Recidivism in Obesity and Differential Characteristics Between Normal Weight, Currently Obese, and Formerly Obese Individuals Using Self-Help, Professional Weight Loss Treatment, or No Treatment

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Psychology

1990

ABSTRACT

RECIDIVISM IN OBESITY AND DIFFERENTIAL CHARACTERISTICS BETWEEN NORMAL WEIGHT, CURRENTLY OBESE, AND FORMERLY OBESE INDIVIDUALS USING SELF-HELP, PROFESSIONAL WEIGHT LOSS TREATMENT, OR NO TREATMENT

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The first purpose was to determine the ratio of individuals who have self-recovered from obesity to individuals, who have recovered with professional help. Second, the recidivism rate of obesity was calculated. The third purpose was to identify differential characteristics among the following groups: (1) individuals who have never had a weight problem; (2) formerly obese individuals who used self-help; (3) formerly obese individuals who used professional help; (4) currently obese individuals who are using self-help; (5) currently obese individuals who are using professional help; and (6) currently obese individuals who are not attempting weight loss at the time of the study.

The following characteristics were compared between these six groups: (1) history of weight loss efforts; (2) onset of obesity; (3) self-efficacy related to eating restraint; (4) social support and social functioning; (5) physical

activity level; (6) weight locus of control; (7) self-control; (8) emotional stress; (9) psychological state; (10) coping responses; (11) personal/demographic information; and (12) parental weight history.

This study consisted of 1,000 non-self-selected individuals, randomly chosen from a community. Results showed there were more individuals who self-recovered from obesity than those who recovered with professional help.

Formerly and currently obese individuals using self-help and professional help attempted weight loss one more time than the number of times weight was regained. Formerly obese individuals had fewer weight loss attempts than the currently obese individuals. Individuals who never had a weight problem reported a history of weight loss efforts.

Currently obese individuals had lower self-efficacy than the formerly obese individuals and individuals who never had a weight problem.

Active behavioral coping response was found more among individuals who never had a weight problem.

There was a larger number of women using professional help and a larger number of men using self-help. More women than men were attempting weight loss despite having a normal body weight.

Onset of obesity significantly differed among the six groups.

There was no difference among the six groups for social support, physical activity level, weight locus of control, self-control, emotional stress, psychological mood states, parental weight, age, marital status, race, and employment status.

The study's limitations and suggestions for future research are provided.

To Nancy Ridley, my parents, and my grandmother, who bolstered my confidence in myself and in my work through their continued love and support.

All of the above individuals helped in countless ways and gave encouragement when it was needed.

To all of these very important people in my life, I dedicate this dissertation.

ACKNOWLEDGMENTS

Dr. Dozier W. Thornton was always willing to provide assistance and continuous support throughout my research project. His encouragement and support are greatly appreciated.

Dr. Bertram Stoffelmayr has played an important part in all aspects of this research study. His enthusiastic interest in weight loss and maintenance and his intellectual challenges inspired me throughout the dissertation process. He also helped arrange for financial support from the Department of Psychiatry in order to cover incentives for subjects' participation.

Dr. Robert Caldwell provided me with many useful comments on my writing style. His generous commitment of time in helping me with the fine tuning of my writing improved my dissertation.

Dr. Raymond Frankmann provided me with advice about the statistical analyses of the data. His statistical guidance gave me a sense of direction and is greatly appreciated.

Rick Albrecht was a wonderful resource person who helped me a great deal with the statistical analyses of the data. Lynae Wozniak helped me with laser printing of the questionnaires mailed to participants. Her hours of work provided me with professional looking questionnaires. Roger Halley gave a great deal of time and assistance in preparing and collecting supplies for my research study.

To all of the above people, I am deeply appreciative of their contribution to my research study.

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CHAPTER I
INTRODUCTION

Very little is known about people who lose weight on their own. Thus, there are unknown differences between individuals who attend organized weight loss programs and individuals who lose weight on their own without the help of any organized group. Because of the lack of information in this area, there is a need to study the self-help weight reducers and compare them to individuals who lose weight through professional help. In this study, self-help was defined as an individual's attempt to overcome obesity through his/her own adaptive capabilities without the assistance of professionals or any organized groups.

The first purpose of this study was to identify differential characteristics between the following groups: (a) individuals who have never had a weight problem; (b) formerly obese individuals who used self-help methods of treatment; (c) formerly obese individuals who used professional methods of treatment; (d) presently obese individuals who are currently using self-help methods; (e) presently obese individuals who are currently using professional treatment methods; and (f) presently obese individuals who are not actively pursuing weight loss techniques at the time of the study. Body mass index (BMI), which is weight divided by height squared, is an accepted measure in the literature of obesity. Using predetermined BMI cutoff points, each individual was classified into six groups. Thus, in this study, obesity was defined in terms of BMI.

Characteristics that differentiate between the six groups may be helpful in understanding obese individuals, in identifying new areas for treatment programs, and in discovering consistent experiences associated with successful weight loss and maintenance. The following twelve characteristics were compared between the six groups: personal and demographic data; weight locus of control; self-efficacy relating to eating restraint; social support relating to weight loss efforts and social functioning; physical activity level; history of weight loss efforts; parental weight; onset of obesity; self-control; emotional stress, measured by negative life change events; psychological mood states; and coping responses.

Jacobs and Wagner (1984) examined differences in individuals who were currently obese, previously obese now average weight, and always average weight. They gave a battery of behavioral and personality measures which included an assessment of physical self-concept, self-control, health locus of control, comparative reinforcement hierarchy, and various activities. Significant differences were found in the following: (a) physical self-concept; (b) time spent in vigorous activity; (c) time spent in passive activity with friends and in social activities; and (d) the reinforcement value of the following: eating, time with friends or family, and relaxing. Many other important variables (e.g., history of weight loss efforts, self-efficacy, psychological mood states) were not examined in Jacobs and Wagner's (1984) study. It is crucial that greater attention be given to a wide range of factors that may possibly differentiate between currently obese, formerly obese individuals, and individuals who have never had a weight problem.

Only a small number of studies have reported on self-recovery and recidivism rates of obesity. Therefore, there is a need for further research in

this area. The second purpose of this study was to examine the ratio of individuals who have self-recovered from obesity as compared to individuals who have recovered through professional help. This study obtained a randomly chosen sample. In other words, a sample representative of the general population was drawn in order to obtain data about the ratio of self-recovered to professionally-recovered obese individuals. The third purpose was to determine the recidivism rate of obesity. This allowed for an examination of the common pattern of losing weight followed by weight gain.

The following questions were explored in the present study: (a) What is the ratio of individuals who have self-recovered from obesity as compared to individuals who have recovered through professional help in a randomly selected sample?; (b) What is the rate of recidivism of obesity in a randomly chosen sample?; (c) Do formerly obese individuals (who used self-help or professional help), currently obese individuals (using self-help, professional help, and no help at the time of the study), and individuals who never had a weight problem differ in the following: history of weight loss efforts; onset of obesity; self-efficacy related to eating restraint; social support relating to weight loss efforts and social functioning; physical activity level; weight locus of control; self-control; emotional stress, measured by negative life change events; psychological mood states; coping responses; parental weight; and personal/demographic information?

The present study contributes to the literature by providing information about possible differential characteristics between the six groups previously mentioned. In addition, the study provides information on self-recovery from obesity and recidivism of obesity.

CHAPTER II
REVIEW OF THE LITERATURE

In this chapter, the following areas of theory and research are reviewed: the problem of obesity; definitions and measurements of body weight and weight change; history of weight loss efforts; family weight history, family environment, and genetics; personality, and demographic variables associated with body weight and weight loss; onset of obesity; treatments for obesity; self-help research; self-efficacy expectations in weight loss; social support in weight loss and maintenance; physical activity in weight loss and maintenance; locus of control in weight loss research; self-control; emotional stress; a proposed model of obesity; mail questionnaire research; and research on self-reported weight.

Problem of Obesity

Beginning fifty years ago, it became common for health care professionals, insurance underwriters, and food companies to look negatively upon obesity. Over the years, many specialties have been developed in an effort to treat obesity. The diet industry in the United States has been estimated to gross over $100 million a year, and the number increases annually (Beller, 1977).

Obesity afflicts a large portion of the United States population. Of the American population, it is estimated that 30% of the women and 20% of the men are obese. This means that they weigh at least 20% in excess of their

ideal body weight according to actuarial tables from the Metropolitan Life Insurance Company (Bray, 1979; Grande, 1974).

Even though there are often negative social consequences for the obese person and consistent warnings that obesity is hazardous to one's health, obesity is becoming more prevalent. In addition to obesity's negative health-related consequences, overweight individuals often carry around the burden of guilt and anxiety. Individuals are taught that being fat is considered a predisposing factor in hypertension, atherosclerosis, hernia, gall bladder disease, diabetes mellitus, liver disease, degenerative joint disease, and hyperuricemia (Berg, Williams, & Sutherland, 1979).

There have been many attempts to develop an effective treatment for obesity. Treatments have included many different intervention approaches. At one time or another, the following have been tried as weight loss techniques: the latest "miracle diet," psychotherapy, hypnosis, drugs, jaw wiring, and even surgery bypassing the small intestine or stomach. Unfortunately, none of these treatment methods have produced consistent or long-term success. However, bypass surgery may be recommended for the grossly obese (over 300 pounds or more) (Bray, 1976; Leon, 1976; Stunkard, 1978a).

Despite all of the efforts to treat obesity, it is difficult to achieve long-term weight maintenance. Stunkard (1958) concluded that the majority of obese individuals will not remain in treatment.. In addition, he stated that for those who stay in treatment most people will not lose weight and of those who do lose weight, most will regain weight. Stunkard and McLaren-Hume (1959) analyzed many studies examining the treatment of obesity and the weight histories of 100 obese individuals. They found that after 2 years, only 2 people had maintained a weight loss of 20 pounds. Thirty-one years

after Stunkard and McLaren-Hume's review, weight maintenance is still difficult to achieve. Wing and Jeffery (1979) reviewed the results of 145 studies involving the treatment of obesity published between 1965 and 1977. They concluded that there has been little progress in the clinical effectiveness of the treatment of obesity since Stunkard and McLaren-Hume's (1959) review.

Definitions and Measurements of Body Weight and Weight Change

Obesity is generally defined as a body fat content (i.e., percent of body consisting of fat) greater than 20% (Blundell, 1984; Bray, 1978). The terms overweight and obese refer to the condition when fat tissues make up a greater than normal proportion of total body weight (Bray, 1978). In the average American male, 15%-20% of body weight is fat tissue. In the average American female, 20%-25% of body weight is fat tissue (Blundell, 1984; Bray, 1978). There is a natural increase in body fat with increasing age.

There has been a technical difference made between the terms obesity and overweight (Bray, 1978, 1979). Obesity refers to an excess of body fat, whereas overweight refers to an excess of body weight according to height standards contained in actuarial tables (Bray, 1978; 1979). For practical purposes, the two terms may be used synonymously and interchangeably.

Colliver, Frank, and Frank (1983) did a correlational and factor analyses of six weight measurements used in the literature of obesity. Based upon measures of 951 adults, who were 20% or more above their ideal weights (according to the 1959 Metropolitan Life Tables), these authors studied the following measurements of body weight:

1) ponderal index: weight divided by height cubed

2) body mass index: weight divided by height squared

3) Sheldon's ponderal index: height divided by the cubed root of weight

4) weight-height ratio: weight divided by height

5) relative weight: ratio of observed weight to ideal weight

6) Benn's index: weight divided by height, where height is raised to a power based upon a regression coefficient of weight and height relative to mean population values

Colliver et al. (1983) found that the mean intercorrelation between these weight indices was $\bar{r}$ = .96, with a range of .87 to 1.0. Factor analyses showed that all six indices measure obesity and account for 97% of the variance between the six measurement methods. These researchers concluded that relative weight, weight-height ratio, and body mass index are the easiest to construct and interpret, but all six indices are empirically equal.

In a review of the literature on obesity treatment, Brownell (1982) examined six frequently reported measures of weight change. He concluded that absolute weight, measured in pounds or kilograms, is easy to understand, but did not account for individual differences in weight, frame size, or degree of obesity. Body mass index (BMI) is related more with the actual degree of body fat. The body mass index is considered to be the best single indicator of body fat and is widely recommended as a useful measure (Bray, 1979; Burton, Foster, & VanItallie, 1985). The ponderal index is not easily understood. A weight reduction quotient is frequently difficult to interpret. Categorical weight loss (i.e., listing subjects who have lost 20, 30, 40 pounds, etc.) is easy to understand, but does not account for individual

differences in weight, frame size, or degree of obesity. Percent overweight is easily understood and accounts for frame size, but does not account for percentage of body fat. Brownell (1982) recommended using several measures such as absolute weight, percent overweight, and body mass index when reporting results on weight change.

History of Weight Loss Efforts; Family Weight History, Family Environment, and Genetics; Personality Variables Associated with Body Weight and Weight Loss; and Demographic Variables Associated with Body Weight and Weight Loss

History of Weight Loss Efforts. A factor that has been studied in connection to success in weight loss programs is history of weight loss efforts. Gormally, Rardin, and Black (1980) studied a sample of 40 adult women who averaged 23.8% over their ideal weights. These researchers found that a previous history of weight loss efforts was significantly correlated with success in initial weight loss efforts in a behavioral program ($r = .42$, $p < .05$). In contrast, other researchers found an inverse correlation between previous weight loss attempts and success in weight loss programs (Hoiberg, Berard, Watten, & Caine,1984; Jeffery, Bjornston-Benson, Rosenthal, Lindquist & Johnson,1984; Jeffery, Snell, & Forster,1985).

Weiss (1977) and Wilson (1985) concluded that previous efforts at weight loss are not clearly related to treatment outcome. Weiss (1977) reviewed four studies that reported results on previous weight loss efforts. He found one study showed a negative relationship between previous weight loss attempts to subsequent weight loss. Three other studies did not find a relationship. Wilson (1985) concluded that weight loss history has not been found to be an effective predictor of future weight loss success. Wilson

(1985) outlined two contradictory arguments on this issue. One argument is that each time a new diet is begun, the biological adaptation to restricted energy occurs at a faster pace which makes it harder to lose weight. The other argument is that each time a person tries to lose weight, the individual's chance of success is increased. Currently, no conclusive statements can be made regarding previous history of weight loss efforts and chances for success in subsequent efforts.

Family Weight History, Family Environment, and Genetics. Many researchers believe that family eating habits affect children's body weight. Thus, family environment is believed to be an important factor in the development and perpetuation of obesity. Family habits and beliefs are sometimes used as encouragement for obesity. Mead (1943) believed that changing eating patterns within the family becomes difficult when food has been associated with love and affection. Further, rewarding children who finish everything on their plates with dessert reinforces overeating with more calories. In addition, the popular family attitude of connecting leanness with poor health encourages overfeeding of children. Finally, eating as entertainment rather than necessity adds to the development and perpetuation of obesity (Burland, Samuel, & Yudkin, 1974).

Burland et al. (1974) suggested that obesity is a family affair. These investigators found that obesity is often shared among spouses. After reviewing studies, these researchers found that 15% of the husbands of obese women were overweight. Whereas only 7.5% of the husbands of non-obese women were overweight. One reason given for spouses sharing obesity is the tendency for spouses to eat similar foods. Another reason is the idea of assortive mating (i.e., individuals tend to have partners who have the same degree of body fat) (Burland et al.,1974).

Other researchers have stated that obesity runs in families. Stunkard (1980) pointed out that as far back as the 19th century, it was documented that most obese patients in treatment had at least one obese parent. In 1930, Rony found that over two-thirds of 250 obese patients in Chicago had at least one obese parent. These findings suggest possible genetic contributors to obesity.

Studies have been done that show family influences on obesity and suggest a genetic component in the development of obesity. For example, Langone (1980) found that most of the Pima Indians of Arizona were grossly obese. He proposed that in previous times of food abundance, "thrift genes" allowed tribal members to store up calories as fat, which could later be used in time of famine. Today, the bodies of Pima Indians continue to store fat which explains the prevalence of obesity.

Studies suggesting a genetic component have been criticized for categorizing obesity as an "all or none" phenomenon. In other words, critics point out that along with common genes, family members often live in the same household. Thus, as mentioned earlier, other researchers believe that the family effect of obesity may be attributable to environment, or a combination of environment and genetic factors, rather than only to genetics. Because of the many possible confounding environmental influences on obesity, it has been difficult to get a measurement of the genetic contribution. Evaluations of the genetic contribution to obesity have included the following: the study of rare genetic diseases associated with obesity, evaluation of somatotypes in families, epidemiological studies, twin studies, and adoptive studies.

Twin studies have given support for the genetics contribution to the development and perpetuation of obesity. In contrast, adoption studies are

not so easily interpreted because it is difficult to distinguish environmental and genetic contributions. Adoption studies are based on the belief that the resemblance of adopted children to their biological parents can be attributed only to genetic correlation, and the extent to which they are similar to their adoptive parents is attributed to the environment. However, many adopted children have spent a large amount of time with their biological parents prior to adoption, or adoptive parents were selected because they were similar to the biological parents. Also, some adoptions may involve a step-parent who is a blood relative to the biological parent of the child (Stunkard, 1980). These problems influence the results of the adoption studies.

After consideration of currently available data, it is clear that genetics have a significant role in the development and perpetuation of obesity. Researchers agree that some types of obesity are the result of single genes, yet they warn that "genes are not destiny" (Stunkard, 1980). The source of individual genetic and environmental variation needs to be identified and their combined interaction needs to be better understood.

Personality Variables. After reviewing many studies of obese individuals, several authors have reported that there is no evidence to support the existence of an specific pattern of personality in obese individuals (Storlie, 1984; Stunkard, 1978b; Weiss, 1977; Wilson, 1985). Similar results have been reported for overweight people who have been successful in weight loss programs. Most studies indicate that there is no reliable personality pattern for obese individuals (Stunkard, 1978b; Weiss, 1977; Wilson, 1985).

Most obese people do not eat significantly more food than normal weight individuals (Bennett, & Gurin, 1982; Dyrenforth, Wooley, & Wooley,

1980; Garrow, 1978; Wooley, Wooley, & Dyrenforth, 1979). Some researchers found that overweight people are more emotionally reactive and more likely to engage in emotionally cued eating than normal weight individuals (Lowe & Fisher, 1983; Strain & Strain, 1979). Lowe and Fisher (1983) studied 17 individuals who averaged 31% overweight and 30 individuals of normal weight. Their results suggested that emotional eating was associated with the degree of overweight (r = .46, $p < .05$). Further, emotional binge eating has been related to relapse from weight loss efforts (Herman & Polivy, 1975; Stunkard, 1978b; Wilson, 1985).

Some researchers have begun to focus on the differences between restrained eaters, who constantly monitor their eating and eat less than they wish, and unrestrained eaters (Herman, 1978; Herman & Mack, 1975; Herman & Polivy, 1975; Loro & Orleans, 1981; Polivy & Herman, 1976). Herman and Polivy (1975) developed a scale to identify restrained eaters and unrestrained eaters. The distinction among restrained and unrestrained eaters has been found to be useful in the treatment and maintenance of weight loss (Brownell, 1985; Nisbett, 1972). The distinction is based on deviations from a biological set point, which is discussed in Chapter V. Individuals who have an excess number of fat cells who are biologically normal weight and statistically overweight must continually "restrain" their food consumption in order to be biologically underweight. Individuals with fat cells that are excess size are known as unrestrained eaters. Several researchers have found differences between food consumption patterns of restrained and unrestrained eaters in terms of their reactivity to stress, anxiety, and social cues (Herman & Mack, 1975; Herman & Polivy, 1975; 1980). Herman and Polivy (1975) found that individuals who scored high on restrained eating are more distractible, eat large amounts of food in times of

emotional stress, show signs of a stress-deprivation syndrome, are more likely to stop attempting weight loss, and are more emotionally reactive (Coates, 1977; Harris, 1983; Herman & Polivy, 1975; Wilson, 1985). Further, Coates (1977) characterized the restrained eater as experiencing less self-control because of poorly learned and randomly applied self-regulatory techniques. They also found that unrestrained eaters are more likely to attempt weight loss when faced with emotional stress. The interpretation of these findings and the meaning of the restrained eating concept are not clear in the literature on weight loss (Wilson, 1985).

Another personality variable that has been associated with weight loss efforts is Rotter's (1966) locus of control construct. The locus of control construct will be reviewed later in a separate section within Chapter II.

Demographic Variables. A greater percentage of women than men are overweight (Bray, 1979). Further, women are four times more likely to participate in a weight loss program than men (Wilson, 1985). Women tend to lose less weight and lose weight at slower rates than men (Weiss, 1977; Wilson, 1985). However, gender differences in amount and rate of weight loss are highly equivocal findings. When percent body fat, initial weight, and age are statistically controlled, gender differences in success at weight loss disappear (Weiss, 1977; Wilson, 1985).

Socioeconomic status, race, and ethnicity have been associated with obesity (Bray, 1979; Brownell, 1985; Weiss, 1977). Obesity has been shown to follow socioeconomic status gradients. Obesity is most common for low income women and median income men (Annual Report/NIH, 1985). Nevertheless, there is no evidence indicating that race, socioeconomic status, or ethnicity are associated with success or failure in weight loss programs (Bray, 1979; Brownell, 1985; Weiss, 1977).

