BY 61 ADOLESCENTS

Food	Method of Preparation Best Liked			
	Raw	Cooked	Sugar Added	Other
<u>Fruits</u>				
Apple	50	6	3	8
Avocado	13	3	2	6
Peach	52	3	3	4
Tomato	42	4	1	6
Raisins	38	1	1	1
Prunes	17	4	4	1
Strawberries	37	2	7	3
Orange	57	0	2	3
Pineapple	45	3	2	3
Cantaloupe	44	2	2	4
Watermelon	53	0	3	7

TABLE IV
FREQUENCY OF CONSUMPTION OF 21 SNACK ITEMS BY 61
ADOLESCENTS PARTICIPATING IN THE STUDY

Snacks	Frequency of Consumption					
	Frequently		Sometimes		Never	
	Num- ber	Per cent	Num- ber	Per cent	Num- ber	Per cent
Candy	19	31.2	40	65.6	1	1.6
Fruits	32	52.5	27	44.3	0	0.0
Popcorn	9	14.8	45	73.8	5	8.2
Fritos	25	41.0	28	45.9	4	6.6
Pizza	15	24.6	23	37.7	19	31.2
Ice cream	42	68.9	18	29.5	0	0.0
Cake	32	52.5	29	47.5	0	0.0
Pie	28	45.9	30	49.2	1	1.6
Hamburger	52	85.2	9	14.8	0	0.0
Hot dogs	42	68.9	15	24.6	0	0.0
Sandwiches	46	75.4	14	23.0	0	0.0
Potato chips	40	65.6	18	30.0	0	0.0
French fries	41	67.2	18	30.0	0	0.0
Soft drinks or Kool-Aid	44	72.1	14	23.0	0	0.0
Cookies	32	52.5	27	44.3	0	0.0
Sweet rolls or doughnuts	29	47.5	30	49.2	0	0.0
Malts or shakes	23	37.7	23	37.7	3	4.9
Fresh vegetables	23	37.7	24	39.3	7	11.5
Cheese	16	26.2	26	42.6	15	24.6
Crackers	12	19.7	42	68.9	1	1.6
Milk	44	72.1	10	16.4	2	3.3

Participants were questioned as to the type of breads usually consumed. Multiple responses, as checked by the students, revealed that over half of the group usually ate biscuits, corn bread, rolls, and white bread. Muffins and whole wheat bread were less frequently eaten by the individuals participating in the study than were the other breads listed.

Responses as to the type of cooked cereals usually consumed by participants revealed that 50.8 per cent of the sample ate rice, 37.7 per cent ate grits, and only a few of the respondents usually ate oatmeal or cream of wheat. Responses concerning bread and cereal preferences are shown in Table V.

The participants named the ready-to-eat cereals usually eaten. Two cereals, Corn Flakes and Rice Krispies, were each named by 13 students. Post Toasties, Frosted Flakes, Captain Crunch, and Cheerios were each named by five or more individuals.

A number of questions regarding between meal snacks were included in the survey form. Approximately one-half of the participants usually ate two or three times between meals. The number of times participants ate between meals ranged from one to eight times a day. The mean was 1.9 times per day.

TABLE V

RESPONSES OF 61 ADOLESCENTS CONCERNING
BREAD AND CEREAL PREFERENCES

Breads and Cereals	Respondents	
	Number	Per cent
<u>Breads</u>		
Biscuits	31	50.8
Muffins	11	18.0
Corn bread	32	52.5
Rolls	35	57.4
White bread	36	59.0
Whole wheat bread	1	1.6
<u>Cooked Cereal</u>		
Rice	31	50.8
Oatmeal	10	16.4
Grits	23	37.7
Cream of Wheat	11	18.0

Data concerning the number of times per day snacks were eaten are shown below:

<u>Number of Times</u>	<u>Respondents</u>	
	<u>Number</u>	<u>Per cent</u>
One or less	20	32.8
2 or 3	32	52.5
4 or 5	6	9.8
6 or 7	1	1.6
8 or more	2	3.3

Participants indicated the portion of the day when snacks were usually eaten. The participants ate snacks between breakfast and lunch, in the afternoon, after the evening meal, and/or before going to bed. A greater proportion of the participants indicated that snacks were more frequently eaten in the afternoon and before going to bed than at other times of the day. Hinton and associates (28) agreed that snacks were consumed most frequently by adolescents in the afternoon and evening. A summary of the responses in regard to the time of the day snacks were eaten by the respondents follows:

<u>Time of Day</u>	<u>Respondents</u>	
	<u>Number</u>	<u>Per cent</u>
Between breakfast and lunch	26	42.6
In the afternoon	45	73.8
After evening meal	26	42.6
Before going to bed	35	57.4

The approximate times of day when snacks were eaten were recorded by the students. Of the 42 respondents who reported eating snacks in the morning, 57.1 per cent usually ate between seven and eight o'clock in the morning. Thirty-two respondents ate snacks in the afternoon. Of this group, 31.3 per cent usually ate between 12 and one o'clock in the afternoon, and 3.4 per cent reported eating between three and four o'clock in the afternoon. Of the 32 respondents who reported eating snacks in the evening, 53.1 per cent ate between five and six in the evening. An analysis of times of days snacks were consumed by participants is shown in Table VI.

The number of soft drinks usually consumed in a week by the participants totaled 344. Of the 61 respondents, 14.8 per cent usually consumed five soft drinks per week, and 5.0 per cent consumed 11 or more soft drinks per week. The average number of soft drinks per person per week was 5.6. Soft drinks consumption ranged from one per week to 24 per week.

TABLE VI

TIMES OF DAY SNACKS WERE REPORTED AS
EATEN BY 61 ADOLESCENTS

Time of Day	Respondents	
	Number	Per cent
<u>Morning</u>		
7- 8 a.m.	24	57.1
8- 9 a.m.	9	21.4
9-10 a.m.	4	9.5
10-11 a.m.	2	4.8
11-12 a.m.	3	7.1
<u>Afternoon</u>		
12- 1 p.m.	10	31.3
1- 2 p.m.	6	18.8
2- 3 p.m.	3	9.4
3- 4 p.m.	11	34.4
4- 5 p.m.	2	6.3
<u>Evening</u>		
5- 6 p.m.	17	53.1
6- 7 p.m.	7	21.9
7- 8 p.m.	4	11.9
8- 9 p.m.	2	6.3
9-10 p.m.	2	6.3

Responses of the participants concerning soft drink consumption are shown below:

<u>Number of Soft Drinks</u>	<u>Respondents</u>	
	<u>Number</u>	<u>Per cent</u>
0	8	13.1
1	1	1.6
2	7	11.5
3	4	6.6
4	5	8.2
5	9	14.8
6	7	11.5
7	6	9.8
8	2	3.3
9	2	3.3
10	5	8.2
11 or more	5	8.2

One portion of the questionnaire was concerned with breakfast eating patterns and habits. A total of 13.1 per cent of the students participating in the study group ate the breakfast served at school. Breakfast included fruits for 37.7 per cent of the students. More breakfasts were eaten by participants on weekends than during the week. The students checked one or more of five reasons for missing breakfast. Of the total group, 80.3 per cent indicated preferring to groom rather than to eat breakfast; 50.8 per cent listed "not hungry" and 41.0 per cent stated that there was "not enough time" to eat breakfast. Other reasons for missing breakfast included "would rather sleep than eat," "not enough energy," and "afraid of gaining weight." Only 14.8

per cent of the individuals checked "afraid of gaining weight" (Table VII).

Spindler (59) stated that teen-agers often skip breakfast because of time spent grooming and dressing, lack of sleep, and not enough time to prepare breakfast. Spindler and Acker (60) stated that breakfasts are frequently missed because the time schedule of the adolescent differed from that of the other family members. Hinton and others (28) reported that 44 per cent of the adolescent girls participating in a study listed "not hungry" as a major reason for missing breakfast. The analysis of breakfast habits of 61 adolescents is shown in Table VII.

Students were questioned as to the usual patterns for the noon meal. Over half of the individuals stated that a noon meal was prepared in the home. Of the study group, 75.4 per cent reported eating the plate lunch served at school. Spindler and Acker (60) stated that many teen-agers reported that having to eat very early in the day, or very late in the day, and having too short lunch periods, were reasons for missing lunch at school.

Approximately half of the students in the present study ate the same kinds of foods at school as eaten in the home. Lunch was eaten in the home on Saturdays and Sundays by 75.4 per cent of the participants. Approximately half of the

TABLE VII
RESPONSES OF 61 ADOLESCENTS CONCERNING
BREAKFAST PATTERNS

Breakfast	Respondents			
	Yes		No	
	Num- ber	Per cent	Num- ber	Per cent
Eat fruits for breakfast	23	37.7	38	62.3
Eat the breakfast served at school	8	13.1	53	86.9
Eat breakfast on these days				
Sunday	51	83.6	7	11.5
Monday	26	42.6	24	39.3
Tuesday	27	44.3	24	39.3
Wednesday	28	45.9	23	37.7
Thursday	23	37.7	27	44.3
Friday	28	45.9	23	37.7
Saturday	51	83.6	5	8.2
Reasons for missing breakfast				
Would rather groom than eat	49	80.3	29	47.5
Would rather sleep than eat	14	23.0	29	47.5
Not hungry	31	50.8	20	32.8
Not enough time	25	41.0	20	32.8
Not enough energy	13	21.3	27	44.3
Afraid of gaining weight	9	14.8	28	45.9

teen-agers ate lunch at the same time each day. Lunch included fruits and green or yellow vegetables for a majority of the students. Salads and desserts were consumed less frequently as foods for lunch. The reported eating practices at lunch appear in Table VIII.