Onset of Obesity

Evidence from a large number of studies indicates that the age at onset of obesity may be related to the success/failure of weight loss (Weiss, 1977; Wilson, 1985; Wing, Nowalk, Epstein, Scott, & Ewing, 1985). An increase in the number of fat cells appears to be associated with early-onset of obesity (Sjostrom, 1980). A negative correlation between number of fat cells and maintenance of weight loss has been reported (Krotkiewski, Sjostrom, Bjorntorp, Carlgren, Garellick, & Smith, 1977). Some researchers have found that early-onset of obesity is more resistant to treatment than adult-onset of obesity (Weiss, 1977; Hoiberg, et al., 1984). In contrast, other studies have found the opposite to be true. Jeffery, Wing, and Stunkard (1978) found that individuals with early-onset obesity lost more weight than those with adult-onset obesity.

Several other studies found no differences between early-onset and adult-onset obese individuals in their emotional response to weight loss (Linet & Metzler, 1981; Wing, Marcus, Epstein, & Kupfer, 1983). After reviewing 21 studies of behavioral treatments for obesity, Stunkard (1978b) concluded that adult-onset and early-onset obese individuals respond equally to treatment. Further, Wilson (1985) concluded that there is little evidence to support a better treatment outcome for adult-onset obese persons. Thus, it is unclear as to the significance of the onset of obesity to weight control efforts.

In the research examining the effect of age at the onset of obesity in weight loss, there are two methodological problems. First, there are inconsistencies across studies in the definition of early-onset and adult-onset of obesity. Second, other differences between individuals with early-onset and adult-onset of obesity have not been controlled.

Many studies comparing early-onset and adult-onset obese individuals do not clearly specify the criteria used for classification, and most appear to rely on individual's self-report to determine the age at which he/she first became obese (Wing et al., 1985). In addition, the cut-off age to determine early-onset and adult-onset varies across studies. For example, Genender, Wellisch, Pasnow, Fawzi, Quinn, and Maxwell, (1982) defined childhood-onset obesity as obesity beginning between 1 and 12 years of age, teenage-onset between ages 13 and 19, and adult-onset after age 20 years. Linet and Metzler (1981) compared individuals with onset of obesity in childhood (up to age 12) to individuals with adult-onset (no age criterion for adult-onset was given). Jeffery et al. (1978) defined early-onset obese individuals as those who were 20 pounds or more overweight at age 20 years.

Individuals with early-onset obesity may differ from those with adult-onset obesity in various ways. These differences include their current age and weight. Such differences may confound comparisons of the two subgroups. Genender et al. (1982) found that individuals whose self-reported onset of obesity occurred as a teenager (13-19 years) were younger and had higher body weight than those individuals who reported onset during childhood (1-12 years). Individuals with adult-onset obesity (older than 20 years of age) were the oldest and had the lower body weight of the three groups. In contrast, Jeffery et al. (1978) found that individuals with early-onset obesity were less overweight than those with adult-onset obesity.

Wing, Nowalk, Epstein, Scott, and Ewing (1985) suggested that the classification of individuals into early-onset and adult-onset obesity categories may be affected by the way in which the data is obtained. Almost twice as many individuals were classified as having early-onset obesity

when the classification was based on their answer to the question "Were you overweight as a child or teenager?" than being based on their answer to "What was your weight at age 21?" Differences between the two measures may result from questions inquiring about different ages or from the fact that one question asks for actual weight and the other for a labeling of the individual as being overweight. From Wing et al.'s (1985) study, it is not clear which method produces more reliable or valid information. Therefore, they suggested that two criteria should be used to classify individuals as having early-onset or adult-onset obesity. First, self-reported weight at age 21 should be compared to the Metropolitan Life Insurance standards. Individuals who report being $\geq$ 20% overweight at age 21 should be classified as being early-onset obese, while those who report being < 20% overweight at age 21 should be considered as being adult-onset obese. Second, individuals should be classified according to their response to the question, "Were you overweight as a child or teenager?" Those who respond positively should be classified as being early-onset obese and those who respond negatively as being adult-onset obese. More studies are needed to compare self-report age of onset to objective measures, such as physician or school records.

Treatments For Obesity

The literature on obesity includes many treatment approaches including the following: medical, dietary, psychoanalytic, behavioral, and multidisciplinary. The following is a summary of the related literature on the various treatment approaches.

Medical Treatments

The following procedures are used in the medical treatment of obesity: suppressing caloric intake through the use of drug therapy, jejunoileal bypass surgery, jaw wiring, and gastric bypass surgery. Medical treatment also plays a part in treating obesity related problems, such as diabetes mellitus, hypertension, atherosclerosis, hernia, gall bladder disease, liver disease, degenerative joint disease, and hyperuricemia.

After the discovery of the anorectic effect of certain drugs (e.g. sympathomimeticamines) in the 1930's, there was a great demand for drugs that affected appetite. These drugs began to be used as a medical treatment of obesity. However, studies on "diet pills" have indicated that anorectic drugs are relatively impotent. Mann (1974) pointed out the ineffectiveness and danger of anorectic drugs. It is important to recognize that these drugs have the potential for drug dependence and abuse. Despite these negative effects, the market still exists and many medical professionals and obese individuals refuse to acknowledge the limited usefulness and dangers of these drugs.

Another medical treatment for obesity is jejunoileal bypass surgery. This is regarded by many professionals as a dangerous choice. In this procedure, a major portion of the small bowel is bypassed. This produces intestinal malabsorption of ingested food and diarrhea by reducing the absorptive surface of the bowel. Because of the decreased caloric absorption, individuals lose weight. Eventually, this procedure leads to plateau because the small bowel becomes hypertrophied (Powers, 1980). Hypertrophy causes a decrease in malabsorption and in weight loss (Powers, 1980).

Jaw wiring is another medical procedure used in the treatment of obesity. The goal of jaw wiring is to reduce food intake. The teeth are wired

together as in the standard treatment for a fractured jaw (Fordyce, Garrow, Kark, & Stalley, 1979). Two studies reported favorable short-term weight loss after the jaw wiring (Rodgers, Burnet, & Goss, 1977; Wood, 1977). However, long-term follow-up reports showed that the majority of individuals gain weight within three months of having the wires removed (Fordyce et al., 1979).

Also available as a medical procedure for the treatment of obesity is gastric bypass surgery. This procedure involves a complete division of a small pouch in the stomach from the remainder of the stomach. This pouch is then joined to the second portion of the small intestine (Mason & Ito, 1969). Since this procedure does not interfere with absorption and digestion, it is better tolerated than the jejunoileal bypass surgery. Individuals who undergo gastric bypass surgery show initial weight losses and continue to show weight loss after at least two years (Fordyce et al., 1979). However, certain health risks are involved as in having any surgical procedure.

In summary, all of the various medical approaches result in short-term weight loss. However, these procedures often fail at weight maintenance. Unfortunately, these procedures have serious side-effects and health risks (e.g., digestive symptoms, possible death). It is hoped that increased medical technology will result in safer and more successful treatments for long-term weight maintenance.

Dietary Approaches

There are many fad diets available. Fad diets are accepted quickly by individuals and they usually are without scientific evidence of their effectiveness. These diets often exhibit two common features: promises of success and minimization of the hardship necessary for diet compliance.

Fad diets usually produce quick, short-term weight loss. However, once the diet has ended, weight is often regained. Most people do not remain on fad diets long enough to lose many pounds of fat. A substantial portion of the initial weight lost with the use of fad diets is water. As soon as individuals return to a more regular food intake, their bodies retain water and they become discouraged to see that only a few pounds were lost. Then old eating habits that may have lead to the development and maintenance of obesity return. Thus, the few pounds that were lost are quickly regained (Stunkard, 1980).

Protein-sparing fasts are recommended in many cases when weight loss is the primary medical intervention for certain medical conditions. For example, individuals with arterial hypertension, hyperlipemia, diabetes mellitus, orthopedic problems, and a body weight at least 20% greater than the calculated ideal weight are put on protein-sparing fasts (Wadden, Stunkard, & Brownell, 1983). The diet is basically a food fast that is supplemented by small amounts of lean meat, fish, or chicken as sources of protein. Some programs use powdered supplements for protein in place of the meat products. Vitamin and mineral supplements are included in a daily regimen. Individuals are seen by a physician for a thorough examination and are monitored at least biweekly during the program.

The protein-sparing diet has impressive results. Some individuals lose as much as 8-10 pounds the first week (Wadden et al., 1983). Many individuals report absence of hunger while on the diet. Despite the short-term effectiveness at weight loss, it is difficult to accomplish weight maintenance. The few studies that examined long-term results showed high relapse rates with this diet (Wadden et al., 1983).

Psychoanalytical Approaches

According to the psychoanalytical approach, obesity is a group of complex psychological and social problems. Psychoanalysts believe that individuals' emotional conflicts are responsible for obesity. Thus, in order to treat obesity, psychoanalysts explore the emotional states of individuals. Psychoanalysts also search for points of origin and factors that appear to maintain the condition of obesity. Most psychoanalysts believe that weight loss and maintenance can only occur when the "emotional needs" are uncovered and resolved. Rand (1978) has shown that weight loss has been associated with therapeutic attention to emotional conflicts. After reviewing longitudinal studies, Rand (1978) found that weight losses, resulting from psychoanalytic treatment, have been maintained for long periods of time for many individuals. Advocates of this approach believe that psychoanalysis functions as an indirect treatment for obesity by addressing its underlying emotional conflicts.

Psychoanalytic theory has also focused on the role of group process in the treatment of obesity. Bruch (1971) believes group process is important because the group setting can address possible psychoanalytic concepts, lend support, and save individuals time and money. Certainly some of the oldest and most successful obesity treatments provide some group therapy and group support. For example, Take Off Pounds Sensibly (TOPS) and Weight Watchers have recognized the benefits of group meetings on successful weight loss.

Professionals with different treatment approaches criticize the length of time involved in the psychoanalytic weight loss process and the amount of money spent by the individual in treatment. However, psychoanalysts believe that only by taking the recovery time to explore underlying issues

can hidden emotional conflicts be resolved. They believe that this is necessary in order to achieve weight loss and maintenance.

Behavioral Approaches

There are many reviews of the behavioral literature concerning the treatment of obesity (Abrams, 1984; Hall & Hall, 1974; Jeffery, Wing, & Stunkard, 1978; Leon, 1976; Stunkard & Mahoney, 1976; Wooley et al., 1979). Behavior modification has been described as a combination of Pavlovian conditioning and operant conditioning (Burland et al., 1974). Treatment is specifically focused on the individual. The behavior therapist carefully observes and records the individual's behavior. Then, a therapeutic plan involving positive and negative reinforcement for the desired and undesired behavior is prescribed for the individual.

The major assumption in the behavioral treatment of obesity is that bad eating habits lead to excess food consumption, which causes obesity. Behaviorists believe that learned behaviors function as operants and contribute to the overweight condition. These operants are reinforced by the pleasure of eating. Such learned behaviors are believed to be under the control of environmental cues associated with eating, which serve as discriminative stimuli for eating behavior (Wooley et al., 1979). Therefore, there is an interaction between learned behaviors and response to environmental cues. This suggests that obese individuals need to develop alternative eating styles or lifestyles that limit environmental cues and change their food intake.

Behavioral techniques were derived from the learning theory approach of Ferster, Nurnberger, and Levitt (1962). These authors reported on an operant method of developing self-control of eating behavior. Their

procedure was based on the theory that increasing the chain of responses leading to food consumption will decrease the tendency to start that chain.

Based on the approach of Ferster et al. (1962), Stuart (1967) developed a behavioral treatment program for overeating. This program requires the individual to monitor the amount of food and drink consumption and the situation in which the consumption occurs. The individual records body weight at specific periods each day, determines activities that are positively reinforcing with respect to food intake, and records weight related fears, such as developing cardiovascular disease. Further, a step-by-step behavioral program is set up to change eating patterns. Step one requires the person postpones his/her meal for predetermined periods of time and sit without eating. This interruption allows the individual to experience control over eating behavior. Step two requires the person keep in the house only those foods which involve preparation and only consume food in the kitchen. In step three, the person is instructed to eat without doing any other activity (i.e., reading, TV watching, etc.). The individual in step four is told to put the utensils back on the table after each bite of food until he/she has swallowed. In step five, the person is asked to engage in some other activity at times when he/she would normally eat. Step six involves relaxation training and having the individual imagine an aversive event while eating. Stuart (1967) reported therapeutic success with his behavior modification techniques. His results indicated greater weight loss and lower attrition rates compared to studies using other treatment approaches when the treatment duration was the same.

After Stuart's (1967) work, a large amount of research and clinical interest in the behavioral treatment of obesity emerged from the psychological and medical fields. Many modifications to the original

treatment program have been tested (Stunkard & Brownell, 1979). After Stuart's original uncontrolled study, it became necessary for researchers to determine the effect of the weight loss treatment by comparing similar obese individuals experiencing other treatment approaches and individuals without treatment. Harris (1969) compared two behavioral treatment groups to a no treatment control group. It was found that those individuals in both behavioral groups lost more weight than those in the control group. Further, the members of both behavioral groups continued to lose weight after treatment completion.

The results from other studies supported the effectiveness of behavioral treatment. Stunkard (1972) concluded that behavior modification is more effective than other methods of treatment for obesity because it produced greater weight loss during treatment and maintenance after treatment. Further, in a review of treatment programs, Stunkard and Mahoney (1976) concluded that despite some variability in outcome, behavioral treatment has been found to be superior to all other treatment approaches for controlling mild to moderate obesity. Consistent with the results of Stunkard and Mahoney's (1976) investigation, Kingsley and Wilson (1977) found that behavioral treatments produce significantly greater initial weight loss than non-behavioral treatment methods. A review of current behavioral techniques shows there is an average weight loss of about 12 pounds (Wing & Jeffery, 1979).

Further support for the effectiveness of behavioral treatment came from research by Wollerscheim (1970) and Penick, Filion, Fox, and Stunkard (1971). Both studies compared behavioral treatments to other treatment approaches. Wollerscheim's (1970) subjects in behavior therapy lost more weight at posttreatment and at two months follow-up than subjects in either

a self-help or a placebo group. Also, subjects in the no treatment control group gained weight during the study. Penick et al. (1971) compared a behavioral approach given by inexperienced therapists against a traditional weight loss approach given by experts. In two groups of subjects, the overall effectiveness of the behavioral program provided by inexperienced therapists was superior to a traditional weight control program (Penick et al., 1971).

Foreyt, Scott, and Gotto (1982) provided additional support for the efficacy of behavioral treatments. These investigators combined the results from 11 published studies with pre-, post-, and follow-up data. The pooled data represented 501 participants receiving behavior therapy, 157 receiving non-behavioral supportive counseling, and 74 receiving no treatment as a control. The weighted means for the behavior modification groups were 174 pounds pretreatment, 167 pounds after eight weeks of treatment, and 167 pounds after 18 weeks of follow-up. In contrast, the other treatment group had a mean pretest weight of 172 pounds, a mean weight of 170 pounds after 12 weeks of treatment, and a mean weight of 174 pounds after a 28 week follow-up. The control group had a mean weight of 159 pounds at pretreatment, and means of 159 pounds and 156 pounds at 9 and 13 weeks of follow-up. The control group had a combined dropout rate of 43%. Based on this sample of the treatment literature, behavioral treatments produce greater maintained weight loss than non-behavioral treatments.

Although behavioral treatment has demonstrated some short-term success, it is inaccurate to conclude that behavioral therapy is the best treatment (Stunkard & Brownell, 1979). A comparative outcome evaluation of 145 outpatient weight loss studies involving diet, drug, behavior, and exercise interventions by Wing and Jeffery (1979) provides a broad

overview of current outcomes from the treatment of obesity. After pooling 23 studies, these authors reported that a group of 284 waiting list no treatment control individuals lost an average 1.1 pounds. Out of 9 studies, 82 attention placebo control individuals lost an average 6.1 pounds. Diet, drug, behavior, and exercise therapies were all found to produce mean weight losses of 15 to 20 pounds. Behavior therapy and anorectic drugs were the most often used intervention approaches, with each producing weight loss rate of approximately one pound per week.

A criticism of behavioral methods in the treatment of obesity has been the lack of maintenance of weight lost in behavior therapy over follow-up periods. In a review of 16 behavioral programs with 12 month follow-up sessions, Foreyt, Goodrick, and Gotto (1981) found that for the year following treatment, the average rate of weight loss was zero and the maintenance was highly variable with mean weight losses at follow-up sessions ranging from 1 to 27 pounds. Further, several studies with longer follow-up periods of 3 to 5 years found that the majority of participants had significant weight gain (Gotestam, 1979; Graham, Taylor, Hovell, & Siegel, 1983). Thus, there is a tendency for individuals to lose weight in treatment, but not maintain it.

In summary, behavior modification methods have generally been found to be one of the most effective weight loss treatments among the mildly to moderately obese (Hirsch, 1977; Leon, 1976; Stuart, 1975; Stunkard, 1975). During treatment, behavioral weight loss programs generally result in average weight losses of approximately one pound per week (Wing & Jeffery, 1979). However, after treatment, most people do not continue to lose large amounts of weight (Jeffery, Wing, & Stunkard, 1978). Further, many people regain much of the weight they lost in treatment (Gotestam, 1979; Graham et al., 1983). This decrease in rate of weight loss

and occurrence of weight gain after treatment suggests that the behavioral changes acquired during treatment are not maintained. To support this statement, individuals report a decrease in the use of behavioral techniques and a deterioration of behavior changes during follow-up periods (Foreyt, et al., 1981).

Multidisciplinary Approaches

The multidisciplinary approach was developed as a result of the low statistical success rate of the unidimensional weight loss programs. From the available follow-up studies, it appears that only 8% of obese individuals seen in traditional nutrition clinics maintained satisfactory weight loss (Blackburn & Greenburg, 1978). The multidisciplinary approaches include environmental, medical, and etiological factors in effort to increase the effectiveness of weight loss treatment and maintenance.

When dealing with obesity, multidisciplinary approaches include behavior modification specifically designed for each person (Blackburn & Greenburg, 1978). The multidisciplinary treatment design usually involves medical and nutritional education, exercise, and experiential training. However, different combinations of the various available treatment approaches can be included into the multidisciplinary category.

The main assumption of the multidisciplinary models comes from the behaviorist's view that modifications to one's lifestyle is necessary in order to eliminate the overweight condition (Blackburn & Greenburg, 1978). Also prevalent among the multidisciplinary models is the belief that environmental cues influence the obese person's control over eating and that substitution behaviors need to be developed (Schachter, 1971; Stuart, 1967).

Because of the brief history of the multidisciplinary approach, its statistical comparison with other treatment methods is limited. As obesity

becomes better understood and more factors are recognized as contributing to the development and perpetuation of obesity, its treatment will become more successful.

Self-Help Research

One important fact about addictive behaviors is that many people are able to overcome addictive problems on their own (DiClemente & Prochaska, 1982). There is strong evidence to suggest that many people use self-help techniques to cope with a variety of behavioral and psychological problems. Psychic distress is a prevalent, highly recognizable, and a debilitating clinical syndrome. In spite of the prevalence of psychic distress, the majority of people with this condition do not seek the assistance of mental health professionals (Wilcox, Rossi, & Prochaska, 1986). Instead, they attempt to overcome their difficulties through their own adaptive capacities or with the help of friends, family, and clergy (Cowen, 1982; Strupp, 1982). As an example, the preliminary findings of a major epidemiological survey of the mental health of Americans indicated that approximately 19% have a diagnosable mental disorder (Regier, Myers, Kramer, Robins, Blazer, Hough, Eaton, & Locke, 1984). Despite this, only 7% of those identified as having mental disorders actually sought or received treatment for them. Further, from a nationwide survey, Gurin, Veroff, and Feld (1960) found that of the 2,460 people who felt that they had had an "impending nervous breakdown" at some time, 29% used self-help techniques entirely. In addition, 40% of the people who said they worried "all the time" relied on self-change.

Smoking is a serious health-related disorder which is thought to be resistant to treatment. However, the majority of ex-smokers in the United States have quit on their own without the assistance of formal smoking

cessation programs (Fisher, 1982; Horn, 1972; Schachter, 1982). Of the estimated 29 million Americans who quit smoking during the past decade, 70% to 80% were able to stop without formal treatment (DiClemente & Prochaska, 1982). Furthermore, a majority of smokers indicated that if they were to quit, they would not attend a formal treatment program (McAlister, 1975).

Obesity is another serious health-related disorder that has also been viewed as resistant to treatment. Schachter (1982) challenged the poor long-term weight maintenance results. He has argued that the difficulty of losing weight has been greatly overstated. According to Schachter (1982), the pessimistic conclusions regarding people's ability to control their body weight were based on work with self-selected, therapeutic populations of obese individuals who actively sought treatment. Further, Schachter (1982) stated that researchers have neglected all those individuals who were able to succeed on their own.

Schachter (1982) studied smoking and weight loss in a retrospective interview study of individuals from a non-therapeutic population. He conducted smoking and weight history interviews with all members of two predefined groups: the psychology department at Columbia University and all entrepreneurs within a designated main street area of a small seaside resort community. His purpose was to determine the incidence of obesity and smoking self recovery in a non-self-selected population. Based on self-reports, he found that 60% of the individuals he studied were able to reduce their weight to normal standards and maintain their weight without the help of professional treatment. In addition, he found that another 10%, although still overweight, had maintained a significant weight loss. He found that

successful weight loss and maintenance in untreated individuals in his study was higher than most reports of obesity treatment outcome.

Schachter (1982) proposed two explanations for the discrepancy between professional belief and realistic facts. The first reason he stated was that people who quit their habit on their own do not go to professionals for help. Most of the literature on obesity contains information about self-selected groups of individuals who sought professional help. These individuals are the only available subjects for studies. Schachter (1982) stated that people who recover themselves do not become part of the literature data. Because of this fact, the difficulty in treating addictive behaviors may be exaggerated. The second reason he stated was the inferences drawn from studies of treatment effectiveness are based on single attempts to recover from the addictive state. He stated that people try to quit repeatedly. Schachter's (1982) data represents a lifetime of attempted self-recovery while most researchers only view a single attempt of the participants in their programs. This explains the extraordinary success rates that Schachter reports. Schachter (1982) proposed that with or without professional help, success rates with multiple attempts to discontinue the addictive behavior may be greater than with single attempts.

Rzewnicki and Forgays (1987) attempted to replicate Schachter's (1982) study. These investigators found less support for Schachter's obesity findings. There were many more (about 2 1/2 times as many) obese subjects in Schachter's population who were able to manage their weight than in the their replication population. Both males and females in Schachter's population were more successful at losing weight than Rzewnicki and Forgays' subjects. These differences were all statistically significant.

The differences between the findings in Rzewnicki and Forgays' (1987) study and Schachter's (1982) original study indicated several limitations to Schachter's (1982) study. The first limitation was that only employed persons or psychology students were studied, omitting a substantial portion of the population that does not work outside the home. Secondly, detailed psychological and weight data was not collected. A third limitation was that Schachter (1982) indicated that the success rate for subjects who sought help for smoking or obesity was lower than that for untreated subjects. He stated that this may have been due to the "perversity of the therapeutic process." However, an adequate test of the hypothesized "perversity of treatment" factor involves comparison of three groups: (a) obese subjects requesting and receiving treatment; (b) subjects requesting but not receiving treatment; and (c) subjects not requesting or receiving treatment (Jeffery & Wing, 1983). Because request for help and receipt of help were confounded in Schachter's study, conclusions regarding the harmful effects of treatment are only speculative. In addition, Schachter (1982) apparently equated the therapeutic interventions of clinical psychologists and psychiatrists with help provided by other practitioners (e.g., including physicians, hypnotists, and groups such as Weight Watchers). Most likely, the latter practitioners are not adequately trained in psychotherapeutic services. Thus, their treatments cannot be compared to that of the former group of practitioners.

Finally, Schachter (1982) argued that subjects, who do not enroll in formal weight loss programs, are most likely to be successful in the long-term. He also assumed that individuals who lose weight on their own have the necessary personality or motivational characteristics to maintain their weight. Schachter (1982) proposed that one such characteristic might be an internal locus of control. However, he could not make any definitive

statements because he did not measure personality or motivational characteristics for weight maintenance.

There are few studies that assess weight maintenance. Jeffery, Folsom, Luepker, Jacobs, Gillum, Taylor, and Blackburn (1984) collected data from a major survey conducted in the Minneapolis-St. Paul area. They found that approximately one-third of the individuals who reported having been overweight had successfully lost weight. More men than women reported having been overweight. Formal weight loss programs were used more by women than men. Dieting to control weight was widely reported by both sexes, even among those who had never been overweight. However, more women reported having dieted to lose weight. Although most dieting attempts consisted of balanced, low caloric menus, a significant percentage were fad types, whose nutritional safety may be questioned. Marston and Criss (1986) tracked 47 formerly overweight individuals from a published study (Marston & Criss, 1984) for a year via a mailed questionnaire. Their findings indicated a higher incidence of maintenance than expected with 94% remaining below a criterion of 15% over goal weight and 58% regaining less than 20% of the amount lost.

It is apparent that many individuals are able to change problem behaviors without professional help. Although there has been a large amount of research on professional treatments, until recently there has been very little research on the self-help process. Perri and Richards (1977) and Perri, Richards, and Schultheis (1977) were the pioneers into the self-help process. These investigators have identified self-control strategies (e.g., self-reward) used by individuals who have been successful at changing their smoking behavior. Perri, Richards, and Schultheis (1977) found that individuals who succeeded in reducing smoking had used self-reinforcement

techniques. Other researchers have attempted to identify personality factors or other variables associated with success at self-quitting (Baer, Foreyt, & Wright, 1977; Pederson & Baskerville, 1983). Unfortunately, these studies have been associated with several methodological problems, such as relying primarily on retrospective data, using small and possibly unrepresentative samples, and having a relatively narrow scope (e.g., assessing only personality variables or only behavioral procedures used). More information about successful self-help efforts to change problem behaviors is needed in order to help individuals initiate change on their own and to create effective prevention programs.

Self-Efficacy Expectations in Weight Loss

Once a program is over, therapist support and external reinforcement are no longer available. Therefore, the individual must take responsibility for initiating and sustaining behaviors in order to maintain weight after the treatment program (Kanfer, 1979). Consequently, individuals need to obtain the motivation and self-regulation necessary to maintain changes accomplished in treatment.

Self-efficacy is thought to be the key component in the behavioral self-regulation process. Bandura (1977) hypothesized that a person's expectations of efficacy represent a cognitive construct necessary for sustained behavioral change. Bandura's (1977) theory of self-efficacy states that expectations of performance success in certain situations will determine the amount of effort expended. In other words, individual levels of self-efficacy determine how hard a person will try to perform a task in the face of ambiguity and obstacles. Consequently, the greater the perceived self-

efficacy, the more active the person's attempts will be to cope with a given situation.

Self-efficacy differs conceptually from outcome expectancy. Outcome expectancy has been defined as a person's belief that a given set of behaviors will lead to a certain outcome. Outcome expectancy, unlike self-efficacy expectancy, does not address the individual's belief about his/her ability to execute specific behaviors (Condiotte & Lichtenstein, 1981).

It has been shown that self-efficacy expectancies have important effects on individuals' thought patterns, the emotional arousal they experience, and their behavior (Bandura, 1977; Bandura & Schunk, 1981). Individuals with a low sense of self-efficacy for certain behaviors are likely to avoid situations which are difficult for them. For example, individuals who have never been able to lose weight might avoid future attempts at weight loss. In contrast, individuals successful in managing their weight have a high sense of self-efficacy for weight control behaviors; thus, they may avoid situations which would jeopardize their success. Based on the self-efficacy theory, one goal of weight loss and maintenance programs is to increase self-efficacy expectations related to an individual's ability to resist the urge to eat.

A personal sense of self-efficacy is based on a combination of several sources of information (Bandura, Adam, & Beyer, 1977; Schunk & Carbonari, 1984). The most reliable indicator of self-efficacy level is personal performance. Continual successes in a situation or task lead to a sense of confidence and ability, whereas continual failures lead to a sense of helplessness or hopelessness. Another way to learn about one's abilities is through vicarious learning. Therefore, a person can learn about his/her capabilities and limitations by watching the actions of others. When the

model observed is perceived as being similar to the observer, the chances are great that the model's successes will be seen as potential successes for the observer. Finally, physiological changes can provide feedback of success or failure about a planned action. For example, when cravings for sweets decrease, one's level of self-efficacy increases because this change represents success at weight control.

Many overweight individuals have a long history of weight loss attempts. The long history is indicative of many failures and usually a sense of hopelessness about one's ability to be successful. It is important that weight loss programs include the topic of self-efficacy to help individuals deal with many daily cues associated with food intake. Self-efficacy provides motivation to attempt new weight control efforts and the confidence necessary to begin these efforts when setbacks and failures occur.

There has been some criticism about Bandura's (1977) self-efficacy model. Critics have stated that self-efficacy theory has conceptual problems. Much of the criticism is related to the distinction between self-efficacy expectations and outcome expectations. Many critics believe that the central concept of efficacy expectations is not unambiguously differentiated from outcome expectations, despite Bandura's (1977) claim that these are relatively separate entities. Further, there is some uncertainty about what factor is actually being assessed in the empirical studies (Eastman & Marzillier, 1984). Another area of criticism includes methodological issues of self-efficacy theory (Eysenck, 1978; Marzillier & Eastman, 1984). For a complete discussion of the self-efficacy controversy, interested readers can consult the first volume of Advances in Behavior Research and Therapy (1979) in which two-thirds of the issue is devoted to criticism. Currently, this argument has not been resolved. Despite the controversy, critics and

advocates of the self-efficacy theory recognize the importance of the construct in the integration of cognition and behavior (Eastman & Marzillier, 1984).

After reviewing the self-efficacy and health behavior research literature, O'Leary (1985) demonstrated that perceived self-efficacy has a mediating role in treatment effectiveness. After reviewing research on cardiac rehabilitation, pain management, smoking cessation, and weight control, O'Leary (1985) stated that increasing perceived self-efficacy is important in health related interventions.

Self-efficacy theory has been applied to the problem of obesity and weight control in only a few studies. Chambliss and Murray (1979) gave a placebo drug to participants of a weight program and stated that the drug was a metabolic stimulant. After two weeks, these researchers manipulated self-efficacy by telling some participants that the drug was inert. They encouraged participants to attribute their successful weight loss to their own efforts at changing behavior. Posttreatment results showed that participants with an internal locus of control and self-efficacy attributions, had increased their efforts at weight loss. In another study, the participants' pre-existing levels of self-efficacy were assessed. Following the assessment, subjects were divided into high and low self-efficacy groups (Weinberg, Hughes, Critelli, England, & Jackson, 1984). Then, a test of exercise self-efficacy was given to all participants. Participants were given false feedback associated with the degree of their self-efficacy. The results of the study indicated that pre-existing self-efficacy was significantly related to weight loss. Those individuals with higher initial self-efficacy lost more weight. In addition, individuals given high self-efficacy feedback lost more weight than those given low self-efficacy feedback (Weinberg et al., 1984).

A review of research literature on the role of self-efficacy in mediating behavior change shows that the construct is useful in explaining behavior outcome. However, the research findings are unclear as to the role that self-efficacy plays in achieving these outcomes. Differences in treatment samples and treatment approaches have made it difficult to compare the various studies. However, it has been concluded that in behavioral treatments, there is a positive relationship between self-efficacy and successful weight loss.

Social Support in Weight Loss and Maintenance

Social support increases the effect of the treatment and often contributes to an increased maintenance of weight loss at follow-up (Wilson & Brownell, 1978). The rationale for social support is based on the view that successful weight loss and maintenance requires constant vigilance and the willingness to re-apply self-regulatory techniques when undesired behaviors occur (i.e., eating prohibited food).

Eating is responsive to social influence. Thus, support from family, friends, and coworkers may help the obese person adhere to the weight loss program. Many treatment programs have asked family, friends, and coworkers to support program participants (e.g., Brownell, Heckerman, Westlake, Hayes, & Monti, 1978; Hickey, Friedman, Harper, Foreyt, & Bornstein, 1985; Wilson & Brownell, 1978). Mahoney (1978) found a positive relationship between an individual's weight loss success and an index of his/her supportive relationships. Therefore, the greater the support, the greater the success at weight loss. Kingsley and Wilson (1977) suggested that continued self-management of weight loss requires social support from significant others. Further, Powers (1980) suggested that

mealtime interactions between family members may be symptomatic of emotional and underlying family psychopathology. For example, the use of food to maintain control over family members can have long-term damaging effects.

As stated above, social support from significant others is helpful in the treatment of obesity and maintenance of weight loss. Researchers have examined spouse involvement in weight loss efforts. Some studies have found that including the spouses of obese individuals in behavioral programs can produce superior weight loss and maintenance of weight loss. For example, Brownell, Heckerman, Westlake, Hayes, and Monti (1978) demonstrated that the inclusion of spouses in the standard behavioral treatment program resulted in significantly greater weight loss in follow-up at 3- and 6-months than treatments without spouse participation. In Brownell et al.'s (1978) couples training program, spouses learned the following: (a) to monitor their partners' behavior; (b) to model prescribed eating habits which set a good example; and (c) to assist their obese partners in coping with high-risk situations by engaging them in activities that were incompatible with eating. Subjects in couples training treatment showed an average weight loss of nearly 30 pounds in follow-up at 8.5 months (Brownell et al.,1978). The size of weight loss was considerably larger than usual, with nearly one-third occurring during the 6-month maintenance phase. This finding suggests that spouse training may make weight loss and long-term maintenance easier. Pearce, LeBow, and Orchard (1981) compared the following groups: (a) a couples training group to a behavioral program for wives alone; (b) a non-behavioral treatment; and (c) a delayed treatment control group. As in the Brownell et al.'s (1978) study, results at posttreatment indicated that the behavioral groups were more effective than

the control groups, but that they did not differ significantly from each other. At 3-, 6-, 9-, and 12-month follow-ups, the couples training group was significantly superior to the wives alone group in weight loss. Women in the couples training group not only maintained weight loss, but even lost more weight after treatment ended. Some other spouse involvement programs have also shown better weight losses, at the end of treatment (Rosenthal, Allen, & Winter, 1980) and at follow-up (Fremouw & Zitter, 1980; Pearce, LeBow & Orchard, 1981).

In studies comparing group versus individual therapies, it has also been demonstrated that support from others increases weight loss and maintenance. Kingsley and Wilson (1977) randomly assigned subjects to conditions in which they received either a behavioral program in small groups or individual sessions with trained counselors. The two approaches did not differ in weight loss at the end of an initial treatment phase. However, during a one year follow-up period, the subjects assigned to small groups obtained better weight maintenance. It is possible that group cohesiveness may encourage adherence to weight reducing strategies and serve to support continued interest in weight loss efforts. There have also been efforts to create support groups for participants at the conclusion of weight loss programs (Levine & Sorenson, 1984).

Other forms of social influences used to promote weight loss and maintenance include commercial groups and informal independently lead groups. The effects of these groups range from harmful to safe. Some professionals look unfavorably on some of these groups. This negative view is due to lack of knowledge about these groups, the absence of scientific assessment of most groups, and a general mistrust of money making businesses for weight loss (Brownell, 1985).

A review of commercial weight loss groups will not be given here. If further information is desired, readers can refer to reviews by: Colletti and Brownell (1982); Stuart and Mitchell (1980); and Stunkard and Brownell (1979). These reviews have shown that the major problem with these groups is attrition. It has been found that between 50% and 80% of participants dropout of these groups within 6 weeks. There also seems to be a continual pattern of program attendance and then absence. For example, the average person who joins Weight Watchers has joined three times before. For individuals who remain in the program, weight losses are usually moderate.

In summary, some studies have found that different forms of social support are beneficial in weight loss treatment and maintenance. However, other studies have failed to replicate these findings (Brownell & Stunkard, 1981; Dubbert & Wilson, 1984). The inconsistency in outcome among similar studies using the same treatment approaches is unexplained.

Physical Activity in Weight Loss and Maintenance

It is common for obese people to have low levels of physical activity. Mayer (1968) and other researchers have indicated that physical inactivity is a major factor in the development and perpetuation of obesity. Thus, exercise programs have been included in the treatment of obesity and weight maintenance programs. There are several reasons that increased physical activity helps to control weight. Exercise increases caloric expenditure and the metabolism of fat, aids in the conditioning of one's body, usually has psychological benefits, and decreases appetite (Bjorntorp, 1976; Horton, 1974).

As stated earlier, physical activity enhances in weight loss through an increased caloric expenditure (Gwinup, 1975; Lewis, Haskell, Wood, Manoogian, Bailey, & Pereira, 1976). It is possible to lose weight without reducing one's caloric intake. Allen and Quigley (1974) stated that the caloric cost of activity, although varying with age, sex and body weight, increases in direct proportion to the body weight during physical activity. Therefore, they state that the obese individual expends twice the number of calories as does someone else half his/her weight performing the same physical activity.

Gwinup (1975) treated obese women using only aerobic walking. After one year, average weight loss was about 22 pounds for women who continued to do 1-2 hours of aerobic exercise daily. Miller and Sims (1980) treated obese individuals using diet modification and one hour of daily exercise. The most successful participants representing the top third in terms of weight loss one year after treatment averaged a loss of 58 pounds. These studies show that aerobic exercise of approximately one hour daily, five to six times each week can produce long-term weight losses that are significantly greater than the average long-term losses obtained using dietary behavior modification alone.

Harris and Halbauer (1973) compared a behavioral program aimed at changing eating habits to a similar program combined with exercise. Weight losses for the two groups did not differ after 12 weeks of treatment. However, the exercise group showed greater weight losses at the 7-month follow-up. Miller and Sims (1980) found that exercise was one of the few factors that predicted long-term maintenance of relatively large weight losses obtained in a residential treatment program. Dahlkoetter, Callahan, and Linton (1979) also used exercise as an experimental variable and found

that a combination of eating habit changes and exercise was more effective than either alone. Further, Stalonas, Johnson, and Christ (1978) studied the effects of exercise and other components on several follow-up periods. All groups had significant weight loss at program completion and the 3-month follow-up. These researchers found that only individuals who exercised and used contingency management had maintained their weight losses after one year.

The relationship of physical activity to changes in an individual's metabolic rate is very important. Physical activity has been shown to speed up a slowed metabolism, which is often exacerbated by the restricted caloric intake of dieting (Mayer, 1968; Scheuer & Tipton, 1977). Therefore, an overweight person who is physically active may burn more calories throughout the day than a non-exercising obese person, because the exercise maintains a higher basal metabolic rate (Stunkard, 1980). Researchers have demonstrated that the effect of physical activity on metabolism is an almost instantaneous rise in the basal metabolic rate. This rise helps to burn more calories. Allen and Quigley (1974) stated that the resting metabolic rate has been found to rise 25% above basal level for up to 15 hours after strenuous activity. Many researchers have also suggested that increased physical activity over an extended period of time will affect the metabolic rate on a long-term basis allowing for increased caloric expenditure. In addition, Allen and Quigley (1974) found that with physical activity, there is an increase in the specific dynamic action of food (i.e., the amount of energy expended in the ingestion and digestion of food), and an increase in the postexercise metabolic rate.

One misconception regarding the relationship of physical activity to appetite is that increased exercise will lead to an increased appetite.

Research demonstrates that this does not always occur. Instead, physiological mechanisms act to balance food intake with energy expenditure. However, research with both animals and humans suggests that these mechanisms only work adequately within normal ranges of physical activity (Mayer, 1968). It appears that animals require certain critical levels of activity for normal regulation of the appetite regulatory mechanisms. Farmers know that animals will not reduce their food intake to balance extremely low levels of activity. Thus, farmers decrease the activity of animals they wish to fatten for market. This practice is known as penning or cooping. For humans, it has been shown that food consumption may increase slightly at a sedentary level (Mayer, 1968). A change in activity patterns, such as from a sedentary level to a moderately active level, will not always stimulate appetite. Furthermore, increased activity may contribute to a reduction in food intake. Support comes from Garrow (1974), Lewis, et al. (1976), and Stunkard (1980) who demonstrated that when obese individuals engage in exercise programs, their appetites stabilize. This results in fewer calories consumed per day.

Researchers have found another benefit of physical activity. It appears that an increase in lean body mass occurs with a corresponding decrease in fat cell size. This changes the body's ratio of muscle to fat (Powers, 1980). Allen and Quigley (1974) concluded that physical activity results in less muscle mass loss than when people diet. When one eats fewer calories than the body needs to function, the energy must be obtained from some other source. Much of the energy comes from fat, but some also comes from the body's muscle stores. This muscle is also called "lean body mass." One can reduce the loss of muscle by having adequate protein, carbohydrate, vitamins, and minerals in the diet, but some muscle is almost always lost. It

is unhealthy to lose muscle. Therefore, the goal is to lose as much fat as possible and minimize muscle loss. Exercise can help minimize the loss of muscle when one is losing weight and can increase the amount of muscle one adds if weight is regained. This is important in the long run because many people gain and lose weight many times. When most people regain weight after they lose weight, they regain weight more rapidly than their body can replace the muscle that was lost. This means that the body becomes more fat and less muscle, even if weight does not change. When exercise and diet are combined, less lean tissue and more body fat are lost than when diet is used alone (Sjostrom & Bjorntorp, 1974; Stunkard, 1980; Watson & O'Donovan, 1977).

Another important aspect of including physical activity in the treatment of obesity is the psychological benefits of regular physical exercise. Goodrick (1978) found that aerobic exercise has a more positive effect on individuals' self-concept than dieting. Aerobic training gives individuals a positive experience and increases their cardiovascular fitness. The sense of achievement and the lifestyle changes gained from an aerobic exercise program can help individuals develop a more positive self-concept. The change to a more positive self-concept may be an important factor in helping individuals maintain the appropriate caloric intake. Hanson and Nedde (1974) studied changes in self-concept in a group of 8 adult, non-obese women before and after 8 months of physical conditioning. After the conditioning, there were increases in the following: self-satisfaction, self-acceptance, perceptions of physical self, capabilities in social interactions, and overall levels of self-esteem and self-confidence.

In summary, it has become popular to encourage obese individuals to engage in physical activity. There are many reasons for the promotion of

physical activity in the treatment of obesity and weight maintenance. In spite of the benefits of exercise, the effectiveness of regular exercise in weight control has been examined in only a few studies. However, there is great variability in how exercise should be applied to weight loss and maintenance programs. Further, there is difficulty in motivating individuals to engage in physical activity. The compliance rates for a high level of physical activity have been generally low in exercise programs.