Dinner was served in the home of 82 per cent of the students. Foods served at dinner for a greater proportion of the individuals included salads and green or yellow vegetables. Potatoes rather than green vegetables were preferred by 60.7 per cent of the study group. Fruits were eaten for dinner by 41 per cent of the group. More than one dessert was eaten at dinner by 34.4 per cent of the participants. Approximately one-third of the students indicated that dinner was eaten at the same time everyday. In the majority of the families, 82 per cent, dinner was prepared each day. A summary of the eating habits for the evening meal is shown in Table IX.

Participants were asked to list all foods eaten on the previous day and to indicate how many servings were consumed. Responses were categorized into four food groups: the meat group, the milk group, the fruit and vegetable group, and the bread and cereal group. The meat group was divided into several subdivisions: meat, sandwiches, meat substitute, and eggs.

TABLE VIII
RESPONSES OF 61 ADOLESCENTS CONCERNING
LUNCH PATTERNS

Lunch	Respondents			
	Yes		No	
	Num- ber	Per cent	Num- ber	Per cent
Noon meal prepared in home	38	62.3	16	26.2
Eat the plate lunch served at school	46	75.4	12	19.7
Eat the same kinds of foods at school as at home	32	52.5	29	47.5
Take lunch to school	9	14.8	49	80.3
Eat lunch on Saturdays and Sundays	46	75.4	14	23.0
Eat salads for lunch	19	31.2	39	63.9
Eat fruits for lunch	40	65.6	21	34.4
Green or yellow vegetable served with lunch	41	67.2	17	27.9
Eat more than one dessert at lunch	19	31.2	41	67.2
Eat lunch at the same time everyday	32	52.5	28	45.9

TABLE IX
RESPONSES OF 61 ADOLESCENTS CONCERNING
DINNER PATTERNS

Dinner	Respondents			
	Yes		No	
	Num- ber	Per cent	Num- ber	Per cent
Evening meal prepared in home	50	82.0	10	16.4
Eat salads for dinner	32	52.5	28	45.9
Eat fruits for dinner	25	41.0	35	57.4
Green or yellow vegetable served with dinner	46	75.4	15	24.6
Prefer potatoes rather than green vegetables to eat with meat	37	60.7	23	37.7
Eat more than one dessert at dinner	21	34.4	39	63.9
Eat dinner at the same time everyday	18	29.5	41	67.2
Days of week dinner is eaten				
Sunday	55	90.2	5	8.2
Monday	50	82.0	6	9.8
Tuesday	50	82.0	6	9.8
Wednesday	50	82.0	6	9.8
Thursday	50	82.0	6	9.8
Friday	49	80.3	7	11.5
Saturday	49	80.3	6	9.8

Of the 61 students participating in the study, 24 individuals ate one serving, and 24 students ate two servings of either a meat or a sandwich. Girls participating in the study had a mean of 1.9 servings for meats or sandwiches and the mean for boys was 1.8 servings.

A greater proportion of girls than boys ate a meat substitute, peanut butter or dry beans, during the day. The mean number of servings of a meat substitute was 0.1 for boys, and 0.3 for girls. A total of 10 servings of eggs was reported as consumed during the day. The number of servings ranged from one to six per person. A summary of the number of servings from the meat group reported as eaten by the students follows:

<u>Meat Group</u>	<u>Servings</u>				
	<u>0</u> <u>Num-</u> <u>ber</u>	<u>1</u> <u>Num-</u> <u>ber</u>	<u>2</u> <u>Num-</u> <u>ber</u>	<u>3</u> <u>Num-</u> <u>ber</u>	<u>4 or</u> <u>More</u> <u>Num-</u> <u>ber</u>
Sandwiches	41	10	6	4	0
Meats	22	14	18	3	4
Meat substitute	49	11	1	0	0
Eggs	56	1	3	1	0

Milk, cheese, and ice cream were included as servings from the milk group. A greater proportion of girls than boys consumed food from the milk group. The number of servings from the milk group ranged from one to four servings

per person. Of the 61 persons participating in the study, 14 consumed one serving, and 13 consumed two servings from the milk group. Seven students consumed three to four servings within the day. Forty-three students had no servings from the milk group. The mean for girls was 1.5 servings per person, and the mean for boys was 0.04 servings. A summary of the number of servings from the milk group follows:

<u>Milk Group</u>	<u>Servings</u>				
	<u>0</u> <u>Num-</u> <u>ber</u>	<u>1</u> <u>Num-</u> <u>ber</u>	<u>2</u> <u>Num-</u> <u>ber</u>	<u>3</u> <u>Num-</u> <u>ber</u>	<u>4</u> <u>Num-</u> <u>ber</u>
Glasses of milk	43	5	9	3	1
Cheese	56	2	1	1	1
Ice cream	50	7	3	0	1

Students listed fruits and vegetables consumed during the day. Only 14 students ate any type of fruit during the day of the survey. More girls than boys ate fruits. The number of fruits eaten ranged from one to three per person. Boys consumed an average of 0.1 servings of fruit per person, and girls consumed an average of 0.4 servings per person.

One serving of a green or leafy vegetable was consumed by 30 of the 61 participants. Eleven of the participating students ate two servings of a vegetable. The number of servings of vegetables ranged from one to five per person. Boys consumed a mean of 1.1 vegetables per person, and girls

consumed a mean of 1.0 vegetables per person. A summary of the servings of vegetables and fruits reported as eaten by the students follows:

<u>Vegetable and Fruit Group</u>	<u>Servings</u>			
	<u>0</u> <u>Num-</u> <u>ber</u>	<u>1</u> <u>Num-</u> <u>ber</u>	<u>2</u> <u>Num-</u> <u>ber</u>	<u>3</u> <u>Num-</u> <u>ber</u>
Vegetables				
Green or leafy	41	12	7	1
Starchy	37	18	4	1
Fruits				
Citrus	54	5	1	1
Other	54	4	2	1

The bread and cereal group included breads as well as cooked and prepared cereals. A greater proportion of girls than boys consumed breads. Eleven participants in the study group ate two servings of bread, and 10 participants ate one serving from the bread group.

A greater proportion of the girls than boys ate both cooked and ready-to-eat cereals. The number of servings ranged from one to two servings of cereal per person. Seven individuals had one serving, and three individuals had two servings of cereal. A summary of the servings from the

bread and cereal group reported as eaten by the students follows:

<u>Bread and Cereal Group</u>	<u>Servings</u>						<u>6 or More Num- ber</u>
	<u>0 Num- ber</u>	<u>1 Num- ber</u>	<u>2 Num- ber</u>	<u>3 Num- ber</u>	<u>4 Num- ber</u>	<u>5 Num- ber</u>	
Breads	17	10	11	7	7	1	8
Cereals	57	7	3	0	0	0	0

An examination of the dietary intakes of the adolescents participating in the study revealed that a large portion of the group had an inadequate diet for the day of the survey. Over half of the group ate two or more servings of meat, and two or more servings of a vegetable. One or more servings of meat substitutes were consumed by only 19.7 per cent of the study group. A large percentage of the adolescents had no servings from the milk group, 58.0 per cent; no serving of a citrus fruit, 88.5 per cent; and no serving of a green or leafy vegetable, 67.2 per cent. However, breads and cereals were consumed by a high percentage of the study group, 75.4 per cent. Table X shows the reported food intake according to food groups.

Many of the adolescents participating in the study listed no snacks as eaten the day previous to the survey.