Locus of Control in Weight Loss Research

A self-regulation process is involved in the effort to lose and maintain weight. This process may be partially directed by generalized expectancies concerning the nature and locus of personal control over behavior outcomes (Bellack, 1975). Rotter (1966) proposed the theoretical construct of locus of control to describe individual differences in beliefs regarding generalized outcome expectancies. A person is said to have a belief of internal locus of control when he/she perceives that events (e.g., reinforcements, outcomes, etc.) are contingent upon his/her own behavior or personal characteristics. When outcomes are perceived as resulting from factors not related to one's behavior (e.g., luck, chance, fate, the behavior of others, etc.), the individual is said to have a belief of external locus of control (Rotter, 1966; 1975). Rotter (1966) defined locus of control beliefs as expectancies that particular behaviors will be followed by reinforcements. Thus, it is believed that a person's locus of control expectancies are determined by one's reinforcement history.

Several authors have suggested that there is a relationship between locus of control beliefs and self-evaluation (Chambliss & Murray, 1979; Kaplan, Atkins, & Reinsch, 1984; Weiss, 1977). Bellack (1975) suggested that

external locus of control beliefs signify impaired self-regulation. He suggested that people with an external locus of control belief system are unable to evaluate their own behavior appropriately in the absence of external input; thus, they do not make effective use of self-reinforcement in behavior change efforts (Bellack, 1975).

Piziak (1983) and Hirsch (1985) have suggested that obesity indicates an inadequate self-regulatory system. Therefore, locus of control beliefs may be related to the difficulty in weight loss efforts. Chambliss and Murray (1979) studied locus of control, weight loss, and self-efficacy attributions. These investigators found that higher self-efficacy attributions for weight loss appeared to increase a person's ability to lose weight. However, this was only true for individuals who had internal locus of control beliefs. This interaction between self-efficacy attributions and locus of control expectancies is not unexpected. Self-efficacy attributions refer to a person's perceived ability to produce a behavior (Bandura, 1977). Locus of control expectancies refer to a perceived relationship between a behavior and an outcome (Rotter, 1966). Therefore, self-efficacy and locus of control are related constructs. If an overweight individual has confidence that he/she can perform a certain weight loss behavior (i.e., high self-efficacy), but has no confidence that such a behavior will lead to weight loss (i.e., external locus of control), then locus of control will be a better predictor of weight loss than self-efficacy. On the other hand, if a person has confidence that certain weight loss behaviors will result in weight loss (i.e., internal locus of control), but has no confidence in his/her ability to perform the behaviors (i.e, low self-efficacy), then self-efficacy will be a better predictor of weight loss.

Garner, Garfinkel, Stancer, and Moldofsky (1976) studied body-image disturbances in 16 early-onset obesity adults who ranged from 25% to 75% overweight. Garner et al. (1976) found that the obese group had significantly higher external locus of control beliefs on Rotter's (1966) locus of control scale ($p < .025$) than were three groups of normal weight controls. These researchers hypothesized that obese individuals experience little self-control and have an overall sense of inadequacy with regard to efforts to gain control over their bodies. This finding has not been replicated, but there is evidence that locus of control beliefs are related to weight loss efforts.

Weiss (1977) reviewed seven studies that examined the relationship between locus of control and weight loss. He found that overweight individuals with internal locus of control beliefs lost more weight in weight loss programs than did overweight individuals with external locus of control beliefs. Further, overweight individuals who were more external in locus of control beliefs were more likely to enter weight loss programs (Goldney & Cameron, 1981; Wallston & Wallston, 1978; Weiss, 1977).

According to a review of the literature, the type of weight loss treatment offered has a differential effect on individuals with internal and external locus of control beliefs. Individuals with internal locus of control beliefs lost more weight in self-directed programs, while individuals with external locus of control beliefs lost more weight in therapist-directed groups programs and programs using monetary incentives (Saltzer, 1978; Wallston & Wallston, 1978; Weiss, 1977).

Several researchers have suggested that a locus of control measure may be used as a diagnostic tool for matching a person's cognitive style to a congruent weight loss treatment (Balch & Ross, 1975; Saltzer, 1978; Wallston

& Wallston, 1978; Weiss, 1977). Wallston, Wallston, Kaplan, and Maides (1976) matched subjects for locus of control scores and for type of weight loss treatment to assess whether the locus of control was a useful differential diagnostic construct. Thirty-four adult women, averaging 32.4 pounds overweight, were paired on the basis of their locus of control scores, using the Health Locus of Control Inventory of Wallston et al. (1976). Participants were then randomly assigned to either a self-directed weight control treatment or a weight loss support group for 8 weeks. As hypothesized, individuals with internal locus of control beliefs, who received the self-directed treatment lost more weight and were more satisfied with their treatment than were individuals with internal locus of control beliefs, who received the support group treatment ($p < .01$). Similarly, individuals with external locus of control beliefs, who received the support group treatment lost more weight and were more satisfied with their treatment than were individuals with external locus of control beliefs, who received the self-directed treatment. Balch and Ross (1975) found similar results with 34 adult women, averaging 35% overweight, who participated in a 9 week program of self-control weight loss. There were significant correlations between internal locus of control beliefs and both completion and success in the weight loss program.

Research regarding locus of control and weight loss is not consistent. Using Rotter's (1966) scale, several authors have not found support for the locus of control construct as a predictor of response to weight loss programs (Lauer, Wampler, Lantz, & Romine, 1979; Rodin, Bray, Atkinson, Dahsm, Greenway, Hamilton & Molich, 1977; Wallston et al., 1976). As discussed earlier, others have found support for the use of Rotter's (1966) scales as a diagnostic and prescriptive tool (Balch & Ross, 1975; Chambliss & Murray,

1979; Weinberg et al., 1984). The disagreement may represent a lack of specificity in Rotter's (1966) scale for measuring locus of control beliefs relevant to weight loss efforts. Rotter's (1966) Locus of Control Scale measures only generalized expectancies. Rotter (1975) recommended that researchers use situation-specific expectancy measures when attempting to predict behaviors in specific situations. At least three efforts have been made to develop locus of control scales specific to the weight loss situation (Saltzer, 1982; Tobias & MacDonald, 1977; Wallston et al., 1976).

The Health Locus of Control (HLC) Scale developed by Wallston et al. (1976) has been used in diagnostic and predictive studies on health related behaviors. After reviewing three studies that used the Wallston et al.'s (1976) HLC scale, Winefield (1982) concluded that the HLC scale is insufficient as a predictor of health behaviors. In addition, Saltzer (1978; 1982) gave evidence suggesting that the HLC scale is not the best available locus of control scale for weight loss research.

An internal-external control of weight scale was developed by Tobias and MacDonald (1977). On a sample of 27 normal weight undergraduate students, these researchers found that their five item scale has a test-retest reliability of .52. This was compared to Rotter's (1966) internal-external scale, which had a test-retest reliability of .76 with the same sample. With a group of 100 undergraduate women, who averaged 33.1% overweight, Tobias and MacDonald (1977) found that locus of control attributions changed over the duration of a weight loss program ($p < .05$). Subjects who participated in a self-determination raising group became more internal in their locus of control attributions, while subjects in a behavioral contracting group became more external in their control attributions (Tobias & MacDonald, 1977).

Saltzer (1978; 1982) developed a four item Weight Locus of Control (WLOC) Scale. He reported that the WLOC is a better predictor of intention to lose weight than either Rotter's (1966) I-E scale or Wallston et al.'s (1976) HLC scale. Saltzer (1982) used 110 undergraduates and administered the Rotter (1966) I-E scale, two versions of Wallston et al.'s (1976) HLC scale, the Crowne-Marlow social desirability scale, and the WLOC (1982) scale. After a 24 day posttest, the WLOC scale had a test-retest reliability of .67 ($p < .001$). Using Cronbach's alpha, the WLOC scale had an internal consistency of .58. The WLOC scale correlated moderately with Rotter's (1966) I-E scale ($r = .32$, $p < .001$) and correlated mildly with Wallston et al.'s (1976) HLC scale ($r = .21$, $p < .02$). These results suggested that the WLOC scale is related but not identical to Rotter's (1966) and Wallston et al.'s (1976) scales and has convergent validity. The WLOC scale was not significantly correlated with the Crowne-Marlow social desirability scale ($r = -.03$), n.s.). This suggests that the WLOC scale is not biased by a social desirability response set. In conclusion, the WLOC scale appears to be a better measure of weight relevant locus of control than Rotter's (1966) I-E scale, Wallston et al.'s (1976) HLC scale, or Tobias and MacDonald's (1977) I-E scale of weight control.

Self-Control

A consistent predictor of outcome to the behavioral treatment of obesity has been the ability to follow self-control procedures and reinforce appropriate behaviors (Cooke & Meyers, 1980). Kanfer (1971) suggested that the capability to use self-control techniques is a learned process that is dependent upon each individual's history. Despite variability in the use of self-control procedures among obese individuals, it is proposed that obese

individuals will show less self-control than normal weight individuals (Jacobs & Wagner, 1984).

Self-controlling responses are assumed to be cued by any internal event, such as anxiety, pain, or thought that disrupts the effective performance of a target behavior. Self-controlling responses are then directed at reducing the interference caused by such events. For example, early signs of anxiety during an examination could serve as a cue for a test-anxious student to use a self-controlling response such as telling him/herself to take a deep breath and relax.

Evidence that self-control is important in the process of removing an undesirable behavior was found by Katz and Singh (1986). These researchers compared current smokers to self-recovered former smokers on Rosenbaum's (1980) Self-Control Schedule. Their results indicated that former smokers had higher self-control than current smokers. This suggests that some cigarette smokers who want to quit may be more inclined to do so because of individual differences in self-control skills.

Self-reinforcement is an important aspect of self-control (Jacobs & Wagner, 1984). Researchers have shown that individuals with external locus of control beliefs are more dependent upon others and are less effective in their use of self-reinforcement than individuals with internal locus of control beliefs (Bellack, Schwartz, & Rozensky, 1974; Bellack & Tillman, 1974). Further, Jacobs and Wagner (1984) found that obese individuals stated that food is one of several reinforcing events in their life. However, obese persons reported that their most reinforcing activity is spending time with family and friends. It is possible that obese individuals reinforce themselves with food when they find that family and friends are not available for contact. In contrast, formerly obese and normal weight individuals reported

that eating was the least reinforcing activity and identified a greater variety of reinforcing events (Jacobs & Wagner, 1984).

Emotional Stress and Negative Life Change Events

Affective components play a large role in weight control techniques (Stalonas, Perri, & Kerzner, 1984). In a five year follow-up study, Stalonas, Perri, and Kerzner (1984) found that the average participant was 1.5 pounds heavier than when they began the study. Participants reported that situational, social, and emotional factors affected their weight control attempts. In addition, Dubbert and Wilson (1984) demonstrated that in weight maintenance the amount of reported stress was related to the amount of weight regained. The weight maintenance participants had difficulty in dealing with stressful emotions without the use of their old and familiar coping behavior (i.e., eating). Further support came from Craighead (1985) who reported that the ability to cope with disruptive life events and emotional states was positively associated with success in weight maintenance. Finally, Marston and Criss (1984) found that reduced emotionality in eating behavior is predictive of success in maintenance of weight loss.

The traditional psychodynamic explanation for being overweight is that eating becomes a defense or coping style used to deal with emotions. Leon (1977) described obesity in terms of excessive eating as an overlearned response to affective stimuli. She also suggested that individuals who successfully maintain weight loss are able to reduce the number of affective stimuli they inappropriately respond to with increased food consumption.

Strain and Strain (1979) used an affective stress model approach toward weight loss and maintenance. Their model is similar to models used

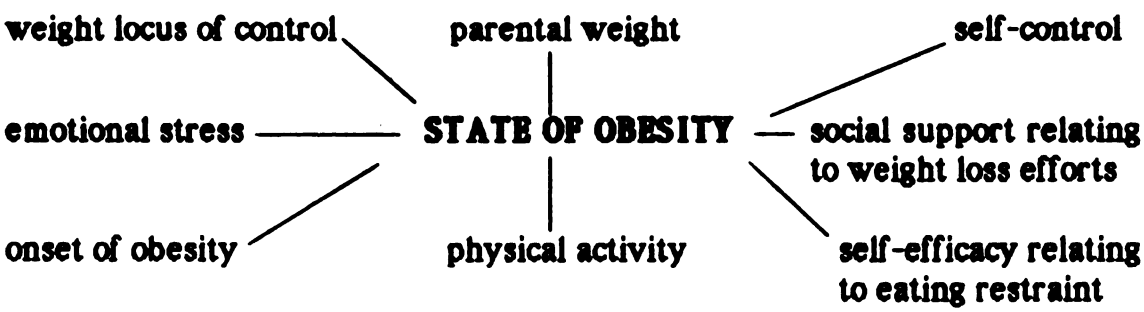
to describe the process of coping with physical disabilities. Weight loss and maintenance are viewed as including the following: (a) affective components, such as threats to self-esteem or sense of body intactness; and (b) fears about loss of love and approval, loss of control, injury to body, pain, and guilt.

Further, Fischman-Havstad and Marston (1984) studied a group of overweight women and found that family emotion and process were related to maintenance of weight loss. Their findings give support to the idea that overeating may represent a coping mechanism used to relieve disturbing emotions. Thus, the coping responses of individuals appear to be an important factor related to weight control efforts.

Model of Obesity

Over the last 30 years, there has been a large amount of research conducted on obesity. After reviewing this research literature, it can be concluded that obesity is best viewed as a multifactorial phenomena. The author of this paper views obesity as emerging from numerous factors in an individual's life. It is not necessary that all of the factors be present in order for an individual to be obese. According to the literature on obesity, there is strong support for the following factors: self-efficacy, physical activity, and parental weight. Thus, these three factors have most importance in perpetuating and maintaining the state of obesity. This model of obesity was based on the literature of obesity and was intended to outline the important factors associated with obesity. The model was not intended to predict which individuals will or will not become obese. The factors in this model are not placed in any particular order. See Table 1 for a graphic depiction of the proposed model of obesity.

Table 1
Model of Obesity



The hypothesized model of obesity included eight components which were thought to contribute to the overweight condition. After reviewing the literature of obesity, expectations were made about these components in terms of distinguishing currently obese, formerly obese, and individuals who never experienced a weight problem. First, it was expected that early-onset of obesity would be found more among currently obese individuals, while adult-onset would be found more among formerly obese individuals. In addition, individuals who never had a weight problem would not have an onset of obesity. Second, currently obese individuals would have lower self-efficacy related to eating restraint than formerly and individuals who never had a weight problem. The third expectation was that formerly obese individuals and individuals who never had a weight problem would report higher social support relating to weight loss efforts than presently obese individuals. Fourth, individuals who were currently obese would report lower physical activity levels than formerly individuals and individuals who never had a weight problem. The fifth expectation was that formerly obese individuals and individuals who never had a weight problem would have an

internal weight locus of control belief system related to weight control, while currently obese individuals would have an external weight locus of control belief system. Sixth, formerly obese individuals and individuals who never had a weight problem would have higher self-control than presently obese individuals. The seventh expectation was that formerly obese individuals and individuals who never had a weight problem would report lower emotional stress, measured by negative life change events, than individuals who were currently obese. Eighth, currently and formerly obese individuals would have at least one obese parent whereas individuals who never had a weight problem would not have an obese parent.

The eight components of the proposed model of obesity were assessed among six groups. The six groups were as follows: (a) never experienced a weight problem; (b) formerly obese, lost weight through self-help; (c) formerly obese, lost weight through professional help; (d) currently obese, using self-help; (e) currently obese, using professional help; and (f) currently obese, not using self-help or professional help at the time of the study.

Mail Questionnaire Research

For a long time, researchers recognized the obvious advantages of mail questionnaire surveys. They are relatively low in cost, geographically flexible, can reach a widely dispersed sample of individuals, and they are free from the costs and time involved in individual interviews.

Typical response rates in mail survey research range from 30% to 50% (Hopkins & Stanley, 1981). The use of extensive follow-up generally results in responses from 70% or less of the total sample (Hopkins & Stanley, 1981). Mail surveys have been inadequate in research because the literature did not provide specific instructions for conducting surveys. Many techniques

have been found to increase the response rate. These techniques will be reviewed in the following section.

Dillman and Christenson (1974) believe that low response rates, poor data quality, and the perceived necessity of limiting oneself to only a few questions have contributed to avoidance of mail questionnaires in studies of the general public. These researchers tested the effectiveness of a particular method for eliciting response to lengthy questionnaires on state-wide samples of the general public in Arizona, Indiana, North Carolina, and Washington. The method, which depended on systematically manipulating all aspects of the data collection process, produced response rates from 69.7% to 75.2% of the total sample. It was equally effective in rural and urban areas. The data quality, as measured by item non-response, was uniformly high throughout the 85-165 item questionnaire. Their results demonstrated that high response from the general public is possible.

Dillman (1978) wrote about the procedures for conducting mail surveys. He collected data from many studies, combined many techniques, and wrote about the most effective manner in which to conduct mail surveys. He called this method the total design method (TDM) for surveys. Dillman (1978) believes that there are three procedures that must be done to maximize survey response: (a) minimize the costs for responding; (b) maximize the rewards for responding; and (c) establish trust that those rewards will be delivered.

In 1978, 48 individual mail surveys had been conducted that relied totally or partially on the TDM for surveys. The average response rates for the forty-eight surveys was 74%. None of the surveys obtained less that a 50% response rate. All the response rates under 60% were obtained by those who only partly used the TDM procedures.

According to Dillman (1978), one factor that influences response rate is the type of population surveyed. The average response rate for the general public surveys was 70%, compared to 77% for the specialized populations surveyed. Another factor that influences response rates is the length of the questionnaire (Dillman, 1978). There is almost no difference in response rates for various lengths below 12 pages, or about 125 items. The response to these questionnaires averaged 76%. However, beyond that length the response rate decreases to an average of 65%. The 10-12 page questionnaire, which is the one typically used, appears to be an optimal length that cannot be exceeded without decreasing response rate.

Another important issue in survey research is the quality of the completed questionnaire, such as item non-response. In almost all the studies using TDM procedures, item non-response was very low, usually not exceeding 3%-4% of the returned questionnaires. Non-response was generally less for personal items than nonpersonal items, with the exception of income, which was only slightly higher.

Dillman (1978) specifically explained the TDM procedures for mail surveys. He outlined every detail to be followed in implementing the surveys. For example, he discussed writing questions, visual presentation of the questionnaire, writing the cover letter, printing the materials, preparing the follow-up postcards, follow-up mailing schedule, and procedures for handling difficulties that arise throughout the process.

According to the literature, there are several procedures that may increase response rate. Many writers of mail questionnaires recommend the use of official support. Brunner and Carroll (1969) tested the effects of sponsorship on the refusal rate of personal interviews preceded by a

preliminary letter and found that university sponsorship had a significant advantage over commercial sponsorship.

The inclusion of a stamped return envelope is a common practice in mail surveys. Ferris (1951) found that including a stamped, addressed return envelope in the mailing results in a 62% response rate as compared to 26% for the control group. There has been a large amount of experimentation in the class of mailing and the type of postage used for the outgoing and return envelopes. The results from these studies have been inconsistent. Watson (1965) found a small benefit for first class over third class while Kernan (1971) found none at all. Wallace (1954) found a significant benefit for airmail over first class for the return envelope, while Kephart and Bressler (1958) did not for the outgoing mail. Several researchers found a significant advantage in special delivery over first class (Gullahorn & Gullahorn, 1963; Kephart & Bressler, 1958). Robinson and Agisim (1951) found a significantly larger response using first class stamps rather than a postage meter, while Clausen and Ford (1947) did not. Longworth (1953) found no significant difference between multiple small denomination stamps versus one large denomination stamp, while Watson (1965) found a advantage in using multiple stamps.

Another technique for increasing response rate to mailed questionnaires is personalized communications. A number of researchers have argued that personalization is one of the important elements of a survey method that increases response rate (Reeder, 1960; Roeher, 1963; Tallent & Reiss, 1959). Personalization is defined as the process of creating a belief that the respondent is receiving the researcher's individual attention (Dillman & Frey, 1974). Ways to accomplish personalization include the following: individually typed letters; handwritten letters or postscripts;

individual salutations; hand-applied signatures; telephone calls to each respondent; and some type of follow-up. Several researchers have tested the effects of a handwritten signature on the cover letter against a duplicated signature and have not found a significant difference (Clausen & Ford, 1947; Kawash & Aleamoni, 1971). Weilbacher and Walsh (1952) did not obtain a significant difference after testing the combined effects of a personal salutation and a handwritten signature against an impersonal salutation and a duplicated signature.

The influence of the content and style of the cover letters on response rates has received little investigation. It has generally been assumed that offering anonymity encourages a high level of voluntary response. The assumption is made that there are questions which, if answered openly would be threatening to the respondent. However, there is little evidence to support these assumptions. Andreason (1970) concluded that when respondents want anonymity, response rates decrease with personalization, which itself suggests decreased anonymity. Some researchers found no significant difference in response rates between relatively anonymous respondents and those who were identified in the questionnaire (Mason, Dressel, & Bain, 1961; Rosen, 1960; & Scott, 1961). Scott (1961) found that respondents tended to be indifferent to the issue of anonymity.

A technique for stimulating response is the offer of a reward. Including monetary rewards with the questionnaire significantly increased response rates to the questionnaire (Kephart & Bressler, 1958; Wotruba, 1966). Promised rewards produced very small increases in response (Wotruba, 1966). Gelb (1975) found that an immediate reward was a more effective incentive for middle-class respondents, while a promised reward was more effective for lower-class respondents. Bellizzi and Hite (1986)

compared mail survey techniques with face-to-face distribution in supermarkets of questionnaires to be completed at home and returned to researchers. A financial incentive versus no incentive was also included in the study. These researchers found that significantly higher return rates came from the incentive groups and from the groups receiving the questionnaires personally in supermarkets.

Douglas, Westley, and Chaffee (1970) found high response rates for a mixed delivery method by which questionnaires were dropped off at residences and returned by mail. Several researchers have also found high response rates for a delivery method by which questionnaires were dropped off and returned by mail (Bush & White, 1985; Stover & Stone, 1974). Lovelock, Stiff, Cullwick, and Kaufman (1976) reported increased response rates when questionnaires were dropped off and picked up at residences. This method proved to be an improvement over home distribution through the mail. Although home drop-off may be of value, home pick-up may have provided a special incentive for the respondents to complete the questionnaire in the Lovelock et al. (1976) study. However, both home drop-off and pick-up are expensive techniques.

Another technique thought to increase response to questionnaires is the use of a deadline date. Scott (1961) reported attaching a sticker to a questionnaire with the word "immediate" printed in black on red paper encouraged early reply, but did not increase response rate. The few studies that have been done suggest that deadline dates increase the rate of questionnaire return, but do not increase response rate.

It is unclear if the length of the questionnaire affects the response rate. There is little evidence to support the view that shorter questionnaires result in higher response rates than longer ones. Scott (1961) and Sletto

(1940) found no significant difference in results when using short questionnaires versus long questionnaires. However, their results are not necessarily conclusive because of the possibility of interaction between particular questions and questionnaire length.

Research on Self-Reported Weight

Measurements of body weight and height are often not possible for financial reasons. Self-reports of weight, as compared to actual measurements, have traditionally been viewed with skepticism and have not been considered sufficiently valid for studies. Schlichting, Hoilund-Carlsen and Quaade (1981) reported that people do not report their height and weight accurately. These researchers found that for both sexes, individuals who were tall (over 166.2 cm for women and 180.8 cm for men), there was a tendency to underestimate their height. For men and women who were short (under 166.2 cm for women and 180.8 cm for men), there was a tendency to overestimate their height. Men and women who were overweight (› 47.8 kg for women and ›79.9 kg for men), there was a tendency to underestimate their weight. For both sexes, individuals who were thin (‹ 47.8 kg for women and ‹ 79.9 kg for men), there was a tendency to overestimate their weight. In summary, for both sexes, the data demonstrated that short and normal weight individuals exaggerated their height and weight the more shorter and thinner they were. Conversely, tall and overweight individuals underreported their height and weight the more taller and heavier they were (Schlichting, et al., 1981).

In contrast, other research demonstrates that self-reported weight is a reliable method of obtaining data (Rzewnicki & Forgays, 1987). Stunkard and Albaum (1981) tested the accuracy of self-reported weights by

comparing reported weights with measured weights of 1,302 subjects at 8 different medical and non-medical sites across two countries (United States and Denmark), across ages, sexes, and different purposes for the weight measurements. Self-reported weights were accurate across all these variables in the American sample, even among obese people. These researchers suggested that this finding does not support the need for measured body weights in studies. Danish reports were somewhat less accurate, particularly among women over forty years of age. In another study, Charney, Goodman, McBride, Lyon, and Pratt (1976) found a correlation of 0.96 between measured and reported weight for 50 adults (20 to 30 years of age). These researchers also found that these subjects tended to underestimate their weights by about 5%, with slightly greater error among obese individuals. The study found no sex difference in reporting error. In summary, self-reported body weight is considered to be an acceptable method of collecting information since individuals tend to be accurate in reporting their own body weight.

CHAPTER III

METHOD

The procedures and research design are presented in this chapter. The population of interest is defined, the community sample is described, and sampling techniques are explained. The measures used in the study are described and procedures for scoring the measures are presented. The procedures for the data analyses are also outlined.

Population and Subject Selection for the Pilot Study. The population of interest for this study consisted of individuals living in the city of Lansing, Michigan. The sample was drawn from the 1989 registered voters' list. Individuals had to be at least 21 years of age since adult obesity was being studied.

One possible limitation to the generalization of these research findings, based on the sample of this population, was that individuals under 21 years of age were not represented. Another possible limitation was that some individuals were excluded from the study because they were not registered voters.

Procedures

Methodological Pilot Study

In order to determine the method that would yield the highest number of participants, a methodological pilot study was conducted. This pilot study

involved the assessment of two different procedures for obtaining participants to complete a questionnaire.

Procedure 1

Subject Selection. Twenty individuals were randomly chosen from the 1989 registered voters' list. These individuals were contacted via mail. In the mailed letter (see Appendix A), individuals were informed of the following: (a) the purpose of the study and the format; and (b) information regarding the raffle prize system for participation in the study. Individuals were asked to select a date and time for the completion of the questionnaire at one of the group assessment sessions held at the Michigan State University campus. A map of the Michigan State University campus was enclosed since subjects were asked to come to the campus.

Group Assessment Session. Following contact via mail, individuals were asked to choose one date and time, in accordance to their day of preference, for a group assessment session. Group assessment sessions were scheduled over a 7 week period in order for subjects to have a large selection of dates to choose from.

It was planned that individual weight and height were to be measured at the session. The group size expected to range from 1 to 5 individuals for each of the group sessions. At the assessment session, participants were to receive a description of the purpose of the study, format, and information regarding the raffle prize system for participation in the study. After the informed consent forms were signed, the participants would have completed the paper-and-pencil questionnaire. At the end of each group sessions, each person was to be given one raffle ticket for the chance at one prize.

After one week had passed, none of the postcards were returned from subjects. Therefore, the author telephoned these subjects in order to assess their willingness to participate. When the author telephoned the subjects, nine individuals (out of 20) stated that they had difficulties in coming to the campus for completing the questionnaire. The subjects gave many reasons for not attending the group assessment session. The reasons included the following: lack of transportation, not enough time because of overtime at work, recent surgery, busy with wedding plans, no child care available, etc. All of these nine subjects indicated that they would participate if they could complete the questionnaire at home and mail it back to the author. Another nine subjects did not have listed telephone numbers so they could not be contacted. Of the remaining two subjects, one subject was not interested in participating and the other subject did not have a current address or telephone number.

Incentives for Participation. All participants were eligible to receive one raffle ticket at the completion of the group assessment session. The money used for the raffle prizes was furnished by the Department of Psychiatry research fund. The prize amounts were as follows: 1st prize - $25 gift certificate from the Lansing Mall, 2nd prize - $15 gift certificate from the Lansing Mall, 3rd prize - $10 gift certificate from the Lansing Mall (total prize amount - $50). The only restriction on the raffle drawing was that each individual could win only one prize.

Informed Consent. At the group assessment session, participants were to have been provided with an Informed Consent Form (see Appendix B). Only those participants who signed the form were to be accepted into this study.

Procedure 2

Subject Selection. Twenty individuals were randomly chosen from the 1989 registered voters' list. These individuals were contacted via mail. In the mailed letter (see Appendix A), individuals received the following: (a) a description of the purpose of the study and the format; (b) information regarding the raffle prize system for participation in the study; (c) an Informed Consent Form (see Appendix B); (d) a standard weight table and an instructional sheet on using the computer response sheet for recording responses (see Appendix C); (e) a computer response sheet; and (f) the questionnaire (see Appendix D). Only those participants who signed the Informed Consent Form were accepted into this study.

Incentives for Participation. All participants were eligible to receive one raffle ticket after they returned the questionnaire. Once all the questionnaires were received, the raffle drawing was held and the winners were notified via telephone. The money used for the raffle prizes was furnished by the Department of Psychiatry research fund. The prize amounts were as follows: 1st prize - $25 gift certificate from the Lansing Mall, 2nd prize - $15 gift certificate from the Lansing Mall, 3rd prize - $10 gift certificate from the Lansing Mall (total prize amount - $50). The only restriction on the raffle drawing was that each individual can win only one prize.

Follow-up Collection Procedures. A master mailing list was used to record questionnaires as they were received. The master list also contained the raffle ticket numbers for each subject who completed the questionnaire. Immediately after a completed questionnaire was received, a postcard was sent as a thank you which read: "Thank you for the prompt return of the questionnaire sent to you. I greatly appreciate your participation in this

important study. Your raffle ticket number is _____. Please retain this number until the drawing on May 25, 1989." The raffle number was recorded in the master list.

Two weeks after the original mailing, a postcard follow-up was sent to all recipients of the first mailing, who had not completed the questionnaire. The postcard was preprinted, but with an individually typed name and address on one side and an individually applied signature on the other. The note on this postcard was written as a reminder to those who have not returned the questionnaire. The postcard said: "As of today, I have not received your questionnaire. Since little information is known about differences, if any, between individuals who are normal weight, currently overweight, and formerly overweight, it is important to gather this information. The data that you provide will be used to help improve weight loss programs and provide comparative information. You are part of a carefully selected sample and your response is needed if the study is to be successful. Please complete the questionnaire and mail it by May 20, 1989 so I can analyze this data and you will be eligible for a raffle prize. If you need a replacement questionnaire, please call me at (xxx) xxx-xxxx."

Ten of the subjects did not have telephone numbers and one did not have a current address; therefore, these individuals were not contacted for follow-up. Two subjects did not complete the questionnaire and one was not interested in participating. Seven subjects participated and completed the questionnaire. Compared to Procedure 1, the response rate was higher for Procedure 2. Since Procedure 2 yielded the highest number of participants, this procedure was chosen for the main study. Thus, mailing the questionnaires to individuals, asking individuals to complete the

questionnaires and mail the questionnaires back to the author was the procedure used in the main study.

Final Procedures Based on Results from the Methodological Pilot Study

Subject Selection. One thousand individuals were randomly chosen from the registered voters' list. One thousand individuals were contacted via mail. There were three criteria for subjects to be included in this study. First, individuals had to be a 1989 registered voters (as of May, 1989) in the city of Lansing. Second, individuals had to have a currently listed telephone number so they could be contacted regarding unclear or missing responses. Third, individuals had to be at least 21 years of age since adult obesity was being studied.

Community Sample. Complete data was obtained on a sample of 363 adult community members who chose to complete the questionnaire. Table 2 outlines the characteristics of the sample.

Table 2
Summary Characteristics of the Entire Sample

AGE:
- mean-52.4 years
- range-21 to 84 years
- SD-15.3 years

SEX:
- female-57.6%
- male-42.4%

MARITAL STATUS:
- single-9.1%
- married-71.1%
- divorced/separated-10.2%
- widowed-9.6%

Table 2 Continued
Summary Characteristics of the Entire Sample

EDUCATION:
- mean-13.6 years
- range-8 to 17 years
- SD-2.23 years

RACE:
- black-3.6%
- white-94.8%
- asian-0.3%
- hispanic-0.3%
- other-1.0%

OCCUPATION:
- secretarial, school teacher, librarian work-25.6%
- manual labor-13.8%
- health care profession-8.8%
- owner of business-4.1%
- professional-14.3%
- servant of the public-20.9%
- homemaker-8.0%
- police or fireperson-0.8%
- student-1.4%
- bank or business executive-2.2%

EMPLOYMENT STATUS:
- full-time-50.7%
- part-time-12.7%
- unemployed-5.5%
- retired-31.1%

SELF-REPORTED CHILDHOOD/TEENAGE OBESITY:
- overweight as child/teenager-18.5%
- not overweight as child/teenager-81.5%

SELF-REPORTED ADULT OBESITY:
- overweight as an adult-63.6%
- not overweight as an adult-18.5%
- never had a weight problem-17.9%

Number of Respondents. One thousand questionnaires were mailed to randomly chosen registered voters in the city of Lansing. Out of the thousand mailed, 363 questionnaires were completed and returned. Thus, there was a 36.3% response rate by individuals who received the questionnaire.

Some individuals had moved without forwarding addresses; therefore, they did not receive the questionnaire. It was possible that the postal system lost some questionnaires; thus, some individuals may not have received the questionnaire. The exact number of individuals who did not receive a questionnaire was not determined because of the lack of follow-up in the study.

Collection Procedure. The procedure for obtaining participants and data was determined by the methodological pilot study. The pilot study indicated that sending the questionnaire through the mail yielded the highest number of individuals responding to the request of completing the questionnaire. Thus, for the main study, one thousand randomly chosen individuals received the questionnaire via mail.

In the mailed letter (see Appendix A), individuals received the following: (a) a description of the purpose of the study and the format; (b) information regarding the raffle prize system for participation in the study; (c) an Informed Consent Form (see Appendix B); (d) a standard weight table and an instructional sheet on using the computer response sheet for recording responses (see Appendix C); (e) a computer response sheet; and (f) the questionnaire (see Appendix D). Only those participants who signed the Informed Consent Form were accepted into this study.

A master mailing list was used to record questionnaires as they were received. The master list also contained the raffle ticket numbers for each subject who completed the questionnaire. Immediately after a completed questionnaire was received, a postcard was sent as a thank you which read: "Thank you for the prompt return of the questionnaire sent to you. I greatly appreciate your participation in this important study. Your raffle ticket number is _____. Please retain this number until the drawing on September 5, 1989." The raffle number was recorded in the master list.

Incentives for Participation. All participants were eligible to receive one prize raffle ticket. The money used for the raffle prizes was furnished by the Department of Psychiatry research fund. The prize amounts were as follows: 1st through 6th prize was a $25 gift certificate from the Lansing Mall; 7th through 12th prize was a $15 gift certificate from the Lansing Mall; 13th through 18th prize was a $10 gift certificate from the Lansing Mall (total prize amount - $300). The only restriction on the raffle drawing was that each individual could win only one prize.

Informed Consent. Participants were provided with an Informed Consent Form (see Appendix B). Only those participants who signed the form were accepted into this study.

Follow-up Procedures. Two weeks after the original mailing, a reminder follow-up occurred. It consisted of a postcard sent to all recipients of the original mailing. The postcard was preprinted, but with an individually typed name and address on one side and an individually applied signature on the other. The note on this postcard was written as a reminder to those who have not returned the questionnaire. The postcard said: "As of today, I have not received your questionnaire. Since little information is known about differences, if any, between individuals who are

normal weight, currently overweight, and formerly overweight, it is important to gather this information. The data that you provide will be used to help improve weight loss programs and provide comparative information. You are part of a carefully selected sample and your response is needed if the study is to be successful. Please complete the questionnaire and mail it by August 11, 1989 so I can analyze this data and you will be eligible for a raffle prize. If you need a replacement questionnaire, please call me at (xxx) xxx-xxxx."

Measurement Schedule. Appendix D contains all of the measures that were used in this study. Specific information about each measure is contained in the section entitled "Instrumentation".

Body weight and height were self-reported by participants. The questionnaire assessed the following information: demographic and personal data; history of weight loss efforts; onset of obesity; parental weight; self-efficacy related to eating restraint; social support relating to weight loss efforts and social functioning; physical activity level; weight locus of control scale; self-control; emotional stress measured by negative life change events; psychological mood states; and coping responses.

Availability of Results. After the fundamental research questions explored in this study were reviewed, the results were available to participants at their request. Participants were instructed to include a self-addressed, twenty-five cent stamped envelope with their questionnaire if they desired a copy of the results.

Instrumentation

Fourteen areas of measurement were included in this study: body weight; body height; demographic and personal data; history of weight loss

efforts; onset of obesity; self-efficacy related to eating restraint; social support relating to weight loss efforts and social functioning; physical activity level; weight locus of control; self-control; emotional stress measured by negative life change events; coping responses; psychological mood states; and parental weight.

Body Weight. Body weight was self-reported by all participants using item #2 on Part 2. Body weight was reported in pounds and converted to kilograms. Body weight data was used to calculate the body mass index (BMI). BMI equals weight (in kilograms) divided by height-squared (in meters). BMI was used to estimate obesity.

Body Height. As with the body weight data, body height was self-reported by all participants. Body height was reported in feet and inches which was converted to meters using item #3 on Part 2. Body height data was also used in the calculation of BMI .

Demographic, History of Weight Loss Efforts, and Onset of Obesity. Part 1 of the questionnaire, items #1 through #6 assessed the following demographic data: the individual's gender, marital status, education, ethnic background, occupation, and status of employment. Item #7 assessed whether or not the individual was under a physician's care for medical problems. Item #8 assessed about onset of obesity. Items #19 through #26 assessed the individual's weight onset, history of weight loss efforts, and family weight history. In Part 2, item #1 assessed the individual's age. Item #2 assessed current weight, and item #3 assessed current height. Item #7 assessed current medications of the individual.

Self-Efficacy Relating to Eating Restraint. Perceptions of self-efficacy for one's ability to maintain weight loss strategies in the face of weight control related to stress was assessed using items #17 through #46 of Part 2.

The self-efficacy scale used in this study was developed by VanKoten-Chappell (1982) and revised by Mavis (1987). Using 118 obese subjects in a weight loss program, Mavis found the self-efficacy scale to possess an internal consistency reliability coefficient alpha of .91 (Mavis, 1987). The internal consistency of the self-efficacy scale obtained in another study was a Cronbach's alpha of .93 (Fuller, 1988).

The thirty-item scale was scored on an eleven item response gradient (0% -100%), reflecting the individual's degree of self-efficacy for his/her ability to maintain weight loss strategies in each situation described. Data was reported in terms of each individual's average self-efficacy score.

Social Support Relating to Weight Loss Efforts. Two measures of social support were used in this study. The first measure assessed the support of family and friends with regard to weight control efforts. This first measure of social support involved items #27 through #34 of Part 1. The measure simply asked the currently obese and formerly obese individuals to indicate if family members or friends are/were positive, negative, or indifferent about individual attempts to lose weight. For individuals who have not experienced a weight problem, they were asked to indicate if family members or friends are/were positive, negative, or indifferent about a situation in which they have had to make a change in their lives (e.g., quit smoking, deal with divorce, etc.). Support of family and friends was scored by summing the responses to these eight questions.

The second measure assessed social functioning. Items #8 through #16 of Part 2 and items #35 through #58 of Part 1 were involved in this measure. This measure was taken from the Health and Daily Living (HDL) form developed by Moos, Cronkite, Billings, and Finney (1984). The HDL form includes questions that assess sociodemographic factors as well as

various indices that measure health-related and social functioning. The following indices are included in the HDL form: (a) health-related functioning; (b) social functioning and resources; (c) family functioning and home environment; (d) children's health and functioning; (e) life change events; (f) coping responses; and (g) family level composite indices. Using approximately 1200 individuals, Moos et al. (1984) found the HDL possesses an internal consistency reliability coefficient of Cronbach's alpha ranging from .67 to .92.

The social functioning items were scored by summing specific items together. After the summation, three areas of social functioning were obtained: (a) social activities with friends; (b) the number of social network contacts; and (c) the number of close relationships. Data was reported in terms of each individual's score on each of these three specific areas of social functioning.

Physical Activity Level. Physical activity level in the past twelve months was assessed using items #59 and #60 of Part 1. Item #61 inquired about any medical condition that restricts physical activity level. Item #62 inquired about any non-medical reason that may interfere with participation in physical activity. The data was reported based on the total number of hours that an individual was involved in weekly physical activity during the past twelve months.

Weight Locus of Control. Weight loss relevant locus of control attributions were assessed using items #63 through #66 of Part 1. This questionnaire is the Weight Locus of Control (WLOC) scale developed by Saltzer (1982). Using a group of 110 college undergraduates, Saltzer (1982) found a test-retest reliability of .67 ($p < .01$) for the WLOC scale at a twenty-four day posttest. The internal consistency of the WLOC scale was measured

by Saltzer (1982) as alpha - .58. The WLOC scale has a small and insignificant correlation (r - -.03) with a social desirability response set (Saltzer, 1982). Fuller (1988) found that using 118 subjects, the WLOC scale had an internal consistency estimate of reliability of alpha - .69.

Items #63 and #66 are internally worded while items #64 and #65 are externally worded. The scale was scored in the external direction with each item ranging from 0 (strongly disagree) to 5 (strongly agree) for the externally worded items and reverse scored for the internally worded items. Data was presented in terms of the total scale score.

Self-Control. Self-control was assessed using items #67 through #102 of Part 1. This is actually the Self-Control Schedule developed by Rosenbaum (1980). The Self-Control Schedule (SCS) is a thirty-six item self-report questionnaire that measures individual differences in applying self-control methods. The reliability and the validity of the scale was evaluated by a number of studies involving more than 600 subjects. Using a group of 82 college undergraduates, Rosenbaum (1980) found a test-retest reliability of .72 (p > .05) for the SCS at a twenty-eight day posttest. The internal consistency of the SCS was computed on the data obtained from four different samples using the Kuder-Richardson formula 20. The alpha coefficients obtained for the samples were .81 (n-145), .80 (n-117), .84 (n-179), .78 (n-111), and .80 (n-105) respectively. The SCS has a significant Pearson correlation (r -.30) with the G Factor of Catell's 16 PF (Rosenbaum, 1980). The data was reported in terms of the sum of the responses.

Emotional Stress. Emotional stress was measured by negative life change events using items #103 through #117 of Part 1. This is another measure contained in the Health and Daily Living Form (HDL) developed by Moos et al. (1984). The measure of negative life change events taken from

the HDL form contains fifteen items, which are conditional on how many months ago the event occurred (e.g., 1-3 months, 1-6 months, or 1-12 months). The measure was scored by summing the "yes" responses to these 15 items.