TABLE X
REPORTED FOOD INTAKE OF 61 ADOLESCENTS
ACCORDING TO FOOD GROUPS

Number of Servings	Respondents	
	Number	Per cent
<u>Meat Group</u>		
Meat or sandwiches		
None	11	18.0
One	16	26.2
Two or more	34	55.7
Meat substitute		
None	49	80.3
One	11	18.0
Two or more	1	1.6
<u>Milk Group</u>		
None	36	59.0
One to two	15	24.6
Three to four	7	11.5
Five or more	3	4.9
<u>Fruit and Vegetable Group</u>		
Citrus fruits		
None	54	88.5
One	5	8.2
Two or more	2	3.3
Green or leafy vegetables		
None	41	67.2
One to two	19	31.2
Three to four	1	1.6
Other vegetables and fruits		
None	31	50.8
One to two	26	42.6
Three to four	3	4.9
Five or more	1	1.6
<u>Bread and Cereal Group</u>		
None	15	24.6
One to two	20	32.8
Three to four	14	23.0
Five or more	12	19.7

Snacks reported as consumed by the group included pie, cake, cookies, corn chips, candy, potato chips, tea, and soft drinks. The number of servings per person ranged from one to nine servings. The snacks frequently consumed, in descending rank order, were as follows: soft drinks, candy, and corn chips. The mean number of snacks eaten was 2.0 per person. A greater percentage of girls than boys consumed snacks during the day. A summary of snacks consumed by the 61 adolescents on the day previous to the study follows:

<u>Snacks</u>	<u>Servings</u>			
	<u>0</u> <u>Num-</u> <u>ber</u>	<u>1</u> <u>Num-</u> <u>ber</u>	<u>2</u> <u>Num-</u> <u>ber</u>	<u>3 or</u> <u>More</u> <u>Num-</u> <u>ber</u>
Pie	54	4	3	0
Cake	55	6	0	0
Cookies	54	4	0	3
Corn chips	51	5	5	0
Candy	49	7	4	1
Potato chips	54	5	2	0
Tea	57	2	2	0
Soft drinks	42	11	5	3

THE SELF-CONCEPTS OF THE ADOLESCENTS

Questions concerning the emotional status of the participants were checked in columns of "frequently," "sometimes," or "never." Over one-half of the participants had

trouble making friends with boys and girls (Table XI). Most of the participants frequently had trouble getting along with their fathers and mothers. Individuals of the study group indicated more difficulty in getting along with their sisters than with their brothers. Approximately 81.8 per cent of the study group indicated having felt depressed or lonely, and having enjoyed being with other people as well as meeting new people.

A majority of the respondents revealed that food was "sometimes," or "never" associated with feelings of nervousness, depression, and upset emotions. A total of 80.3 per cent of the respondents usually were hungry at meal time, or between meals, and a few felt guilty when they ate too much. Sixty-seven per cent of the group reported some type of skin problem which might be associated with upset emotions or poor dietary habits.

Thirty-six of the individuals never considered themselves overweight. However, a majority of the participants sometimes admired very thin people. A total of 31.2 per cent of the students usually had friends who were about their own weight, and 41.0 per cent sometimes had friends who were about their own weight.

Individuals in the study rated their own personality as either outgoing, average, or timid. Half of the boys

TABLE XI

RESPONSES OF 61 ADOLESCENTS CONCERNING FACTORS
INFLUENCING SOCIAL AND EMOTIONAL PROBLEMS

Question	Responses		
	Fre- quently	Some- times	Never
Do you have trouble making friends with girls?	6	34	18
with boys?	5	35	15
Do you get along with Father?	30	17	7
Mother?	35	13	7
Sister(s)?	25	19	6
Brother(s)?	19	24	8
Do you eat everything on your plate?	8	44	4
Do you eat because the food is there?	7	27	24
Do you eat when you are depressed?	6	25	27
Do you eat when you feel nervous?	4	23	28
Do you eat when you are upset?	5	25	28
Are you hungry at meal time?	16	33	8
Are you hungry between meals	18	31	9
Do you think you are overweight?	13	8	36
Do you ever feel depressed?	7	43	6
Do you ever feel lonely?	14	31	12
Do you enjoy being with others?	35	21	1
Do you admire very thin people?	16	37	5
Are most of your friends about your same weight?	19	25	14

TABLE XI (Continued)

RESPONSES OF 61 ADOLESCENTS CONCERNING FACTORS
INFLUENCING SOCIAL AND EMOTIONAL PROBLEMS

Question	Responses		
	Fre- quently	Some- times	Never
Do you feel guilty when you eat too much?	8	26	23
Do you enjoy meeting new people?	34	21	2
Do you have skin problems?	5	32	20

considered themselves outgoing in personality, and the other half considered themselves as average for personality. Of the 39 girls participating in the study, 46.2 per cent checked themselves as outgoing, 48.7 per cent as average and 2.6 per cent considered themselves as timid. A summary of personality ratings by the participants follows:

<u>Personality Rating</u>	<u>Boys</u>		<u>Girls</u>	
	<u>Num- ber</u>	<u>Per cent</u>	<u>Num- ber</u>	<u>Per cent</u>
Outgoing	11	50.0	18	46.2
Average	11	50.0	19	48.7
Timid	0	0.0	1	2.6

Each of the participants rated his own personal appearance on a scale ranging from very unattractive to very attractive. Approximately one-third of the girls and boys rated their personal appearance as average. Only one individual, a girl, rated her personal appearance as very unattractive. Two individuals, one boy and one girl, considered themselves unattractive. Conversely, eight girls and six boys rated their personal appearance as very attractive. The sex distribution according to personal appearance ratings is shown in Table XII.

Participants were requested to rate themselves as they thought boys of the same age group would rate their personal

TABLE XII

RESPONSES OF 61 ADOLESCENTS CONCERNING EVALUATIONS
OF PERSONAL APPEARANCE

Personal Appearance	Boys		Girls	
	Num- ber	Per cent	Num- ber	Per cent
<u>Self Rating</u>				
Very attractive	6	27.3	8	20.5
Attractive	6	27.3	13	33.3
Average	7	31.8	15	38.5
Unattractive	1	4.6	1	2.6
Very unattractive	0	0.0	1	2.6
<u>Rating for Boys</u>				
Very attractive	2	9.1	5	12.8
Attractive	3	13.6	14	35.9
Average	11	50.0	13	33.3
Unattractive	1	4.6	5	12.8
Very unattractive	1	4.6	0	0.0
<u>Rating by Girls</u>				
Very attractive	6	27.3	4	10.3
Attractive	5	22.7	11	28.2
Average	6	27.3	22	56.4
Unattractive	3	13.6	1	2.6
Very unattractive	2	9.1	0	0.0

appearance, using the same scale as used in rating their own personal appearance. Girls were of the opinion that boys would rate them as either attractive (35.9 per cent), or average (33.3 per cent). Boys, however, were of the opinion that other boys rated them as average in appearance (50 per cent). A summary of the responses on how boys might rate personal appearance of the participants is shown in Table XII.

In a similar manner, individuals rated their personal appearance as they thought girls would rate them. Of the participating girls, 56.4 per cent indicated that other girls would rate them as average in appearance, 10.3 per cent thought other girls would consider them to be very attractive, and 2.6 per cent thought other girls would rate them as unattractive. None of the girls were of the opinion that other girls would rate them as very unattractive. Equal percentages of the boys, 27.3 per cent, indicated that girls would rate them as very attractive or as average in appearance. Of the 22 boys, 9.1 per cent thought girls would rate them as very unattractive. A summary of how girls might rate the participants is shown in Table XII.

The degree of happiness of the individuals participating in the study was indicated by checking ratings of extremely happy, average, unhappy, and very unhappy. More girls than boys were extremely happy. A larger number of both girls and

boys rated themselves as happy than checked any other category. Fewer participants considered themselves as average, or unhappy. Three boys and four girls rated themselves as unhappy or very unhappy. Responses to the degree of happiness of the participants are summarized below:

<u>Happiness Rating</u>	<u>Boys</u>		<u>Girls</u>	
	<u>Num-</u> <u>ber</u>	<u>Per</u> <u>cent</u>	<u>Num-</u> <u>ber</u>	<u>Per</u> <u>cent</u>
Extremely happy	4	18.2	10	25.6
Happy	10	45.5	16	41.0
Average	5	22.8	8	20.5
Unhappy	1	4.6	0	0.0
Very unhappy	2	9.1	4	10.3

Twenty-one statements concerning the self-image of the participants were included in the questionnaire. In response to each item, students checked one of these categories: "frequently," "sometimes," or "never." The majority of the students responded positively to statements that indicated a desire for more social contacts. These statements included: "I feel lonely," "I don't make friends easily," "I don't feel at ease at parties," "I'd like to date frequently," and "I wish I had more friends." The statements that indicated a poor self-concept were answered as "frequently," or "sometimes" by 55.1 per cent of the respondents. Statements concerning the emotional status of the participants revealed

that many of the adolescents sometimes get upset, have fewer chances to be leaders, fight with brothers and sisters, and usually wish others would choose them for their teams. Table XIII shows the responses of individuals to the self-image index.

PHYSICAL ACTIVITY PATTERNS OF THE ADOLESCENTS

The members of the study group frequently participated in physical education classes at school daily. Dancing, exercising, bicycling, skating, running, taking long walks, and other activities were more frequently reported types of activities than were bowling and tennis. Fifty-four of the individuals usually enjoyed exercise, and 55 individuals would rather be active than to rest in bed. Of the 61 participants in the study, 32 individuals exercised on weekends, and 44 individuals exercised during the week when away from school. Responses to the physical activity index are shown in Table XIV.

A total of 45.9 per cent of the study group rested in bed seven to eight hours. The next most frequently checked

TABLE XIII
RESPONSES OF 61 ADOLESCENTS TO STATEMENTS
CONCERNING SELF-IMAGE CONCEPTS

Statement	Responses		
	Fre- quently	Some- times	Never
I get upset easily	13	32	12
I feel unsure of myself	7	41	10
I feel lonely	7	41	10
My feelings are easily hurt	12	24	21
I do not make friends easily	16	33	8
I feel awkward	6	35	16
I am afraid I will not succeed in life	5	24	28
I like to be alone	5	30	22
I feel I have to make excuses for my actions	5	28	25
I am afraid others will make fun of me	7	26	25
I need more energy to keep up with my friends	8	18	32
I do not feel at ease at parties	14	27	16
I wish others would invite me to their home	12	21	24
I talk more than I listen	15	26	13
I feel left out of activities	7	26	24

TABLE XIII (Continued)

RESPONSES OF 61 ADOLESCENTS TO STATEMENTS
CONCERNING SELF-IMAGE CONCEPTS

	Responses		
	Fre- quently	Some- times	Never
I never have the chance to be a leader	11	30	17
I fight with my brothers and sisters	10	32	13
I feel that I am different	10	26	22
I would like to date frequently	20	20	16
I wish I had more friends	16	29	12
I wish others would choose me for their teams	13	31	14

TABLE XIV
RESPONSES OF 61 ADOLESCENTS CONCERNING
THE EXTENT OF PHYSICAL ACTIVITY

Question	Responses		
	Fre- quently	Some- times	Never
Do you participate in Physical Education at school daily?	35	21	1
Do you ever do these things?			
Bowling	11	21	21
Dancing	30	26	2
Exercising	28	22	4
Tennis	10	19	28
Bicycling	21	33	4
Skating	19	25	10
Running	31	24	1
Taking long walks	24	28	2
Other activities	19	11	1
Do you exercise during the week when away from school?	8	36	9
Do you enjoy exercise?	18	36	4
Do you exercise on Saturday or Sunday?	8	24	22
Would you rather rest in bed than be active?	2	27	28

time for testing in bed was nine to 10 hours a day. A summary of reported hours of bed rest follows:

<u>Hours in Bed</u>	<u>Respondents</u>	
	<u>Number</u>	<u>Per cent</u>
Six hours or less	9	14.8
Seven to eight hours	28	45.9
Nine to ten hours	21	34.4

Individuals participating in the present study gave the total time spent in class, watching television, listening to the radio or records, and eating. These students spent an average of 10 hours or more engaged in sedentary activities. An average of five hours per day per person was reported for time spent sitting in class, and 2.3 hours per person for watching television. Fewer hours were spent in listening to the radio or records, or in eating. Data concerning the hours spent in sedentary activities are shown below:

<u>Sedentary Activities</u>	<u>Hours</u>	
	<u>Total Number</u>	<u>Mean</u>
In class	305 hrs	5.0 hrs
Watching television	141 hrs	2.3 hrs
Listening to radio or records	96 hrs, 5 min	1.6 hrs
Eating	72 hrs, 31 min	1.2 hrs

Students checked a list of chores frequently performed around the house. Those chores were: make beds, sweep floors, mop floors, vacuum, dust, wash dishes, mow lawn, rake lawn, water lawn, empty wastebaskets, iron clothes, wash clothes, fold clothes, hang clothes, clean own room, and shop for groceries. Classifications used for analyzing the list of work activities frequently performed at home were as follows: indoor activities, outdoor activities, and cleaning their own rooms. The number of activities ranged from no chores to 17 chores per person. An average of 6.6 chores were performed indoors, and 2.2 chores outdoors daily. Only 46 of the 61 students cleaned their own rooms. A summary of chores frequently performed around the house follows:

<u>Chores</u>	<u>Household</u> <u>Total</u> <u>Number</u>	<u>Chores</u> <u>Mean</u>
Indoors	403	6.6
Outdoors	132	2.2
Clean own room	46	.8

FOCUS ON THE OVERWEIGHT ADOLESCENTS

A nurse from Bishop College of Dallas, Texas and a nurse from the James Madison High School weighed and measured each participant in the study. Standard scales were used for height and weight measurements.

Reed and Stuart (54) compiled a longitudinal study of child health and development that was used by Children's Medical Center Outpatient Department, Dallas, Texas. A growth chart showing the range of normal weight and height for children one to 18 years of age was developed. This growth chart was used to determine the number of overweight and normal weight individuals in the present study.

All boys and girls were within the normal range for height at each age level. Of the 61 adolescents in the present study, 8.2 per cent of the boys and 11.5 per cent of the girls were overweight. Seventeen of the 22 boys participating in the study were normal in weight, and five were overweight. Thirty-two of the 39 girls were normal in weight and seven were overweight individuals.

Of the 13-year-old girls participating in the study, 13 were normal in weight, and four were overweight. Two of the 20 fourteen-year-old girls were overweight, and one of the two 15-year-old girls was overweight.

Two 13-year-old boys, one 14-year-old boy, and two 15-year-old boys were overweight. The age and sex distribution

of the overweight teen-agers of the present study appears below:

<u>Age</u>	<u>Boys</u>		<u>Girls</u>	
	<u>Normal Weight Number</u>	<u>Over- weight Number</u>	<u>Normal Weight Number</u>	<u>Over- weight Number</u>
13	6	2	13	4
14	10	1	18	2
15	1	2	1	1
Total	17	5	32	7

The twelve overweight adolescents reported the total number of overweight members within their families. Twenty-two persons, or 26 per cent, of the 86 family members reported as overweight were from the families of the 12 overweight adolescents. These 22 overweight individuals consisted of the following family members: six mothers, three fathers, five sisters, two brothers, two grandmothers, two aunts, one uncle, and one cousin. The mean number of overweight family members in the homes of the 12 overweight adolescents was 1.8 persons per family, while the mean number of overweight family members for the 49 normal weight adolescents was 1.3 persons. In a study of 373 adolescents conducted by Mullins (47), obesity occurred among the relatives of the obese adolescents more frequently than among the relatives of the normal weight adolescents. Mayer (38) stated that an adolescent's chances for becoming obese are greater when the

parents are overweight. A summary of the total overweight adults and children in families of the overweight adolescents follows:

<u>Family Members</u>	<u>Overweight Number</u>	<u>Individuals Per cent</u>
Adults	15	68.2
Children	7	31.8

Of the 58 mothers reported for the population, 69 per cent, or 40 mothers, were employed outside the home. Of this group of 40 employed mothers, 10 were mothers of the obese adolescents. Eight of these mothers were employed full time and two were employed part time. Morse and associates (46) conducted a survey of the nutritional knowledge of mothers. The investigation of these authors revealed that mothers who combined full or part time employment with home-making had lower average scores on tests that revealed the amount of nutrition knowledge of the mothers.

The Professional Advancement Committee (29) of the James Madison High School revealed that more fathers than mothers of the community completed high school. According to Morse and others (46), mothers who completed one to three years of high school had lower scores on the nutrition tests administered to 238 mothers than did mothers who had more education.

The employment status and the reported education level of the mothers of the obese or non-obese adolescents may affect the nutritional status of the family. The higher the level of education and the more homemaking tasks performed, the greater the possibility that the mothers will possess more nutritional knowledge.

Eating Patterns and Practices

The overweight teen-agers checked the method of preparation best liked for vegetables listed in Part I of the questionnaire. Green beans, turnip greens, broccoli, hominy, okra, black-eyed peas, lima beans, and spinach were preferred as boiled vegetables. Raw was the method of preparation best liked for carrots and onions. Potatoes and squash were best liked as fried vegetables. There was little difference between obese and non-obese individuals in the methods of preparation preferred for vegetables.

Responses as to the method of preparation best liked for fruits were similar for normal weight and overweight individuals. For the obese group, apples, peaches, tomatoes, raisins, strawberries, oranges, pineapple, cantaloupe, and watermelon were preferred as plain fruits. Avocado and prunes were liked as other methods of preparation.

Overweight boys and girls preferred beef as either roasted or baked. Fried was the method of preparation best liked for ground meat, steak, chicken, bacon, liver, and pork. Tuna, ham, and bologna were liked as sandwiches by the obese. There was little difference in the responses of the obese and non-obese subjects.

A large proportion of the overweight teen-agers frequently consumed, in descending rank order, the following snack foods: hamburger, Kool-Aid and soft drinks, French fries, and potato chips. A few of the overweight adolescents checked popcorn, Fritos, pizza, fresh vegetables, and cheese as snacks never consumed.

The mean number of times snacks were consumed by the population was 1.9 times a day. The overweight adolescents reported a mean of 1.6 times a day for eating between meals. Snacks were usually eaten one to eight times a day for the total population, and one to five times a day for overweight teen-agers.

Snacks were usually consumed in the afternoon and after the evening meal. Approximately 60 per cent of the overweight adolescents indicated that snacks were eaten between breakfast and lunch and before going to bed.

Overweight boys reported that snacks were frequently consumed between seven and eight o'clock in the morning,

between one and two o'clock in the afternoon, and between four and six o'clock in the evening. The overweight girls more frequently consumed snacks between eight and nine o'clock in the morning, three and four o'clock in the afternoon, and six to seven o'clock in the evening. The normal weight and overweight adolescents tended to eat snacks before arriving at school, at lunch time, or after the evening meal.

The mean number of soft drinks consumed in a week by the population was 5.6. Overweight boys consumed 3.4 soft drinks in a week, and the overweight girls drank 3.7 soft drinks in a week. A similar study, conducted by Trenholme and Milne (65), of 2,436 teen-agers indicated that 3.9 bottles of carbonated beverages were consumed per week for the boys, and 3.4 bottles were consumed per week for the girls.