Coping Responses. Coping responses were assessed using items #118 through #150 of Part 1. This is another measure taken from the Health and Daily Living Form (HDL) developed by Moos et al. (1984). The measure of coping responses taken from the HDL form requires respondents to think about a recent stressful event and then on a four-point scale rate their frequency of use of thirty-three different coping responses. Responses were classified by Moos et al. (1984) according to the method of coping and includes three indices: (a) active cognitive coping (e.g., "Considered several alternatives for handling the problem"), (b) active behavioral coping (e.g., "Talked with friend about the problem"), and (c) avoidance coping (e.g., "Refused to believe that it happened"). This measure was scored by summing specific responses to these items for the three coping indices.

Psychological Mood States Questionnaire. Psychological mood states were assessed using items #151 through #215 of Part 1. This is actually the Profile of Mood States (POMS) developed by McNair, Lorr, and Droppleman (1971). The POMS is a sixty-five item self-report questionnaire that measures six identifiable mood or affective states: (a) tension-anxiety; (b) depression-dejection; (c) anger-hostility; (d) vigor-activity; (e) fatigue-inertia; and (f) confusion-bewilderment. Each item requires the individual to give a five point adjective rating.

The reliability and the validity of the POMS was evaluated by several studies involving approximately 1,000 subjects. The test-retest reliability of the POMS for the six factors ranged from .65 to .74. The internal consistency

of the POMS ranged from alpha coefficients of .87 to .95. A score was obtained for each of the six mood factors, which include the following: (a) tension-anxiety, (b) depression-dejection, (c) anger-hostility, (d) vigor-activity, (e) fatigue-inertia, and (f) confusion-bewilderment. The sum of the responses was obtained for the adjectives defining each factor.

Parental weight. Parental weight was assessed using items #23 and #24 of Part 1. Item #23 inquired about the current weight of the participant's mother. Item #24 inquired about the current weight of the participant's father. The question asked the participant to describe each parent as "very overweight," "slightly overweight," "about average," or "slightly underweight."

Definition of Weight Categories

For the data analyses, six categories derived from weight history and current body weight data were defined. Based on a commonly used criterion, obesity is often defined as 20% or more in excess of ideal body weight according to actuarial tables from the Metropolitan Life Insurance Company (Grande, 1974; Bray, 1979). Using percent of body weight over or under ideal body weight, rather than actual pounds, controls for sex and body somatotype (Colvin & Olson, 1983).

Because body mass index (BMI) is an accepted measure, it was used in this study to classify individuals into the six comparison groups. According to Burton et al. (1985) adult American men have an ideal weight (relative to height, based upon the 1983 Metropolitan tables) that is represented by a BMI of 22.7. A BMI of 27.2 represents an adult male who is 20% over his ideal weight, whereas a BMI of 31.8 represents a body that is 40% over his ideal weight. By the same criteria, adult American women have an ideal

weight represented by a BMI of 22.4, a 20% overweight level represented by a BMI of 26.9, and 40% over ideal weight represented by a BMI of 31.4. Thus, Blundell (1984) recommended that a BMI of 25-30 be used to define mild obesity and a BMI of 30-40 to define moderate obesity.

Based on the BMI, each of the 363 questionnaires was categorized into one of six groups. The six groups were defined in the following manner:

(1). Individuals who have never experienced a weight problem. People who have never in their adult lives been as much as 20% or more overweight (BMI $\leq$ 27.1 for men and BMI $\leq$ 26.8 for women).

(2). Obesity recovery through self-help. People who at some time in their lives have been obese and (a) who are no longer obese, that is, currently they are less than 20% overweight (BMI $\leq$ 27.1 for men and BMI $\leq$ 26.8 for women), and (b) who have lost weight without professional help. Such people will be considered completely recovered. They have lost substantial amounts of weight and are no longer obese.

(3). Obesity recovery through professional help. People who at some time in their lives have been obese and (a) who are no longer obese, that is, currently they are less than 20% overweight (BMI $\leq$ 27.1 for men and BMI $\leq$ 26.8 for women), and (b) who have lost weight with professional help. Such people will be considered completely recovered. They have lost substantial amounts of weight and are no longer obese.

(4). Currently obese using self-help. People who have been obese and who, despite past or present efforts to lose weight, are still obese by the following criteria: (a) they are presently more than 20% overweight (BMI $\geq$ 27.2 for men and BMI $\geq$ 26.9 for women), and (b) they are using self-help methods.

(5). Currently obese using professional help. People who have been obese and who, despite past or present efforts to lose weight, are still obese by the following criteria: (a) they are presently more than 20% overweight (BMI $\geq$ 27.2 for men and BMI $\geq$ 26.9 for women), and (b) they are using professional help methods.

(6). Currently obese using neither self-help nor professional help. People who have been obese and who, despite past or present efforts to lose weight, are still obese by the following criteria: (a) they are presently more than 20% overweight (BMI $\geq$ 27.2 for men and BMI $\geq$ 26.9 for women), and (b) they are not currently using self-help or professional help methods.

The following rules were used to deal with special problems of categorization. The following groups of individuals were eliminated from the data analyses: two women who were pregnant at the time of the study, four individuals who were taking medication known to affect weight (e.g., diuretics, cortisone, etc.), and one individual who was under 21 years of age. See Table 3 for the frequency and percent of individuals in each of the six groups.

Table 3
Frequency and Percent of Individuals in Six Groups

Group	Frequency	Percent
1 (NWP)	178	49.0
2 (FO,NN,SH)	36	9.9
3 (FO,NN,PH)	24	6.7
4 (CO,SH)	68	18.7
5 (CO,PH)	21	5.8
6 (CO,NH)	36	9.9

NWP- Never had a weight problem
FO,NN,SH- Formerly obese, now normal weight and used self-help
FO,NN,PH- Formerly obese, now normal weight and used professional help
CO,SH- Currently obese using self-help
CO,PH- Currently obese using professional help
CO,NH- Currently obese, not attempting weight loss

Experimental Design

Participants were randomly chosen to complete the questionnaire. After the completion of the study, the number of self-recovered and professionally recovered obese individuals was summed respectively and a simple ratio was calculated. Second, the rate of recidivism was determined by comparing the number of times that individuals reported losing and then regaining weight. Third, twelve characteristics were compared across the six groups. The six comparison groups included: (a) never experienced a weight problem; (b) formerly obese, lost weight through self-help; (c) formerly obese, lost weight through professional help; (d) currently has a weight problem, using self-help methods; (e) currently obese, using professional help; and (f) currently obese, not using self-help or professional help at the time of the study.

As stated earlier, these six groups were compared on twelve characteristics that included: (a) history of weight loss efforts; (b) onset of obesity; (c) self-efficacy related to eating restraint; (d) social support relating to weight loss efforts and social functioning; (e) physical activity level; (f) weight locus of control; (g) self-control; (h) emotional stress measured by negative life change events; (i) psychological mood states; (j) coping responses; (k) personal and demographic data; (l) parental weight. The experimental design is outlined in Table 4.

Table 4
Experimental Design

(1) 1,000 questionnaire packets were mailed to a randomly chosen sample of individuals from the city of Lansing, Michigan 1989 voters' registration list, who had a listed telephone number.
(2) Individuals who were at least 21 years of age, completed a questionnaire, signed the Informed Consent Form, and mailed the forms back to the author.
(3) Using the information that participants reported about their weight history, current body height and weight measurement, body mass index, and weight loss technique, each participant was categorized into one of six groups. The following groups were used:

(a) Never had a weight problem (NWP)
(b) Obesity recovery through self-help (FO,NN,SH)
(c) Obesity recovery through professional help (FO,NN,PH)
(d) Currently obese using self-help (CO,SH)
(e) Currently obese using professional help (CO,PH)
(f) Currently obese using neither self-help or professional help at the time of the study (CO,NH)

Table 4 Continued
Experimental Design

(4) Using information obtained from the questionnaires, the following was determined:

(a) Of those individuals who have lost weight, the ratio of self-recovers to professionally recovered obese individuals was reported.

(b) From those individuals who have been obese and lost weight and then regained the weight, the recidivism rate of obesity was determined.

(c) The six comparison groups were compared on twelve different characteristics. These included the following:

history of weight loss efforts
onset of obesity
self-efficacy related to eating restraint
social support relating to weight loss efforts and social functioning
physical activity level
weight locus of control
self-control
emotional stress measured by negative life change events
psychological mood states
coping responses
personal and demographic data
parental weight

Research Hypotheses

1. History of weight loss efforts

History of weight loss efforts will be lower for formerly obese individuals who used either self-help or professional help as compared to currently obese individuals, using either self-help, professional help, or no current help. Individuals who have never had a weight problem will not have a history of weight loss efforts.

2. Onset of Obesity

Early-onset of obesity will be found more frequently among currently obese individuals, using either self-help, professional help, or no current help as compared to formerly obese individuals, who used either self-help or professional help. Adult-onset of obesity will be found more frequently among formerly obese individuals, using either self-help or professional help, as compared to currently obese individuals. Individuals who have never had a weight problem will not have an onset of obesity.

3. Self-efficacy relating to eating restraint

Self-efficacy relating to eating restraint will be lower in individuals who are currently obese, using either self-help, professional help, or no current help than in formerly obese individuals, who used self-help or professional help, and in individuals who have never experienced a weight problem.

4. Social support relating to weight loss efforts and social functioning

Social support relating to weight loss efforts and social functioning will be lower in presently obese individuals, using either self-help, professional help, or no current help than in formerly obese individuals, who used self-help or professional help, and in individuals who have never had a weight problem.

5. Physical activity level

Physical activity level will be lower in individuals who are currently obese, using either self-help, professional help, or no current help than in formerly obese individuals, who used self-help or professional help, and in individuals who have never had a weight problem.

6. Weight locus of control

Weight locus of control belief systems of currently obese individuals, using either self-help, professional help, or no current help will be externally directed, while the weight locus of control belief systems of formerly obese individuals, who used self-help or professional help, and individuals who have never experienced a weight problem will be internally directed.

7. Self-control

Self-control will be lower in individuals who are presently obese, using either self-help, professional help, or no current help than formerly obese individuals, who used self-help or professional help, and in individuals who have never had a weight problem.

8. Emotional stress

Emotional stress, measured by negative life change events, will be higher in currently obese individuals, using either self-help, professional help, or no current help than in formerly obese individuals, who used self-help or professional help, and in individuals who have never experienced a weight problem.

9. Psychological mood states

Psychological mood states will not differ among the six comparison groups.

10. Coping responses

Coping responses will not differ among the six comparison groups.

11. Personal and demographic data

Personal and demographic data will not differ among the six comparison groups, except for BMI, current, maximum, and minimum adult body weight.

12. Parental weight

Currently obese individuals and formerly obese individuals using either self-help, professional help, or no help will have at least one parent who is obese, while individuals who have never experienced a weight problem will not have an obese parent.

CHAPTER IV

RESULTS

The results of the current research are presented in three sections: (a) a determination of the ratio of individuals who self-recovered from obesity as compared to individuals who recovered with professional help; (b) a determination of the recidivism rate of obesity; and (c) the tests of the hypotheses stated in Chapter III.

Group Comparisons

The means and standard deviations for the data obtained in this study are outlined in Table 5. Throughout this paper, the following labels are used to refer to the six comparison groups:

NWP- Never had a weight problem
FO,NN,SH- Formerly obese, now normal weight and used self-help
FO,NN,PH- Formerly obese, now normal weight and used professional help
CO,SH- Currently obese using self-help
CO,PH- Currently obese using professional help
CO,NH- Currently obese, not attempting weight loss

Table 5
Group Means and Standard Deviations for All Data

	Group					
Variable	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
No. Times tried to lose weight in life time	3.36 (SD-2.5)	2.94 (2.3)	4.96 (2.8)	5.78 (2.5)	6.05 (2.5)	4.00 (2.6)
No. times regained weight in life time	2.57 (SD-2.2)	2.41 (2.1)	4.21 (2.5)	4.87 (2.3)	5.25 (2.1)	3.74 (2.3)
Self-efficacy Relating to Eating Restraint	57.83 (SD-20.9)	58.91 (21.7)	49.95 (20.1)	48.84 (17.9)	52.95 (20.6)	44.52 (24.1)
Social Support Relating to Weight Loss Efforts	1.84 (SD-2.0)	1.78 (2.1)	3.29 (1.9)	2.85 (2.0)	2.90 (2.1)	2.03 (2.1)
Social Functioning: Family Social Activities	5.96 (SD-2.6)	6.56 (2.9)	6.54 (2.7)	6.22 (2.8)	5.81 (2.3)	6.58 (2.8)
Social Activities with Friends	7.33 (SD-2.6)	6.81 (2.6)	6.83 (2.1)	7.59 (2.8)	6.48 (2.0)	7.08 (2.7)
Social Network Contacts	22.96 (SD-15.4)	25.83 (15.8)	21.58 (11.7)	22.12 (14.7)	23.62 (13.6)	27.25 (18.5)
Number of Close Relationships	13.18 (SD-12.7)	11.33 (7.8)	11.63 (7.8)	10.99 (10.4)	17.91 (22.3)	13.42 (13.1)

Table 5 Continued
Group Means and Standard Deviations for All Data

Variable	Group NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
Number of Friends	18.34 (SD-19.3)	15.50 (12.9)	14.54 (10.3)	16.60 (19.4)	20.24 (22.7)	22.81 (23.7)
Hours of Physical Activity per Week	2.99 (SD-2.5)	3.31 (2.9)	2.96 (2.6)	3.29 (2.8)	2.67 (2.1)	2.33 (2.9)
Weight Locus of Control	4.67 (SD-3.5)	4.56 (3.8)	4.25 (3.6)	4.79 (3.6)	5.00 (4.3)	4.67 (3.8)
Self-control	78.54 (SD-24.1)	79.33 (19.3)	78.42 (20.4)	82.18 (23.1)	75.43 (22.7)	79.44 (28.5)
Emotional Stress	8.03 (SD-9.2)	9.97 (10.1)	8.00 (7.4)	10.59 (15.6)	7.19 (7.8)	10.67 (12.9)
Psychological Mood States:						
Tension/Anxiety	8.81 (SD-4.8)	8.89 (6.4)	8.75 (4.3)	9.06 (4.7)	9.05 (4.8)	7.03 (3.8)
Depress./Deject.	7.43 (SD-8.5)	8.33 (11.7)	6.71 (7.9)	10.02 (11.1)	6.67 (7.2)	5.75 (5.1)
Anger/Hostility	6.55 (SD-6.5)	6.53 (7.5)	6.83 (8.2)	8.32 (8.1)	5.81 (5.9)	5.03 (5.1)
Vigor/Activity	17.14 (SD-5.8)	17.47 (5.9)	16.63 (5.4)	15.66 (6.8)	15.95 (4.8)	16.42 (6.6)
Fatigue/Inertia	8.05 (SD-5.9)	7.22 (6.5)	7.58 (4.9)	9.93 (6.5)	8.62 (4.9)	7.75 (4.8)
Confus./Bewilder.	6.90 (SD-3.1)	6.61 (3.6)	5.96 (2.9)	7.04 (3.3)	6.00 (2.5)	6.14 (2.5)

Table 5 Continued
Group Means and Standard Deviations for All Data

	Group					
Variable	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
Coping Response:						
Active Cognitive	17.68 (SD-6.5)	18.33 (5.8)	16.33 (6.9)	16.77 (6.3)	20.38 (7.8)	16.39 (5.6)
Active Behavioral	19.09 (SD-7.2)	18.64 (7.8)	19.17 (7.3)	16.46 (7.1)	20.10 (7.1)	15.47 (6.1)
Avoidance	4.01 (SD-3.2)	3.67 (2.9)	4.00 (3.4)	5.15 (3.6)	4.33 (3.5)	4.08 (3.1)
Personal and Demographic:						
Body Mass Index	22.59 (SD-2.3)	25.26 (1.5)	24.98 (1.6)	31.51 (4.6)	31.54 (2.6)	31.84 (4.3)
Age in Years	51.06 (SD-16.3)	53.78 (12.1)	52.96 (15.1)	51.74 (14.9)	59.33 (12.5)	54.08 (14.6)
Current Weight(lbs.)	143.6 (SD-25.5)	166.1 (16.9)	159.1 (22.7)	199.1 (32.3)	191.9 (28.5)	197.8 (31.0)
Maximum Weight as an Adult (lbs.)	153.1 (SD-24.7)	189.7 (16.2)	187.5 (29.7)	210.7 (34.3)	201.4 (28.4)	207.6 (31.2)
Minimum Weight as an Adult (lbs.)	126.4 (SD-24.1)	143.8 (18.8)	129.1 (20.5)	151.4 (33.9)	132.4 (24.7)	143.8 (30.4)
Individuals per group:	178	36	24	68	21	36
Percent of Total:	(49.0)	(9.9)	(6.7)	(18.7)	(5.8)	(9.9)

For each hypothesis, refer to Table 5 for the means and standard deviations of the data in this study.

Ratio of self-recovered versus professionally recovered

Data were collected to calculate the ratio of individuals who self-recovered from obesity versus individuals who recovered with professional help in a randomly selected sample. Out of a total sample of 363 individuals, the ratio of self-recovered to treatment-recovered obese individuals was 36/24. Thus, for this sample, there were more individuals who recovered from obesity through self-help than through professional help. It is important to note that there were 36 individuals (9.9% of total sample) who were not attempting weight loss even though they were currently obese.

Rate of recidivism of obesity

A common occurrence among obese individuals is to lose weight and then regain it. In this sample, formerly and currently obese individuals (groups FO,NN,SH, FO,NN,PH, CO,SH, & CO,PH) attempted weight loss approximately one more time than the number of times weight was regained. On the other hand, individuals who were currently obese and not currently attempting weight loss (CO,NH group) tried to lose weight and regained weight an equal number of times. It is interesting to note that individuals who were formerly obese, but currently normal weight, using self-help (FO,NN,SH group), attempted weight loss half the number of times as individuals who were currently obese, using either self-help (CO,SH group) or professional help (CO,PH group).

When comparing individuals who were currently obese, using self-help (CO,SH group) to individuals using professional help (CO,PH group), the data appeared similar. In other words, the number of times attempting weight loss was approximately the same absolute number for each group, as well as the number of times weight was regained. When comparing individuals who

were formerly obese, but currently normal weight (FO,NN,SH & FO,NN,PH groups), there were differences in the data. The number of times attempting weight loss and the number of times regaining weight was lower for individuals who lost weight through self-help (FO,NN,SH group) than for individuals who used professional help (FO,NN,PH group).

Testing the Hypotheses

A probability level of .05 was used as the significance criterion for each of the hypotheses tested. Statistics and statistical tests were computed using SPSS-X (SPSS-X User's Guide, 1988) programs.

Hypothesis One

The first hypothesis stated that history of weight loss efforts will be lower for formerly obese individuals who used either self-help or professional help as compared to currently obese individuals, using either self-help, professional help, or no current help. Also, it was hypothesized that individuals who have never had a weight problem will not have a history of weight loss efforts.

Individuals classified by current and past BMI as never having a weight problem (NWP group) reported efforts to lose weight. This finding was in reverse of what was predicted. Since these individuals were never obese by definition, they were excluded from the data analyses for this hypothesis.

There were significant differences among the five groups with respect to the number of attempted weight loss efforts (F (4,178) = 9.43, p = .00). Table 6 presents the ANOVA summary table for history of weight loss efforts by group.

Table 6
ANOVA for History of Weight Loss Efforts by Group

Source	df	MS	F
Between Groups	4	60.39	9.43*
Within Groups	178**	6.40	

* p -.00
**There were two individuals who did not complete this information; therefore, the degrees of freedom were reduced by two.

Using the Dunn-Sidak comparison test (Games, 1977) several a priori contrasts were performed. First, an a priori contrast between the combined FO,NN,SH and FO,NN,PH groups (mean- 3.95) and the combined CO,SH, CO,PH and CO,NH groups (mean- 5.28) revealed a significant difference (t - -3.15, df- 178, p - 0.00).

These results supported hypothesis one. The history of weight loss efforts was lower for formerly obese individuals who used either self-help or professional help (groups FO,NN,SH & FO,NN,PH) as compared to currently obese individuals, using either self-help or professional help (groups CO,SH & CO,PH). However, the CO,NH group (mean- 4.00) had a lower history of weight loss efforts than the combined FO,NN,PH, CO,SH, and CO,PH groups (mean- 5.59). This latter finding was in reverse of what was predicted.

Hypothesis Two

According to the second hypothesis, early-onset of obesity will be more frequent among currently obese individuals, using either self-help, professional help, or no current help as compared to formerly obese individuals, who used either self-help or professional help. In other words, adult-onset of obesity will be found more frequently among formerly obese

individuals, using either self-help or professional help, as compared to currently obese individuals. Individuals who have never had a weight problem will not have an onset of obesity.

Early-onset of obesity was significantly different among the six groups (X^2 - 32.15, df - 5, p-.00). There was evidence that early-onset of obesity was related to the group category. Table 7 depicts the observed frequencies of early-onset of obesity. The Chi-square analysis indicated that there were significant variations from what would be expected if early-onset of obesity and group membership were independent.