Similar proportions of overweight boys and girls ate biscuits and rolls. A higher proportion of overweight girls than of the overweight boys ate corn bread, white bread, and whole wheat bread. There was little difference in the proportions of obese and non-obese adolescents who ate oatmeal, grits, and cream of wheat. Ready-to-eat cereals usually consumed by the overweight adolescents were similar to those eaten by the non-obese students.

Fifty per cent of the overweight group ate fruits for breakfast. None of the obese subjects ate the breakfast

served at school. Breakfasts were eaten more frequently on weekends than during the weekdays. Participants ranked "not hungry" as the primary reason for missing breakfast; "not enough time" ranked next as a reason for not eating breakfast. Three of the 12 overweight adolescents participating in the present study, or 25 per cent, checked "afraid of gaining weight" as a reason for missing breakfast. The reasons for missing breakfast were similar to those found by Spindler (59), Hinton and others (28), and Spindler and Acker (60).

Noon meals were prepared in 50 per cent of the homes of the obese adolescents. Half of these obese teen-agers ate the same kinds of foods at school that were eaten in the home. Approximately 80 per cent of the overweight adolescents carried lunches to school. Eleven of the 12 overweight subjects ate lunch on Saturdays and Sundays. Fruits, and green and yellow vegetables were eaten by over half of the obese subjects; however, few of the overweight adolescents ate salads for lunch. Ten of the overweight group usually did not eat more than one dessert at lunch. Seven of the obese group ate lunch at irregular hours.

An evening meal was prepared in the homes of each overweight individual. Over half of the overweight teen-agers did not eat salads or fruits for dinner. A high proportion of the obese group reported that a green or yellow vegetable

was served at dinner. Fifty per cent of the overweight group preferred potatoes rather than green vegetables to eat with meat. Only one overweight individual ate more than one dessert at dinner. Many overweight individuals did not eat dinner at a regular time each day. Dinner was eaten daily by a majority of the overweight participants. Schacter and Gross (56) stated that the obese have rigid eating schedules.

Each participant listed foods eaten on the previous day. Although a recall diet analysis does not always give an exact picture of the adequacy of the diet, it does indicate where dietary improvement is needed. A study of the recall diets of the overweight adolescents participating in the present study revealed that a greater percentage of boys than girls had two or more servings from the meat group. None of the five overweight boys, and two of the seven overweight girls had a serving of a meat substitute. Over one-half of the group had no servings of meat on the day in which the diet was recorded; however, 11 of the 12 overweight boys and girls had one or more servings of meat.

Five of the overweight girls and none of the overweight boys had one or more servings of either milk, ice cream, or cheese. Two overweight girls had one serving, two had two servings, and one had three servings on the day in which the diets were recorded. Milk was also deficient in the diets of

TABLE XV
REPORTED FOOD INTAKE OF FOOD GROUPS ACCORDING
TO WEIGHT CLASSIFICATION

Food Groups	Overweight Adolescents			Normal Weight Adolescents	Combined Group	
	Boys (N=5)	Girls (N=7)	Total Group (N=12)	(N=42)	(N=61)	
	Number	Number	Number	Number	Number	Per cent
<u>Meat Group</u>						
One serving	2	3	5	22	27	44.3
Two or more servings	3	3	6	29	35	57.4
<u>Milk Group</u>						
One serving	0	2	2	5	7	11.5
Two servings	0	2	2	6	8	13.1
Three servings	0	1	1	5	6	9.8
Four or more servings	0	0	0	4	4	6.6
<u>Fruits and Vegetable Group</u>						
Fruits						
One serving	0	2	2	3	5	8.2
Two or more servings	0	2	2	6	8	13.1
Vegetables						
One serving	2	1	3	10	13	21.3
Two or more servings	0	3	3	18	21	34.4
<u>Bread and Cereal Group</u>						
One serving	0	2	2	8	10	16.4
Two servings	1	0	1	9	10	16.4
Three servings	1	1	2	4	6	9.8
Four servings	3	4	7	13	20	32.8

to a score of four when the diet contained the recommended number of servings for a particular food group. Thus a total score of 16 was possible. Dietary scores for the overweight group ranged from four to 12 with a mean of 8.0. Dietary scores for the group normal in weight ranged from four to 13 with a mean of 7.3.

The Self-Concepts of the Overweight Adolescents

In Part III of the survey form, the participants checked columns of "frequently," "sometimes," or "never" to indicate their personal opinions as to how well they got along with family members. The numerical value of three was assigned to a response of "frequently" and a value of two to a response of "sometimes." These values were added for each individual. The mean score was calculated by dividing the total scores for each group by the number of overweight or normal weight teen-agers. The total emotional score was derived by adding scores of 26 questions in Part III concerning emotional problems. The mean score was calculated by dividing these scores by the number of overweight or normal weight adolescents of each sex.

Responses indicated that the obese individuals had more trouble getting along with peers and family members than the non-obese adolescents. The normal weight boys had a mean

score of 1.9 in getting along with girls. Overweight boys, however, had a mean score of 6.6. Normal weight boys had a mean score of 1.8 in getting along with boys, while overweight boys had a mean scores of 6.0. (Table XVI) The obese boys had more problems in getting along with family members having an overall mean score of 330.4; whereas, the normal weight boys had an overall mean of 97.2 for the 26 items relating to emotional problems.

Overweight girls had a mean score of 8.3 in getting along with girls. Normal weight girls had a score of 1.8. Mean scores for both overweight girls and overweight boys in response to the item concerning getting along with boys were lower than the mean scores for the item concerning getting along with girls. Overweight girls had more trouble in getting along with family members than did normal weight girls (Table XVII). The overweight girls had an overall mean score of 361.7 for emotional problems; whereas, the girls of normal weight had an overall mean of 79.2.

The mean scores for the total emotional problems were much higher for the overweight group. Overweight girls had a higher overall mean score for emotional problems than overweight boys. These data indicate that overweight adolescents have more problems in getting along with peers and family members. Stunkard (61), Mullins (47), and Johnson and

TABLE XVI

MEAN SCORES FOR SOCIOLOGICAL AND EMOTIONAL
PROBLEMS CHECKED BY 22 BOYS ACCORDING
TO WEIGHT CLASSIFICATION

Factors	Mean Scores	
	Normal Weight	Over-weight
	(N=17)	(N=5)
Getting Along with Peers		
Girls	1.9	6.6
Boys	1.8	6.0
Getting Along with Family		
Mother	3.0	10.2
Father	3.1	10.6
Brothers	2.5	8.6
Sisters	2.8	9.4

TABLE XVII

MEAN SCORES FOR SOCIOLOGICAL AND EMOTIONAL
PROBLEMS CHECKED BY 39 GIRLS ACCORDING
TO WEIGHT CLASSIFICATION

Factors	Mean Scores	
	Normal Weight	Over- Weight
	(N=32)	(N=7)
Getting Along with Peers		
Girls	1.8	8.3
Boys	1.8	8.1
Getting Along with Family		
Mother	2.6	11.7
Father	2.4	11.0
Brothers	2.0	9.1
Sisters	2.1	9.7

associates (30) were of the opinion that obesity is influenced by emotional problems. Mayer (38) reaffirmed the fact that the obese adolescent often has trouble in getting along with family members.

The overweight individuals rated their own personalities as either outgoing, average, or timid. Seven overweight individuals (58.3 per cent), and 18 normal weight individuals (36.7 per cent) considered themselves as outgoing. A total of 41.7 per cent of the overweight group, and 61.2 per cent of the normal weight group rated themselves as average. Only one normal weight individual and none of the overweight subjects checked the rating of timid.

Over half of the overweight subjects considered themselves as outgoing. Becker (3) reported that the obese are often superficially gregarious while suffering anxieties in interpersonal relationships. A summary of personality ratings of the overweight and normal weight groups concerning personality is shown in Table XVIII.

The overweight adolescents participating in the study were requested to rate their own personal appearance. A greater percentage of normal weight teen-agers (24.5 per cent) than overweight teen-agers (16.7 per cent) considered themselves as very attractive. Contrary to expected results, a larger percentage of the overweight group (41.7 per cent)

TABLE XVIII

COMPARISON OF STUDENTS' RATINGS OF THEIR OWN PERSONALITY
ACCORDING TO WEIGHT CLASSIFICATION

Student Rating of Own Personality	Study Group					
	Overweight				Normal Weight (N=49)	
	Boys (N=5)	Girls (N=7)	Total Group			
	Num- ber	Num- ber	Num- ber	Per cent	Num- ber	Per cent
Outgoing	4	3	7	58.3	18	36.7
Average	1	4	5	41.7	30	61.2
Timid	0	0	0	0.0	1	2.0

than of the normal weight group (28.6 per cent) rated themselves as attractive. A greater percentage of the normal weight than of the overweight subjects checked average as their personal appearance rating. Only one individual, who was normal in weight, considered himself as very unattractive. Data concerning the personal appearance ratings of the overweight and normal weight teen-agers is shown in Table XIX.