Table 7
Observed Frequencies of Early-Onset of Obesity

	Group					
	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
Was overweight as a child/teenager	15 8.4%	6 16.7%	7 29.2%	24 35.3%	3 14.3%	12 33.3%
Was not overweight as a child/teenager	163 91.6%	30 83.3%	17 70.8%	44 64.7%	18 85.7%	24 66.7%
Individuals per group	178	36	24	68	21	36

The high number of individuals in the NWP group who stated that they were not overweight as a child/teenager was not surprising. However, it was surprising to see that a few individuals in the NWP group stated that

they were overweight as a child/teenager. This group was defined as never having a weight problem and was classified by past and current BMI.

There was partial support for this hypothesis. As predicted, individuals who were currently obese using self-help and no help (groups CO,SH & CO,NH respectively) showed a marginal tendency toward early-onset of obesity. Also, as predicted, the data showed that individuals who were formerly obese, now normal weight through self-help (FO,NN,SH group) appeared to have a strong pattern of adult-onset of obesity.

Some of the data showed the reverse of what was predicted. First, individuals who were currently obese using professional help (CO,PH group) appeared to have a strong pattern of adult-onset of obesity. Second, individuals who were formerly obese, now normal weight, through professional help (FO,NN,PH group) showed a slight tendency toward early-onset of obesity.

Individuals were asked if at some time in the past (occurring more than 6 months ago) were they overweight as an adult. With respect to this question, there were significant differences among the six groups (X^2 - 185.89, df - 10, p-.00). There was evidence that being overweight in the past was related to the group category. Table 8 depicts the observed frequencies of being overweight as an adult in the past. The Chi-square analysis indicated that there were significant variations from what would be expected if adulthood obesity and group membership were independent.

Table 8
Observed Frequencies of Adulthood Obesity

	Group					
	NWP	FO,NN,SH	FO,NN,PH	CO,SH	CO,PH	CO,NH
Was overweight as an adult in past	51 28.7%	34 94.4%	23 95.8%	67 98.5%	21 100.0%	35 97.2%
Was not overweight as an adult in past	62 34.8%	2 5.6%	1 4.2%	1 1.5%	0 0.0%	1 2.8%
Never had a weight problem	65 36.5%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Individuals per group	178	36	24	68	21	36

It was surprising to see that 28.7% of individuals classified as never having a weight problem (NWP group) stated that they were overweight as an adult in the past. In addition, it was fascinating to note that a small percentage of individuals defined as formerly obese and currently obese (groups FO,NN,SH, FO,NN,PH, CO,SH, & CO,NH) stated that they were not overweight as an adult in the past.

Hypothesis Three

The third hypothesis stated that self-efficacy relating to eating restraint will be lower in individuals who are currently obese, using either self-help, professional help, or no current help than in formerly obese

individuals, who used self-help or professional help, and in individuals who have never experienced a weight problem.

There were significant differences among the six groups with respect to self-efficacy relating to eating restraint ($F(5, 356) = 4.15$, $p = .00$), as shown in Table 9.

Table 9
ANOVA for Self-efficacy Relating to Eating Restraint by Group

Source	df	MS	F
Between Groups	5	1782.03	4.15*
Within Groups	356**	429.87	

* $p = .00$
**There was one individual who did not complete this information; therefore, the degrees of freedom were reduced by one.

An a priori contrast between the combined NWP, FO,NN,SH, and FO,NN,PH groups (mean= 55.56) and the combined CO,SH, CO,PH, and CO,NH groups (mean= 48.77) revealed a significant difference ($t = -2.42$, $df = 356$, $p = 0.02$) using the Dunn-Sidak comparison test (Games, 1977). This shows that the average mean of the first three groups was significantly larger than the average mean of the last three groups. An a priori contrast between the NWP group (mean= 57.83) and the combined CO,SH, CO,PH, and CO,NH groups (mean= 48.77) revealed a significant difference ($t = -3.49$, $df = 356$, $p = 0.00$). An a priori contrast between the NWP group (mean= 57.83) and the combined FO,NN,SH and FO,NN,PH groups (mean= 54.43) revealed a non-significant difference ($t = -1.08$, $df = 356$, $p = 0.28$).

These results supported hypothesis three. Self-efficacy relating to eating restraint was higher for the combination of the formerly obese individuals who used either self-help or professional help and individuals who have never had a weight problem (groups FO,NN,SH, FO,NN,PH, & NWP) as compared to currently obese individuals, using self-help, professional help, and no help (groups CO,SH, CO,PH & CO,NH). The Tukey post hoc test revealed a significant difference between the following two groups: (a) individuals who have never had a weight problem (mean- 57.83) and the formerly obese individuals who used self-help (mean- 58.91) (groups NWP & FO,NN,SH) and (b) currently obese individuals using self-help (mean- 48.84) and no help (mean- 44.52) (groups CO,SH & CO,NH). The former group had the highest self-efficacy relating to eating restraint than the latter group.

Hypothesis Four

According to the fourth hypothesis, social support relating to weight loss efforts and social functioning will be lower in presently obese individuals, using either self-help, professional help, or no current help than in formerly obese individuals, who used self-help or professional help, and in individuals who have never had a weight problem.

Social Support Relating to Weight Loss Efforts. There were significant differences among the six groups with respect to social support relating to weight loss efforts ($F(5, 357) = 4.75$, $p = .00$), as shown in Table 10.

Table 10
ANOVA for Social Support Relating to Weight Loss Efforts by Group

Source	df	MS	F
Between Groups	5	19.65	4.75*
Within Groups	357	4.13	

* p -.00

Several a priori contrasts were performed by using the Dunn-Sidak comparison test (Games, 1977). First, an a priori contrast between the NWP group (mean- 1.84) and the combined CO,SH, CO,PH and CO,NH groups (mean- 2.59) revealed a significant difference (t - 2.96, df- 357, p -0.00). Therefore, the combined CO,SH, CO,PH and CO,NH groups had higher positive social support relating to weight loss efforts than the NWP group. Second, an a priori contrast between the NWP group (mean- 1.84) and the combined FO,NN,SH and FO,NN,PH groups (mean- 2.53) showed a significant difference (t - 2.25, df- 357, p -0.03). Therefore, the combined FO,NN,SH and FO,NN,PH groups had higher positive social support than the NWP group. Third, an a priori contrast between the combined NWP, FO,NN,SH, and FO,NN,PH groups (mean- 2.30) and the combined CO,SH, CO,PH, and CO,NH groups (mean- 2.59) revealed a non-significant difference (t - -1.06, df- 357, p -0.29).

One limitation is associated with individuals who never had a weight problem (NWP group). Since it was believed that these individuals were not attempting weight loss, they were told to think of a situation in which they had to make a change in their life and answer the questions regarding social support. Therefore, not all individuals were thinking of weight loss efforts when answering questions about social support. It is possible that this fact

may have lead to assessing different aspects and types of social support. Therefore, data analyses was also completed with the elimination of the NWP group. As shown in Table 11, there were significant differences among the five groups with respect to social support relating to weight loss efforts (F (4, 180) = 3.27, p = .01).

Table 11
ANOVA for Social Support Relating to Weight Loss Efforts by Group without the NWP Group

Source	df	MS	F
Between Groups	4	13.34	3.27*
Within Groups	180	4.08	

* p = .01

An a priori contrast was performed by using the Dunn-Sidak comparison test (Games, 1977). The contrast between the combined PO,NN,SH and PO,NN,PH groups (mean= 2.53) and the combined CO,SH, CO,PH and CO,NH groups (mean= 2.59) revealed a non-significant difference (t = 18, df= 180, p =0.86). The Tukey post hoc test revealed a significant difference between the PO,NN,PH group (mean= 3.29) and the PO,NN,SH group (mean= 1.78). The PO,NN,PH group had a higher positive social support; whereas, the PO,NN,SH group had the lowest social support.

Social support was scored by summing the type of social support received (e.g., negative, positive, or indifferent) for eight questions. The possible scores ranged from -8.0 to 8.0. Individuals were asked to rate the support from people around them. If the individual did not have contact

with a certain person they were asked to indicate this. Table 12 shows the frequencies of no contact with certain individuals.

Table 12
Frequencies of No Contact with Specific Individuals

No contact with:	Frequencies for all 6 Groups
Spouse	46
Children	69
Mother	143
Father	197
Siblings	37
Employer	115
Friend	9
Co-worker	103

In summary, social support was not lower for the presently obese individuals than in the formerly obese individuals and individuals who never had a weight problem. The data suggest that hypothesis four was not supported with respect to social support relating to weight loss efforts.

Social Functioning:

The F tests for differences between group means were non-significant for the following: Family Social Activities ($F(5, 357) = 0.70$, $p > .05$); Social Activities with Friends ($F(5, 357) = 0.99$, $p > .05$); Social Network Contacts ($F(5, 357) = 0.82$, $p > .05$); Number of Close Relationships ($F(5, 357) = 1.19$, $p > .05$); and Number of Friends ($F(5, 357) = 0.89$, $p > .05$). See Appendix E for data analyses of the social functioning categories. The close circle of friends was not significantly different among the six groups ($X^2 = 2.60$, $df = 5$, $p >$

.05). There is no evidence that having a close circle of friends is related to the group category. The Chi-square analysis indicated that there were not significant variations from what would be expected if having a close circle of friends and group membership were independent. See Appendix F for relevant statistics.

There were no significant group differences found for any of the social functioning categories. Several a priori contrasts were performed using the Dunn-Sidak comparison test (Games, 1977). All of the a priori contrasts were non-significant. Thus, hypothesis four with respect to social functioning was not supported because there were no significant differences among the six groups.

Hypothesis Five

The fifth hypothesis stated that physical activity levels will be lower in individuals who were currently obese, using either self-help, professional help, or no current help than in formerly obese individuals, who used self-help or professional help, and in individuals who have never had a weight problem.

There were no significant differences among the six groups on physical activity level, which was defined by the number of hours spent in weekly exercise (F (5, 357) = 0.79, $p > .05$). Thus, the average of the mean number of hours spent in weekly exercise did not significantly differ among the six groups. These results did not support hypothesis five. See Appendix E for relevant statistics.

Using the Dunn-Sidak comparison test (Games, 1977) several a priori contrasts were performed. First, an a priori contrast between the NWP group (mean= 2.99) and the combined CO,SH, CO,PH and CO,NH groups (mean=

2.76) revealed a non-significant difference (t = -0.70, df= 357, p =0.49). Second, an a priori contrast between the NWP group (mean= 2.99) and the combined FO,NN,SH and FO,NN,PH groups (mean= 3.13) showed a non-significant difference (t = 0.34, df= 357, p =0.73). Third, an a priori contrast between the combined NWP, FO,NN,SH, and FO,NN,PH groups (mean= 3.09) and the combined CO,SH, CO,PH, and CO,NH groups (mean= 2.76) revealed a non-significant difference (t = -0.90, df= 357, p =0.37). Hypothesis five regarding physical activity level was not supported.

When individuals were asked about the type of physical activity they took part in each week on a regular basis, there were differences across the six groups. A summary of the percentage of each group engaging in regular weekly physical activity can be found in Table 13.

Table 13
Percentage of Each Group Engaging in Regular Weekly Physical Activities

	Group					
	NWP	FO,NN,SH	FO,NN,PH	CO,SH	CO,PH	CO,NH
No Physical Activity	17.4%	22.2%	12.5%	19.1%	19.0%	30.6%
Running	1.7%	5.6%	8.3%	4.4%	------	2.8%
Basketball	2.2%	------	------	------	------	------
Walking	39.9%	38.9%	62.5%	48.5%	52.4%	36.1%
Skiing	1.1%	------	------	------	------	------
Swimming	------	------	4.2%	4.4%	------	2.8%
Softball	2.8%	5.6%	------	------	------	5.6%
Aerobics	4.5%	5.6%	12.5%	2.9%	------	------
Racquet sports	2.2%	------	------	------	------	------
Other	28.1%	22.2%	------	20.6%	28.6%	22.2%

When individuals were asked about having a medical and a non-medical reason that prevents them from physical activity, there were differences across the six groups, as shown in Table 14.

Table 14
Percentage of Each Group Giving Medical and Non-Medical Reasons for Prevention of Physical Activity

	Group					
	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
Medical Reason	21.4%	30.6%	33.3%	41.2%	38.1%	41.7%
Non-Medical Reason	26.4%	13.9%	4.2%	29.4%	14.3%	27.8%
Combined Reasons	47.8%	44.5%	37.5%	70.6%	52.4%	69.5%

Hypothesis Six

According to the sixth hypothesis, the weight locus of control belief systems of currently obese individuals, using either self-help, professional help, or no current help will be externally directed, while the weight locus of control belief systems of formerly obese individuals, who used self-help or professional help, and individuals who have never experienced a weight problem will be internally directed.

Weight locus of control scores were presented in terms of the total score. The possible range of scores was from 0 (internal) to 20 (external). The total sample was internal in weight locus of control (mean=4.67, SD=3.7). There were no significant differences among the six groups on weight locus of control ($F(5, 357) = 0.14$, $p > .05$). See Appendix E for relevant statistics.

Several a priori contrasts were performed by using the Dunn-Sidak comparison test (Games, 1977). First, an a priori contrast between the NWP

group (mean- 4.67) and the combined CO,SH, CO,PH and CO,NH groups (mean- 4.82) revealed a non-significant difference (t - 0.40, df- 357, p -0.69). Second, an a priori contrast between the NWP group (mean- 4.67) and the combined FO,NN,SH and FO,NN,PH groups (mean- 4.41) showed a non-significant difference (t - -0.48, df- 357, p -0.63). In addition, an a priori contrast between the combined NWP, FO,NN,SH, and FO,NN,PH groups (mean- 4.49) and the combined CO,SH, CO,PH, and CO,NH groups (mean- 4.82) revealed a non-significant difference (t - 0.73, df- 357, p -0.46). These results did not support hypothesis six.

Hypothesis Seven

The seventh hypothesis stated that self-control will be lower in individuals who were presently obese, using either self-help, professional help, or no current help than formerly obese individuals, who used self-help or professional help, and in individuals who have never had a weight problem.

There were no significant differences among the six groups on self control ($F(5, 357) = 0.36$, $p > .05$). See Appendix E for relevant statistics.

Using the Dunn-Sidak comparison test (Games, 1977) several a priori contrasts were performed. An a priori contrast between the NWP group (mean- 78.54) and the combined CO,SH, CO,PH and CO,NH groups (mean- 79.02) revealed a non-significant difference (t - 0.16, df- 357, p -0.87). An a priori contrast between the NWP group (mean-78.54) and the combined FO,NN,SH and FO,NN,PH groups (mean- 78.88) showed a non-significant difference (t - 0.09, df- 357, p -0.93). In addition, an a priori contrast between the combined NWP, FO,NN,SH, and FO,NN,PH groups (mean- 78.76) and the combined CO,SH, CO,PH, and CO,NH groups (mean- 79.02) revealed a

non-significant difference (t = 0.08, df= 357, p =0.94). Therefore, these results did not support hypothesis seven.

Hypothesis Eight

According to the eighth hypothesis, emotional stress, measured by negative life change events, will be higher in currently obese individuals, using either self-help, professional help, or no current help than in formerly obese individuals, who used self-help or professional help, and in individuals who have never experienced a weight problem.

There were no significant differences among the six groups on emotional stress, measured by negative life change events (F (5, 357) = 1.08, $p > .05$). See Appendix E for relevant statistics.

Several a priori contrasts were performed by using the Dunn-Sidak comparison test (Games, 1977). First, an a priori contrast between the NWP group (mean= 8.03) and the combined CO,SH, CO,PH and CO,NH groups (mean= 9.48) revealed a non-significant difference (t = 0.46, df= 357, p =0.65). Second, an a priori contrast between the NWP group (mean= 8.03) and the combined FO,NN,SH and FO,NN,PH groups (mean= 8.99) showed a non-significant difference (t = 0.73, df= 357, p =0.47). Third, an a priori contrast between the combined NWP, FO,NN,SH, and FO,NN,PH groups (mean= 8.67) and the combined CO,SH, CO,PH, and CO,NH groups (mean= 9.48) revealed a non-significant difference (t = 0.12, df= 357, p =0.90). Thus, these results did not support hypothesis eight.

Hypothesis Nine

Hypothesis nine stated that psychological mood states will not differ among the six comparison groups.

There were no significant differences among the six groups on psychological mood states, measured by the Profile of Mood States (POMS), for each of the six subscales : (tension-anxiety (F (5, 357) = 0.98, p > .05); depression-dejection (F (5, 357) = 1.48, p > .05); anger-hostility (F (5, 357) = 1.28, p > .05); vigor-activity (F (5, 357) = 0.80, p > .05); fatigue-inertia (F (5, 357) = 1.51, p > .05); confusion-bewilderment (F (5, 357) = 1.06, p > .05). Several a priori contrasts were performed by using the Dunn-Sidak comparison test (Games, 1977). All of the a priori contrasts were non-significant. Consequently, the data does not support hypothesis nine. See Appendix E for relevant statistics.

Hypothesis Ten

According to the tenth hypothesis, coping responses will not differ among the six comparison groups.

Active Cognitive Coping. There were no significant differences among the six groups on active cognitive coping (F (5, 357) = 1.57, p > .05). See Appendix E for relevant statistics.

Using the Dunn-Sidak comparison test (Games, 1977), several a priori contrasts were performed. First, an a priori contrast between the NWP group (mean= 17.68) and the combined CO,SH, CO,PH and CO,NH groups (mean= 17.85) revealed a non-significant difference (t = 0.21, df= 357, p =0.84). Second, an a priori contrast between the NWP group (mean= 17.68) and the combined FO,NN,SH and FO,NN,PH groups (mean= 17.33) showed a non-significant difference (t = -0.36, df= 357, p =0.72). Third, an a priori contrast between the combined NWP, FO,NN,SH, and FO,NN,PH groups (mean= 17.45) and the combined CO,SH, CO,PH, and CO,NH groups (mean= 17.85) revealed a non-significant difference (t = 0.46, df= 357, p =0.65).

Active Behavioral Coping. There were significant differences among the six groups on active behavioral coping (F (5, 357) = 2.83 p = .02). Table 15 is a summary of the analysis for active behavioral coping by group.

Table 15
ANOVA for Active Behavioral Coping by Group

Source	df	MS	F
Between Groups	5	143.86	2.83*
Within Groups	357	50.92	

* p = .02

Several a priori contrasts were performed by using the Dunn-Sidak comparison test (Games, 1977). First, an a priori contrast between the NWP group (mean= 19.09) and the combined CO,SH, CO,PH and CO,NH groups (mean= 17.34) revealed a marginally significant difference (t = -1.96, df= 357, p = .05). Thus, the mean for the NWP group was significantly larger than the average of the means of groups CO,SH, CO,PH and CO,NH. Second, an a priori contrast between the NWP group (mean= 19.09) and the combined PO,NN,SH and PO,NN,PH groups (mean= 18.91) did not indicate a significant difference (t = -0.17, df= 357, p = .86). Third, an a priori contrast between the combined NWP, PO,NN,SH, and PO,NN,PH groups (mean= 18.97) and the combined CO,SH, CO,PH, and CO,NH groups (mean= 17.34) revealed a non-significant difference (t = -1.68, df= 357, p = 0.09).

Avoidance Coping. There were no significant differences among the six groups on avoidance coping (F (5, 357) = 1.48, p > .05). Using the Dunn-Sidak comparison test (Games, 1977), several a priori contrasts were performed.

First, an a priori contrast between the NWP group (mean- 4.01) and the combined CO,SH, CO,PH and CO,NH groups (mean- 4.52) revealed a non-significant difference (t - 1.24, df- 357, p -0.21). Second, an a priori contrast between the NWP group (mean- 4.01) and the combined FO,NN,SH and FO,NN,PH groups (mean- 3.84) showed a non-significant difference (t - -0.36, df- 357, p -0.72). Third, an a priori contrast between the combined NWP, FO,NN,SH, and FO,NN,PH groups (mean- 3.89) and the combined CO,SH, CO,PH, and CO,NH groups (mean- 4.52) revealed a non-significant difference (t - 1.42, df- 357, p -0.16).

The data does not support hypothesis ten since there were significant differences found among the six groups with respect to active behavioral coping.

Hypothesis Eleven

The eleventh hypothesis stated that personal and demographic data will not differ among the six comparison groups, except for BMI, current, maximum, and minimum adult body weight.

Age in Years. There were no significant differences among the six groups with respect to age (F (5, 357) - 1.32, p > .05). See Appendix E for relevant statistics.

Body Mass Index. There were significant differences among the six groups on the BMI (F (5, 357) - 130.14, p - .00). The Tukey post hoc test revealed several significant differences between the group means. First, the NWP group (mean- 22.59) was significantly different from the means of groups FO,NN,SH (mean- 25.26), FO,NN,PH (mean- 24.98), CO,SH (mean- 31.51), CO,PH (mean- 31.54), and CO,NH (mean- 31.84). Secondly, groups CO,SH, CO,PH, and CO,NH were significantly different from the means of

groups NWP, FO,NN,SH, and FO,NN,PH. Table 16 displays the ANOVA table for body mass index.

Table 16
ANOVA for Body Mass Index by Group

Source	df	MS	F
Between Groups	5	1211.02	130.14*
Within Groups	357	9.31	

* p -.00

Current Weight in Pounds. There were significant differences among the six groups on current weight in pounds (F (5, 357) - 60.04, p - .00). The Tukey post hoc test revealed several significant differences between the group means. First, the NWP group (mean- 143.6) was significantly different from the means of groups FO,NN,SH (mean- 166.1), CO,SH (mean- 199.1), CO,PH (mean- 191.9), and CO,NH (mean-197.8). Second, groups CO,SH, CO,PH, and CO,NH were significantly different from the means of groups NWP, FO,NN,SH, and FO,NN,PH (mean- 159.1). Table 17 outlines the ANOVA table for current weight in pounds by group.