Individuals participating in the present study checked answers as to how boys might rate them in personal appearance. Only seven individuals, who were normal in weight, were of the opinion that boys rated them as very attractive. A greater percentage of the overweight group (33.3 per cent) than of the normal weight group (26.5 per cent) indicated that boys might rate them as attractive in appearance. A total of 53.1 per cent of the normal weight individuals, and 33.3 per cent of the overweight individuals were of the opinion that boys might rate them as average in appearance. A higher percentage of the obese (33.3 per cent) than the non-obese (6.1 per cent) were of the opinion that boys might rate them as either unattractive or very attractive. A summary of responses on how boys might rate the personal appearance of the participants is shown in Table XIX.

The participants indicated how girls might rate them in personal appearance. None of the overweight group, and 20.4 per cent of the normal weight group were of the opinion that

TABLE XIX

RESPONSES OF ADOLESCENTS CONCERNING EVALUATIONS
OF PERSONAL APPEARANCE ACCORDING TO
WEIGHT CLASSIFICATION

Opinions of Personal Appearance	Study Group					
	Overweight				Normal Weight (N=49)	
	Boys (N=5)	Girls (N=7)	Total Group			
	Num- ber	Num- ber	Num- ber	Per cent	Num- ber	Per cent
<u>Self Rating</u>						
Very attractive	1	1	2	16.7	12	24.5
Attractive	2	3	5	41.7	14	28.6
Average	2	2	4	33.3	21	42.9
Unattractive	0	1	1	8.3	1	2.0
Very unattractive	0	0	0	0.0	1	2.0
<u>Rating by Boys</u>						
Very attractive	0	0	0	0.0	7	14.3
Attractive	1	3	4	33.3	13	26.5
Average	2	2	4	33.3	26	53.1
Unattractive	1	2	3	25.0	3	6.1
Very unattractive	1	0	1	8.3	0	0.0
<u>Rating by Girls</u>						
Very attractive	0	0	0	0.0	10	20.4
Attractive	2	0	2	16.7	14	28.6
Average	1	6	7	58.3	22	44.9
Unattractive	2	1	3	25.0	1	2.0
Very unattractive	0	0	0	0.0	2	4.1

girls rated their personal appearance as very attractive. A total of 28.6 per cent of the normal weight group, and 16.7 per cent of the overweight group indicated that girls might rate them as attractive. A larger percentage of the overweight individuals (58.3 per cent), than of the normal weight subjects (44.9 per cent), checked average as the rating girls might give them. A total of 25.0 per cent of the overweight teen-agers and 6.1 per cent of the normal weight teen-agers were of the opinion that girls might rate them as either unattractive or very unattractive in personal appearance. The responses of the study group as to how girls might rate the participants in personal appearance are summarized in Table XIX.

The overweight subjects gave themselves higher ratings in personal appearance than they considered boys and girls of the same age group would give them. According to Stunkard and Burt (62) the juvenile obese have poor self-images and disturbed self-concepts as a result of parental and peer disapprovals.

Overweight boys and girls checked an item in the survey form that rated their degree of personal happiness. Twelve per cent or less of both the overweight or the normal weight teen-agers considered themselves as either extremely happy or happy. A total of 25.0 per cent of the obese and

24.5 per cent of the non-obese rated themselves as average in happiness. One-half of the overweight group and 38.8 per cent of the normal weight group rated themselves as unhappy. A total of 16.7 per cent of the overweight subjects and 24.5 per cent of the normal weight subjects considered themselves as very unhappy. McLaren (43) revealed that a popular misconception about the obese is that they are happy people. Actually, they are very unhappy and remain unhappy until they lose weight. A summary of the responses as to the degree of happiness of the participants appears in Table XX.

The overweight boys and girls revealed personal feelings about social contacts. A large proportion of the obese group indicated that they often felt unsure of themselves, liked to be alone, and were not at ease at parties. Three-fourths of the overweight adolescents often felt lonely. The obese group indicated that they usually talked more than they listened, and never had the chance to be a leader. The obese boys and girls sometimes or frequently wished others would choose them for their teams, wished they had more friends, liked to date frequently, fought with brothers or sisters, thought others would make fun of them, and usually felt awkward. All of the overweight subjects indicated that they usually were depressed. One-third of the overweight boys and girls sometimes ate food when depressed, nervous or upset.

TABLE XX

RESPONSES OF 61 ADOLESCENTS CONCERNING
EVALUATIONS OF HAPPINESS

Happiness	Study Group					
	Overweight				Normal Weight (N=49)	
	Boys (N=5)	Girls (N=7)	Total Group			
	Num- ber	Num- ber	Num- ber	Per cent	Num- ber	Per cent
Extremely happy	0	1	1	8.3	5	10.2
Happy	0	0	0	0.0	1	2.0
Average	2	1	3	25.0	12	24.5
Unhappy	2	4	6	50.0	19	38.8
Very unhappy	1	1	2	16.7	12	24.5

Other investigators agreed that the obese have social and emotional problems. According to Becker (3), the overweight individual is often lonely and is usually awkward in social aggressiveness. An editorial in The Journal of the American Medical Association (50) reported that obese persons are often severely depressed. As pointed out by Weinhaus (68) the obese adolescents are often called unpleasant names by peers. Mullins (47), and Weinhaus (68) agreed that the obese react to nervous tension and worry by increased food intake. Stunkard and Burt (62) were of the opinion that the poor self-image that the obese develop during adolescence is difficult to correct.

Activity Patterns of Over-Weight Adolescents

Overweight girls more frequently participated in physical education at school than overweight boys. Similar proportions of girls and boys sometimes danced, exercised during the week away from school, exercised on Saturday and Sunday, or enjoyed exercise. Greater proportions of boys than girls frequently or sometimes skated, ran, or took long walks. Seven of the 12 overweight individuals indicated they would rather be active at all times than rest in bed.

The obese individuals participating in the study were compared with normal weight individuals as to the number of

hours spent asleep or at rest in bed. The hours in bed were categorized as six hours or less, seven or eight hours, and eight or more hours. A greater percentage of normal weight teen-agers than of overweight teen-agers spent six hours or less in bed. A total of one-half of the overweight subjects and 44.9 per cent of the normal weight subjects spent seven or eight hours in bed. A larger percentage of the overweight group (41.7 per cent) than of the normal weight group (32.7 per cent) usually spent eight or more hours in bed. Responses concerning hours at rest in bed for the study groups are shown in Table XXI.

Bloom and Eidex (4) stated that the overweight spend more time in bed or less time on their feet. Contrary to expected results, fewer of the overweight boys than normal weight boys participating in the present study spent more than eight hours in bed. The overweight girls, however, spent more hours at rest than the normal weight girls.

The participants recorded the amount of time spent sitting while in class, watching television, listening to the radio or records, and in eating. The responses of normal weight boys and girls were compared to the responses of overweight boys and girls. Normal weight girls reported a higher mean time for sitting in class (7.5 hours.) than the overweight girls (3.7 hrs.). The obese girls, however, spent

TABLE XXI

COMPARISON OF THE NUMBER OF HOURS PARTICIPANTS SPENT AT
REST IN BED ACCORDING TO WEIGHT CLASSIFICATION

Hours at Rest in Bed	Study Group					
	Overweight (N=12)				Normal Group (N=49)	
	Boys (N=5)	Girls (N=7)	Total Group			
	Num- ber	Num- ber	Num- ber	Per cent	Num- ber	Per cent
6 or less	0	1	1	8.3	11	22.5
7 or 8	4	2	6	50.0	22	44.9
8 or more	1	4	5	41.7	16	32.7

more time watching television, and listening to radio or records than did the non-obese girls. There was little difference in the amount of time reported as spent by the two groups in eating.

There was little difference in the mean times for sitting in class for the obese boys (1.3 hrs.) and the non-obese boys (1.5 hrs.). The overweight boys spent an average of 2.1 hours watching television, while the normal weight boys spent an average of 1.2 hours. The obese boys spent a greater proportion of the time during the day listening to the radio and to records than did the non-obese boys. There was little difference in the proportion of time the normal weight and overweight boys spent in eating. A summary of the amount of time spent per day in sedentary activities for the two study groups is shown in Table XXII.

The overweight girls had a mean time of 13.3 hours for sedentary activities, while normal weight girls spent 12.8 hours engaged in sedentary activities. Overweight boys had overall mean time of 6.2 hours, and normal weight boys had an overall mean of 4.2 hours for sedentary activities.

Overweight boys and girls spent more time watching television, and listening to radio or records than the normal weight individuals. Bryans (8) reported that overweight

TABLE XXII

COMPARISON OF TIME SPENT IN SEDENTARY ACTIVITIES AS REPORTED BY
ADOLESCENTS ACCORDING TO WEIGHT CLASSIFICATION

Sedentary Activities	Study Group			
	Overweight (N=12)		Normal Weight ^{a/} (N=42)	
	Total Time	Mean Time	Total Time	Mean Time
<u>Girls</u>				
In class	27 hrs., 30 min.	3.7 hrs.	241 hrs., 0 min.	7.5 hrs.
Watching television	37 hrs., 0 min.	5.3 hrs.	68 hrs., 30 min.	2.1 hrs.
Listening to radio or records	21 hrs., 0 min.	3.0 hrs.	55 hrs., 45 min.	1.7 hrs.
Eating	8 hrs., 55 min.	1.3 hrs.	48 hrs., 16 min.	1.5 hrs.
<u>Boys</u>				
In class	10 hrs., 30 min.	1.3 hrs.	25 hrs., 0 min.	1.5 hrs.
Watching television	15 hrs., 0 min.	2.1 hrs.	20 hrs., 30 min.	1.2 hrs.
Listening to radio or records	9 hrs., 30 min.	1.9 hrs.	19 hrs., 50 min.	1.2 hrs.
Eating	2 hrs., 50 min.	0.9 hrs.	13 hrs., 10 min.	0.8 hrs.

^{a/}Seven individuals did not check all of the categories concerning daily activities.

adolescents enjoy sedentary activities and are interested in reading, music, and art. Chirico and Stunkard (10) revealed that obese subjects watched television more than 15 hours a week.

The categories for chores frequently performed around the house were "indoors," "outdoors," and "cleaning own room." The three categories included a list of 18 household chores frequently performed by teen-agers. The word "frequently" was explained as chores performed at least five times a week.

Contrary to expected results, overweight girls had a mean score of 9.0, and normal weight girls had a mean score of 7.2 for chores frequently performed indoors. Normal weight girls, however, had a higher mean score for chores frequently performed outdoors than did overweight girls. There was little difference in the proportion of normal weight and overweight girls who frequently cleaned their own rooms.

The mean score for indoor chores performed by normal weight boys was 5.5, and the mean score for overweight boys was 3.6. A slightly greater proportion of normal weight boys than overweight boys performed chores outdoors, or cleaned their own rooms. A summary of the mean number of chores for normal weight and overweight individuals participating in the study is shown in Table XXIII.

TABLE XXIII

COMPARISON OF CHORES FREQUENTLY PERFORMED
BY ADOLESCENTS ACCORDING TO
WEIGHT CLASSIFICATION

Chores	Study Group			
	Overweight			
	Boys (N=5)		Girls (N=7)	
	Total Number	Mean	Total Number	Mean
Indoors	18	3.6	63	9.0
Outdoors	10	2.0	5	0.7
Cleaning Own Room	2	0.4	6	0.9
Chores	Normal Weight			
	Boys (N=17)		Girls (N=32)	
	Total Number	Mean	Total Number	Mean
	Total Number	Mean	Total Number	Mean
Indoors	93	5.5	229	7.2
Outdoors	46	2.7	61	1.9
Cleaning Own Room	11	0.6	27	0.8

The data presented revealed that the overweight individuals spend less time engaged in non-strenuous activities and more time sitting. Johnson, Burke, and Mayer (30) agreed that the obese spend two-thirds less time in physical activities than the non-obese. Corbin and Pletcher (12) also found that the obese are less active than the non-obese. According to Chirico and Stunkard (10), obese subjects prefer sedentary activities.

CHAPTER IV

S U M M A R Y , C O N C L U S I O N S , A N D R E C O M M E N D A T I O N S

A survey of 61 students of the James Madison High School, Dallas, Texas was conducted in 1970. Data were obtained from the survey form, "Survey of Self-Concepts and Eating, and Activity Patterns of Adolescents." The parts of the questionnaire were as follows: Eating Patterns and Practices, Self-Image Index, Activity Patterns, and Family Background Information.

The overall purpose of the present study was to evaluate some of the differences in eating habits, activity patterns, and personality traits of overweight and normal weight adolescents. The specific purposes of the study were:

- 1) To determine differences between the two groups in eating patterns, types of foods preferred, and frequency of food consumption.
- 2) To investigate differences between the two groups in patterns and types of activity.
- 3) To compare personality traits and self-image patterns of the two groups.
- 4) To analyze certain of the factors investigated in relation to family background patterns and sex differences.

Information obtained from the survey form revealed that the family size of the participants ranged from two to eight individuals. The total number of family members was 295, with an average of 4.8 persons per family. A total of 118 adults and 177 children were reported for the 61 families. The number of children per family ranged from one to six. The mean number of children was 2.9.

Over half of the families had both a mother and father. Approximately 37 per cent of the families were one-parent families headed by the mother. Families of the community more frequently lived in a house or an apartment. Most of the families, 60.7 per cent, rented the family dwelling.

Fifty-six overweight adults, and 30 overweight children were reported for the families participating in the study. The number of overweight family members ranged from one to six per family.

Of the 58 mothers, 48.3 per cent were employed full time outside the home. Approximately one-third of the mothers were full time homemakers.

Data obtained from the students revealed the best liked methods of preparing vegetables. The methods were ranked as follows: boiled was ranked as first choice for nine of the 12 vegetables; fried was the second choice, and was best

liked for potatoes and squash; onions and carrots were liked best raw.

A majority of the students liked ground meat, steak, chicken, bacon, liver, pork, and ham as fried meats. Sandwiches were liked best for bologna, tuna, and ham. Beef was best liked roasted.

Plain was the most popular method of preparation for fruits. Very few of the individuals liked fruits cooked, with sugar added, or prepared by any other method listed.

The snacks most frequently consumed, in descending rank order, were as follows: hamburger, sandwiches, soft drinks or Kool-Aid, hot dogs, French fries, potato chips, cookies, and sweet rolls or doughnuts. Ten per cent or more of the students never ate pizza, cheese, and fresh vegetables between meals.

More than one-half of the respondents usually ate two or three times between meals. The number of times snacks were eaten ranged from one to six. The mean number of in-between meal snacks was 1.9.

A majority of the participants reported that snacks were more frequently consumed in the afternoon and evening. Popular times for snacks were between seven and eight o'clock in the

morning; between 12 and one o'clock or three and four o'clock in the afternoon; and from five to six o'clock in the evening.

A total of 344 soft drinks were reported consumed in a week by the students. Of the 61 respondents, 14.8 per cent usually consumed five soft drinks per week. The mean number of soft drinks consumed was 5.6. Soft drinks consumed ranged from one to 24 per week.

Over one-half of the participants frequently ate biscuits, corn bread, rolls, and white bread. Approximately 18 per cent ate muffins, and 1.6 per cent usually ate whole wheat bread.

Ready-to-eat and cooked cereals were frequently consumed by participants. Rice was eaten by one-half of the participants. Oatmeal and cream of wheat were eaten by only a few of the respondents. Thirteen students named Corn Flakes and Rice Krispies as ready-to-eat cereals frequently eaten.

Information obtained from the participants revealed that 13 per cent ate the breakfast served at school. Fruits were consumed by 37.7 per cent as foods for breakfast. Reasons listed for missing breakfast, in descending rank order, were as follows: preferred to groom rather than to eat, not

hungry, not enough time to eat, would rather sleep than eat, not enough energy, and afraid of gaining weight. More breakfasts were eaten on weekends than during the week.

Three-fourths of the students ate the plate lunch served at school; 14.8 per cent took a lunch to school. Approximately one-half of the students reported that a noon meal was prepared in the home, and that the same kinds of foods were eaten at home as eaten at school. Lunches for a majority of the participants included fruits and green or yellow vegetables. Salads and desserts were not frequently eaten as foods for lunch. Over one-half of the participants reported that lunches were served in the home on weekends and that lunch was served at the same time each day.

Dinner was served on weekdays and weekends in approximately 80 per cent of the homes. Salads and green or yellow vegetables were included in the dinners of one-half of the students; and 41 per cent included fruits. A total of 60.7 per cent of the students preferred potatoes rather than green vegetables to eat with meat. More than one dessert per day was reported as usually eaten by 34.4 per cent of the students. A small percentage of the individuals reported that dinner was eaten at the same time everyday.

A one-day dietary recall was given by each teen-ager for breakfast, lunch, dinner, and snacks. An examination of the foods reported as eaten on the day previous to the survey revealed that the adolescents consumed critically deficient diets.

Over 80 per cent of the students ate meat or a suitable protein substitute within the day. The number of servings of meat ranged from one to six. Less than 10 per cent of the boys and girls consumed eggs during the day.

Few of the adolescents consumed fruits or vegetables during the day preceding the survey. Only 14 individuals ate fruits. Very few of the boys or girls consumed vegetables within the day for which the diets were recorded.

Fourteen of the participants consumed one serving from the milk group and 13 consumed two servings. The intake of milk was proportionately greater for girls than for boys, but was very inadequate for most of the group.

Breads and cereals were eaten in adequate or more than adequate amounts by most of the group. These foods were included in meals or eaten as snack foods. A greater proportion of girls than boys consumed servings from this food group.

The quantities of milk, and green or yellow vegetables consumed on the day previous to the survey would suggest that

vitamin A, ascorbic acid, and calcium may be low in the diets of individuals participating in the present study. Protein and carbohydrate, however, were more adequate.

Food was associated with emotional problems for a majority of the students. Eighty per cent of the respondents were usually hungry at mealtime. Very few individuals felt guilty after eating too much.

One-half the boys participating in the study considered themselves as outgoing in personality; the other half rated themselves as average in personality. Of the 39 girls, 48.7 per cent checked the rating of average, 46.2 per cent considered themselves as outgoing, and 2.6 per cent considered themselves as timid.

Approximately one-third of all the adolescents rated their own personal appearance as average. Only one third rated personal appearance as unattractive, and 14 rated their personal appearance as very attractive.

Girls were of the opinion that boys of the same age group would rate them as either attractive (35.9 per cent), or average (33.3 per cent). The boys frequently indicated that other boys of the same age group would rate them as average in appearance.

Over one-half of the girls, 56.4 per cent, indicated that other girls would rate them as average in appearance. None of the girls were of the opinion that other girls rated them as very unattractive. Equal percentages of the boys indicated that girls would rate them as very attractive or as average in personal appearance. Nine per cent of the boys were of the opinion that girls would rate them as very unattractive.

More girls than boys indicated that they were extremely happy. A larger number of both girls and boys rated themselves as happy than checked any other category. Nine per cent of the boys and 10 per cent of the girls considered themselves as very unhappy.

Responses to the questions concerning self-image of the students revealed that a majority of the students desired more social contacts, had few chances to lead, usually had trouble getting along with family members, and were often unsure of themselves.

The questionnaire revealed that 54 of the students usually enjoyed exercise. Thirty-two students exercised on weekends, and 44 exercised during the week. Frequent activities of the adolescents included dancing, exercising, bicycling, skating, running, and taking long walks.

Of the 61 participants in the study, 45.9 per cent rested in bed for seven to eight hours. The next most frequently checked time for resting in bed was nine to 10 hours.

The adolescents spent an average of 10 hours or more engaged in sedentary activities. A mean of five hours per person was reported for time spent sitting in class each day. Watching television ranked second as the sedentary activity consuming many hours of the day for most of the participants.

The number of chores frequently performed around the house ranged from zero to 17. An average of 6.6 chores were performed indoors, and 2.2 chores outdoors. Forty-six students cleaned their own rooms.

All boys and girls were within the normal range for height at each age level. Seventeen boys were normal in weight and five were overweight. Thirty-two girls were normal in weight and seven were overweight. A total of 12 students, or 19.7 per cent of the group, were overweight. Four 13-year-old girls, two 14-year-old girls, and one 15-year-old girl were overweight. Of the boys, two 13-year-old boys, one 14-year-old boy, and two 15-year-old boys were overweight. Twenty-six per cent of the 86 reported overweight persons were from the families of the 12 overweight adolescents. The mean number of overweight family members as reported by the obese group was 1.8.

Forty per cent of the total number of employed mothers were from the families of the overweight adolescents. Ten of these mothers were employed full time, and two were employed part time.

There was little difference between normal weight and overweight adolescents in the methods of preparation best liked for vegetables, fruits, and meats. Snack foods more frequently eaten by the overweight teen-agers, in descending rank order, were as follows: hamburger, soft drinks, and Kool-Aid, French fries, and potato chips. The mean number of times for eating between meals as reported by the overweight adolescents was 1.6. The number of snacks usually eaten ranged from one to five. Sixty per cent of the overweight teen-agers indicated that snacks were usually eaten between breakfast and lunch, and/or before going to bed. The reported times for eating between meals were as follows: between seven and nine o'clock, between one and four o'clock in the afternoon and between four and seven o'clock in the evening.

There was little difference in the mean number of soft drinks consumed per week by the overweight boys and girls. The boys consumed 3.4 soft drinks a week, and the girls, 3.7 soft drinks a week. The mean for the total group of 61 students was 5.6 soft drinks per week per person.

The overweight boys and girls frequently consumed biscuits, and rolls. A higher proportion of overweight girls than overweight boys ate muffins, corn bread, white bread, and whole wheat bread.

None of the obese individuals consumed the breakfast served at school. Approximately one-half of this group ate fruits for breakfast. Breakfasts were eaten more frequently on weekends than during the week. Reasons for missing breakfast, in descending order, were as follows: not hungry, not enough time, and afraid of gaining weight.

A majority of overweight boys and girls carried lunches to school. Noon meals were prepared in the homes of one-half of the obese group. Approximately 90 per cent of the overweight teen-agers ate lunch on weekends. A majority of the obese consumed fruits, and green or yellow vegetables for lunch. Few of the overweight individuals usually ate salads for lunch. Ten of the overweight students reported eating only one dessert at lunch or dinner.

An evening meal was prepared in the home of each obese individual. Over half did not eat salads or fruits for dinner. Fifty per cent of this group of students preferred potatoes rather than green vegetables to eat with meat. Ninety per cent of the group did not eat more than one dessert at dinner.

The one-day dietary recall revealed that at least one serving from the meat group was eaten by 11 of the 12 overweight teen-agers. Seven obese girls and five obese boys ate one or more servings of breads or cereals. Adequate servings from the milk group, and from the fruits and vegetable group were not reported as eaten by this group on the day previous to the survey.

Dietary scores for normal weight teen-agers ranged from four to 13, and for overweight individuals, from four to 12. A total dietary score of 16 was possible, based on the number of servings consumed from each food group. The mean dietary score for the normal weight group was 7.3 and for the overweight group, 8.0.

Over one-half of the obese students frequently had trouble getting along with family members, and usually had trouble making friends with peers. Responses revealed that many of the overweight individuals thought they were overweight, were usually hungry between meals and at mealtime, and ate when nervous, depressed or upset.

There was little difference in the individual personality ratings of the overweight boys and girls. A majority of the obese individuals rated their own personality as either "outgoing" or "average."

Thirty-three per cent or more of the obese group rated their own personal appearance as average or attractive. Only two individuals rated their own appearance as very attractive, and none rated their appearance as very unattractive.

The majority of the overweight group were of the opinion that boys of the same age group might rate them as either "attractive" or "average" in personal appearance. One individual checked "very unattractive" as the rating boys might give.

None of the overweight boys or girls indicated that girls of the same age group would rate them as "very attractive" or "very unattractive" in personal appearance. Approximately 99 per cent of the girls thought other girls might rate them as "average." There was little difference in the number of obese boys who were of the opinion that girls would rate them as either "attractive," "average," or "unattractive."

A total of 66.7 per cent of the overweight individuals considered themselves as "unhappy," or "very unhappy." Only one individual checked "extremely happy," while none checked "happy."

Overweight girls participated in physical education at school more frequently than overweight boys. A majority of the overweight individuals usually participated in some

physical activity during the week. Only one of the obese group exercised on weekends. The obese group reported they usually preferred activity at all times to rest in bed.

Approximately one-half of the obese girls spent nine to 10 hours in bed, and 80 per cent of the obese boys spent seven to eight hours in bed. Contrary to expected results, a greater percentage of normal weight boys than overweight boys usually spent more than eight hours in bed.

The obese group usually spent more time watching television and listening to the radio or to records than did the non-obese group. There was little difference in the amount of time spent sitting in class for normal weight and overweight girls, or for normal weight and overweight boys.

A greater proportion of normal weight than of overweight boys performed chores outdoors or cleaned their own rooms. Normal weight girls had a higher mean for chores frequently performed outdoors than the overweight girls, while overweight girls had a higher mean for chores performed indoors.

In the present study, the author related personality traits or self-concepts with eating and activity patterns. Data obtained from overweight and normal weight teen-agers revealed that overweight adolescents have negative self-concepts that are associated with poor diets and low activity

levels. However, poor eating patterns were evident for both groups.

Of primary concern is the nutritional inadequacy of the diets of the students participating in the present study. The one-day dietary recall indicated that the diets of the obese and non-obese individuals were unbalanced and severely deficient. Poor diets were related to the practices of skipping breakfast, selecting poor snack items, and failing to balance calories with activities. Food patterns of the adolescents within the community studied revealed that snacks provided much of the daily nutrition. These findings suggest a need for instruction on dietary habits and snack selection.

The activity level of the individual may have influenced the amount of weight gained. The overweight students actually participated in fewer activities than normal weight individuals. This finding suggests that the activity level of the obese students should be increased to balance energy consumed.

The present study revealed that in addition to the severe nutritional inadequacy and lack of physical activity of many of the subjects, there was a disturbed body image and poor self-concept. The poor sociological and psychological adjustments of many of the overweight students may have been related to problems within the home.

Personal interviews with some of the overweight adolescents by the author revealed problems which may be associated with obesity. These problems included a work-study schedule that afforded little time for the students to participate in physical activities, and time only for "piece-mealing;" lack of an adequate diet available in the home; poor family relations based on parental pushing and deprecation, social ostracism and name calling by peers; and poor self-concepts resulting in unwillingness to participate in activities.

A certain degree of emotional stability, peer acceptance, adjustment to reality, good family relationships, nutritional knowledge of mothers and students are needed in a program of weight control. The findings of this study suggest a re-emphasis on considering all the developmental needs of adolescents. These needs include the physiological, the psychological, and the social development of the individual.

Better nutrition programs are needed for high school students based on the needs of the individuals concerned. The students should have a role in planning nutrition courses. Emotional and physical development should be stressed as part of a nutrition program. This program should include special emphasis on developing better family and peer group relationships, and on encouraging physical activity. Assistance from qualified individuals from all disciplines should be available for assurance of an effective program.

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