Table 17
ANOVA for Current Weight by Group

Source	df	MS	F
Between Groups	5	43129.14	60.04*
Within Groups	357	718.30	

* p -.00

Maximum Adult Weight in Pounds. There were significant differences among the six groups on maximum weight as an adult in pounds (F (5, 357) = 62.58, p = .00). The Tukey post hoc test revealed several significant differences between the group means. First, the NWP group (mean= 153.1) was significantly different from the means of the other five groups Secondly, the CO,SH group (mean= 210.7)was significantly different from the means of groups NWP, PO,NN,SH (mean= 189.7), and PO,NN,PH (mean= 187.5). Table 18 displays the ANOVA table for maximum adult weight.

Table 18
ANOVA for Maximum Adult Weight in Pounds by Group

Source	df	MS	F
Between Groups	5	46667.42	62.58*
Within Groups	357	745.71	

* p =.00

Minimum Adult Weight in Pounds. There were significant differences among the six groups on minimum adult weight in pounds (F (5, 357) = 10.99, p = .00). The Tukey post hoc test revealed several significant differences between the group means. First, the NWP group (mean= 126.4) was significantly different from the means of groups PO,NN,SH (mean= 143.8), CO,SH (mean= 151.4), and CO,NH (mean= 143.8). Second, the CO,SH group was significantly different from the means of groups NWP, PO,NN,PH (mean= 129.1), and CO,PH. Table 19 displays the ANOVA for minimum adult weight in pounds.

Table 19
ANOVA for Minimum Adult Weight in Pounds by Group

Source	df	MS	F
Between Groups	5	7577.43	10.99*
Within Groups	357	688.98	

* p -.00

Weight Perception of Self. Individuals were asked to refer to a standard weight table provided to them as a guide for answering the question, "How would you describe yourself?" There were significant differences among the six groups on self weight perception (X^2 - 254.98, df - 10, p-.00). There was evidence that current weight self-perception was related to the group category. Table 20 depicts the observed frequencies of current weight self-perception. The Chi-square analysis indicated that there were significant variations from what would be expected if current weight perception and group membership were independent.

Table 20
Observed Frequencies of Current Weight Perception of Self

	Group					
	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
Never had a weight problem	111 62.4%	2 5.5%	1 4.2%	0 0.0%	0 0.0%	1 2.8%
In the past, obese now normal weight	45 25.3%	15 41.7%	11 45.8%	1 1.5%	0 0.0%	1 2.8%
In the past, obese still obese	22 12.3%	19 52.8%	12 50.0%	67 98.5%	21 100.0%	34 94.4%
Individuals per group	178	36	24	68	21	36

The observed frequencies of personal and demographic data by group can be found in Table 21.

Table 21
Observed Frequencies of Personal and Demographic Data by Group

	Group					
	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
SEX						
Male	72 40.4%	29 80.6%	6 25.0%	29 42.6%	4 19.0%	14 38.9%
Female	106 59.6%	7 19.4%	18 75.0%	39 57.4%	17 81.0%	22 61.1%

Table 21 Continued
Observed Frequencies of Personal and Demographic Data by Group

	Group					
	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
MARITAL STATUS						
Single	20	2	3	5	1	2
	11.2%	5.6%	12.5%	7.4%	4.8%	5.6%
Married	127	24	16	47	18	26
	71.3%	66.7%	66.7%	69.1%	85.7%	72.2%
Divorced	14	8	3	9	0	3
	7.9%	22.1%	12.5%	13.2%	0.0%	8.3%
Widowed	17	2	2	7	2	5
	9.6%	5.6%	8.3%	10.3%	9.5%	13.9%
RACE						
Black	3	3	1	4	2	0
	1.7%	8.3%	4.2%	5.8%	9.5%	0.0%
White	173	31	23	62	19	36
	97.2%	86.1%	95.8%	91.2%	90.5%	100%
Asian	0	0	0	1	0	0
	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%
Hispanic	0	1	0	0	0	0
	0.0%	2.8%	0.0%	0.0%	0.0%	0.0%
Other	2	1	0	1	0	0
	1.1%	2.8%	0.0%	1.5%	0.0%	0.0%

Table 21 Continued
Observed Frequencies of Personal and Demographic Data by Group

	Group					
	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
EMPLOYMENT STATUS						
Full-time	94	22	14	34	7	13
	52.8%	61.1%	58.3%	50.0%	33.3%	36.2%
Part-time	25	3	2	5	3	8
	14.0%	8.3%	8.3%	7.3%	14.3%	22.2%
Unemployed	6	1	1	7	2	3
	3.4%	2.8%	4.2%	10.3%	9.5%	8.3%
Retired	53	10	7	22	9	12
	29.8%	27.8%	29.2%	32.4%	42.9%	33.3%
Individuals per group	178	36	24	68	21	36

Sex. There were significant differences among the six groups with respect to the sex of individuals (χ^2 - 29.58, df - 5, p-.00). There was evidence that the sex of individuals was related to the group category. The Chi-square analysis indicated that there were significant variations from what would be expected if individuals' sex and group membership were independent. Refer to Table 21 for the observed frequencies of individuals' sex.

Men were four times as likely than women to have lost weight through self-help. In addition, women were two and a half times more likely than men to have been in former and current professional weight treatment programs.

Marital Status. There were no significant differences among the six groups with respect to marital status (X^2 = 14.13, df = 15, p >.05). There was no evidence that marital status was related to the group category. The Chi-square analysis indicated that there were no significant variations from what would be expected if marital status and group membership were independent. Refer to Table 21 for the observed frequencies of individuals' marital status.

Race. There were no significant differences among the six groups with respect to race (X^2 = 26.36, df = 25, p >.05). There was no evidence that race was related to the group category. The Chi-square analysis indicated that there were no significant variations from what would be expected if race and group membership were independent. Refer to Table 21 for the observed frequencies of individuals' race.

Employment Status. There were no significant differences among the six groups with respect to employment status (X^2 = 16.56, df = 15, p >.05). There was no evidence that employment status was related to the group category. The Chi-square analysis indicated that there were no significant variations from what would be expected if employment status and group membership were independent. Refer to Table 21 for the observed frequencies of individuals' employment status.

Hypothesis Twelve

According to the twelfth hypothesis, currently obese individuals and formerly obese individuals using either self-help, professional help, or no help will have at least one parent who is obese, while individuals who have never experienced a weight problem will not have an obese parent.

Current Weight of Mother. The current weight of the individual's mother was significantly different among the six groups (X^2 - 28.36, df - 15, p-.02). There was evidence that mother's weight was related to the group category. Individuals were asked to indicate if they had no contact because of death or a poor relationship with either parent. Table 22 shows the frequencies of no contact with the individuals' mother and father. Refer to Table 23 for the observed frequencies of current parental body weight. The Chi-square analysis indicated that there were significant variations from what would be expected if mother's weight and group membership were independent.

Table 22
Frequencies of No Contact with Mother and Father

	Group					
	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
Mother	78	19	8	26	16	18
Father	102	23	13	45	17	27

Current Weight of Father. The current weight of the individual's father was not significantly different among the six groups (X^2 - 15.52, df - 15, p-.41). See Table 23 for the observed frequencies of current parental body weight.

Obesity among the individual's mother and father was found for all six groups. Thus, individuals classified as never having a weight problem reported having obese parents. The data did not support hypothesis twelve.

Table 23
Observed Frequencies of Current Weight of Mother and Father

	Group					
	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
Weight of mother:	(X^2 - 28.36, df - 15, p-.02)					
very overweight	11	5	2	12	0	7
	11.0%	29.4%	12.5%	28.6%	0%	38.8%
slightly overweight	36	6	6	13	1	5
	36.0%	35.3%	37.5%	31.0%	20.0%	27.8%
about average	35	1	6	14	1	5
	35.0%	5.9%	37.5%	33.3%	20.0%	27.8%
slightly underweight	18	5	2	3	3	1
	18.0%	29.4%	12.5%	7.1%	60.0%	5.6%
Total number of responses with no contacts eliminated	100	17	16	42	5	18

Table 23 Continued
Observed Frequencies of Current Weight of Mother and Father

	Group					
	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
Weight of father:	(X^2 - 15.52, df - 15, p-.41)					
very overweight	7	0	3	2	1	1
	9.2%	0%	27.3%	8.8%	25.0%	11.1%
slightly overweight	26	3	4	9	1	4
	34.2%	23.1%	36.3%	39.1%	25.0%	44.4%
about average	29	9	2	11	2	2
	38.2%	69.2%	18.2%	47.8%	50.0%	22.2%
slightly underweight	14	1	2	1	0	2
	18.4%	7.7%	18.2%	4.3%	0%	22.3%
Total number of responses with no contacts eliminated	76	13	11	23	4	9

CHAPTER V
DISCUSSION

The purpose of the present research was to compare individuals who attend professional weight loss programs and individuals who lose weight on their own. Exploratory research hypotheses were constructed to identify differential characteristics among the following six groups: (a) individuals who have never had a weight problem; (b) formerly obese individuals who used self-help methods of treatment; (c) formerly obese individuals who used professional methods of treatment; (d) presently obese individuals who were currently using self-help methods; (e) presently obese individuals who were currently using professional treatment methods; and (f) presently obese individuals who were not actively pursuing weight loss techniques at the present time.

This chapter is divided into two sections. The first section includes a discussion of the results of the data analyses for the research hypotheses, considers their meaning, and examines the research limitations. The second section includes an examination of the revised model of obesity and suggestions for further research.

Major Findings From Data Analyses

It was found that out of 363 individuals surveyed: 34.4% were currently obese, 16.6% were formerly obese, and 49% were never obese in

childhood or adulthood. These data supported the literature with respect to prevalence of obesity in the United States (Bray, 1979; Grande, 1974).

This study provides information about the ratio of obese individuals using self-help versus professional help in weight loss. It was found that there were one and a half more individuals who self-recovered from obesity than individuals who professionally recovered. There were also more obese individuals currently attempting to lose weight through self-help versus professional help. Reasons for the prevalence of self-help may have included: convenience; lack of money for financial costs of professional programs; unsuccessful results from professional programs; shame and embarrassment of seeking help outside of home; lack of transportation, mobility, and time to attend professional programs; dislike of interactions with individuals outside of home, and a possible greater tendency for individuals who use self-help to volunteer for this type of research than for individuals who use professional help. It is possible that the ratio of self-help versus professional help reflects a response bias in the sample because some individuals may not have wanted to admit to the need of outside help for weight loss.

One limitation of this study is the lack of inquiries regarding the use of over-the-counter diet pills and diet formulas for weight control in former and current self-help groups. It would have been helpful to obtain information regarding weight control techniques used by self-help individuals. This information would have been helpful for comparing self-help individuals to each other. A second limitation is the lack of inquiries regarding the amount of weight that formerly obese individuals lost. The questionnaire asked if five pounds or more were lost, but did not allow the individual to report the amount of weight that was lost. This information

would have been helpful in understanding the severity of the weight problem.

It is common among obese individuals to lose weight and then regain it. Thus, data were collected in order to determine the recidivism rate of obesity in a randomly chosen sample. This study found that individuals, who were formerly and currently obese using self-help and professional help (groups FO,NN,SH, FO,NN,PH, CO,SH, & CO,PH), attempted weight loss one more time than the number of times weight was regained. Individuals, who were currently obese and not attempting weight loss (CO,NH group), tried to lose weight the same number of times they regained weight. It is interesting to note that individuals, who were formerly obese through self-help (FO,NN,SH group), attempted weight loss half the number of times as individuals who were currently obese, using either self-help or professional help (CO,SH & CO,PH groups).

These findings suggest that there may be individual differences that lead some people to being successful in weight loss and maintenance. Individual differences may include any of the following or a combination: genetics, metabolism, childhood family support and environment, learned eating habits, or other personal characteristics (e.g., self-consciousness, assertiveness, self-motivation, etc.) that were not measured in this study.

The data were similar for individuals who were currently obese, using self-help and professional help (groups CO,SH & CO,PH). In other words, the number of times attempting weight loss was the same number for each group, as well as the number of times weight was regained. Currently obese individuals using self-help and professional help (CO,SH & CO,PH) had a larger number of weight loss attempts than formerly obese individuals, which provides support for the yo-yo effect in dieting.

The yo-yo effect refers to the repeated up and down cycling in body weight (Brownell, 1988). Research shows that taking part in the yo-yo dieting cycle can seriously alter the body's weight regulation system. Therefore, each time the individual diets, it becomes more and more difficult to lose weight. Yo-yo dieting results in the following changes: increases the proportion of fat to lean tissue on the body, redistributes body fat in a way that is dangerous to health, and increases the desire for fatty foods, which are themselves unhealthy (Brownell, 1988). Often, the diet may cause loss of muscle; therefore, when weight is regained it is usually less muscle and more fat that is gained. There is also evidence that repeated yo-yo dieting may increase an individual's risk of heart disease (Brownell, 1988).

There were differences in the recidivism rate when comparing both groups of formerly obese individuals (FO,NN,SH & FO,NN,PH). The number of times attempting weight loss and the number of times regaining weight was lower for individuals who lost weight through self-help (FO,NN,SH group) as compared to individuals who used professional help (FO,NN,PH group). It is possible that self-recovered individuals had "easier" weight problems to control as compared to individuals who recovered through professional help. An explanation for the "easier" weight problem may be a less severe problem of obesity and individual differences that play an important role in the difficulty of losing and maintaining weight. As stated earlier, individual differences may include any of the following or a combination: genetics, metabolism, childhood family support and environment, learned eating habits, or other personal characteristics.

The first hypothesis was related to history of weight loss. In this study, history of weight loss efforts was lower for formerly obese individuals who used either self-help or professional help (FO,NN,SH & FO,NN,PH groups)

as compared to currently obese individuals, using either self-help or professional help (groups CO,SH & CO,PH). Individuals who were currently obese and not attempting weight loss (CO,NH group) attempted weight loss fewer times than individuals who were currently obese, using either self-help or professional help (CO,SH & CO,PH) and formerly obese individuals who used professional help (FO,NN,PH). This finding may have been the result of the CO,NH group giving up on weight control attempts due to lack of motivation after unsuccessful attempts to lose weight. Therefore, these individuals may have resigned themselves to being obese.

Individuals, who were classified by the author using the body mass index (BMI), as never having a weight problem (NWP group), reported attempting weight loss, losing weight, and regaining weight. These findings were surprising, but may reflect the importance of body image, society's pressure to be thin, and suggest the presence of eating disorders, such as bulimia and anorexia nervosa.

The second hypothesis was related to the onset of obesity. As predicted, individuals who were currently obese using self-help and no help (groups CO,SH & CO,NH) showed a slight tendency toward early-onset of obesity. Also as predicted, formerly obese individuals who lost weight through self-help (FO,NN,SH group) showed a strong pattern of adult-onset of obesity. However, some of the data showed the reverse of what was predicted. First, individuals who were currently obese using professional help (CO,PH group) had a strong pattern of adult-onset of obesity. Second, individuals who were formerly obese through professional help (FO,NN,PH group) showed a slight tendency toward early-onset of obesity. These reverse findings can be explained by the subjective nature of the question. Individuals were asked to make a subjective judgment about their body

weight as a child/teenager. In other words, the individuals' judgment may have contained certain biases and distortions regarding childhood/teenage body weight. Possible biases which could have influenced their response include: body distortion, long-term memory difficulties, and having no standard height/weight numerical table for reference in making judgments about childhood/teenage body weights. Future research conducted on the onset of obesity should include concrete evidence regarding body weight. It would be helpful to obtain medical records during each individual's childhood/teenage years to determine the onset of obesity. With this information, memory difficulties and subjective biases could be eliminated from the data.

It was surprising to find that 28.7% of individuals classified as never having a weight problem (NWP group) stated that they were overweight as an adult in the past. In addition, a small percentage of individuals defined as formerly obese and currently obese stated that they were not overweight as an adult in the past. Again, this could be explained by the individual biases and distortions regarding this question. More importantly, this finding points to the importance of an individual's perception of body weight. Thus, this finding suggests that if a person views him/herself as obese, then he/she will attempt to lose weight, despite having a normal body weight.

The third hypothesis was concerned with self-efficacy relating to eating restraint. Overall, currently obese individuals showed lower self-efficacy relating to eating restraint as compared to formerly obese individuals and people who have never had a weight problem.

The fourth hypothesis was concerned with social support relating to weight loss efforts and social functioning. It was believed that individuals

who never had a weight problem (NWP group) would not attempt weight loss; therefore, they were told to think of a situation in which they had to make a change in their life and answer the questions regarding social support. Consequently, not all individuals were thinking of weight loss efforts when answering questions regarding social support. It is possible that this fact may have lead to the assessment of different aspects and types of social support. Data analysis that excluded the NWP group indicated significant differences among the five groups with respect to social support. There were no significant differences among the combined FO,NN,SH and FO,NN,PH groups as compared to the combined CO,SH, CO,PH, and CO,NH groups. However, there were significant differences between the FO,NN,PH group and the FO,NN,SH group. The FO,NN,PH group had the highest positive social support; whereas, the FO,NN,SH group had the lowest social support. With respect to social functioning, there were no significant differences among the six groups. Therefore, all groups appeared to be performing the same types of social activities with family and friends.

The fifth hypothesis was related to physical activity level. Based on the strong empirical support for the beneficial effect of physical activity on weight loss and maintenance, physical activity level was expected to differ. It was surprising that the six groups did not differ significantly on physical activity level. The age of the sample needs to be considered when looking at physical activity level. The mean age of the sample was 52.4 years with a range of 21 to 84 years. Thus, it is possible that the higher age range was partially responsible for the physical inactivity.

Examining physical activity level, there were non-significant differences in the predicted direction. Overall, currently obese individuals showed a trend for lower (non-significant) physical activity level than

formerly obese individuals and individuals who never had a weight problem. A possible explanation for this trend may have been that currently obese individuals believed that they could not exercise because of their overweight condition. In addition, they may have lacked the knowledge regarding the benefits of exercise in the fight to lose and maintain weight. Further, currently obese individuals had the highest number of non-medical and medical reasons for not being physically active. Again, this trend suggests that currently obese individuals believed they could not exercise because of their condition of obesity. It should be emphasized that the explanation for this trend is speculative since there were no significant differences.

The sixth hypothesis was related to weight locus of control belief systems. It was surprising that the six groups did not significantly differ with respect to this variable. Overall, the total sample was internal in weight locus of control. Thus, all groups believed that they were able to control their own weight condition. This finding does not support some past research that found participants in group weight loss programs generally have external locus of control belief systems (Goldney & Cameron, 1981; Wallston & Wallston, 1978; Weiss, 1977).

The seventh hypothesis was related to self-control. Self-control refers to the tendencies of an individual to apply self-management methods to the solution of a common behavioral problem (Rosenbaum, 1980). There were no significant differences among the six groups with respect to this variable.

The eighth hypothesis was related to emotional stress, measured by negative life change events. Although there were no significant differences among the six groups, currently obese individuals using self-help and no help (CO,SH & CO,NH groups) had higher (non-significant) emotional stress than the formerly obese individuals and individuals who have never had a

weight problem (PO,NN,SH, PO,NN,PH, & NWP groups). A possible explanation for this trend is that the current condition of obesity was viewed as a stressor for the currently obese individuals. The CO,PH group had the lowest (non-significant) emotional stress which may be explained by the treatment program acting as a buffer for the stress. The PO,NN,SH and CO,SH groups had higher emotional stress (non-significant) than the PO,NN,PH and CO,PH groups. The lower emotional stress in the latter groups may again point to a buffer provided by the professional groups. It should be emphasized that the explanation for this trend is speculative since there were no significant differences.

The ninth hypothesis was related to psychological mood states. Although there were no significant differences among the six groups, there was a trend indicating that currently obese individuals using self-help (CO,SH group) had the highest score (non-significant) on the following subscales: musculoskeletal tension; a depressed mood accompanied by a sense of personal inadequacy; a mood of anger and antipathy toward others; a mood of weariness, inertia and low energy level; and bewilderment. These high scores for the CO,SH group may be explained by the self-responsibility they felt toward accomplishing activities. These individuals may have blamed themselves for failing whereas individuals who sought outside help may have blamed the professional program as not being successful. Another trend indicated that currently obese individuals not attempting weight loss (CO,NH group) had the lowest score (non-significant) on the following subscales: musculoskeletal tension; a depressed mood accompanied by a sense of personal inadequacy; and a mood of anger and antipathy toward others. This may be explained by a lack of investment to change their weight since these individuals were not attempting weight loss. It is

possible that these individuals may have accepted their overweight condition and felt comfortable with their body.

The tenth hypothesis was related to coping responses. Coping responses describe the way in which people consciously try to adapt to the stress and anxiety associated with various events in life. Coping responses generally represent thoughts and behaviors that people use to deal with stress. In this study, the coping style that was the most useful in distinguishing among the six groups was the active behavioral coping response. Active behavioral coping was found to be significantly different among the six groups. This type of coping reflects the action a person takes when confronted with a difficult situation. Types of questions that assess this coping responses include: "sought help from persons or groups with similar experiences," "made a plan of action and followed it," "tried to find out more about the situation," and "got busy with other things to keep my mind off the problem."

Individuals who never had a weight problem (NWP group) had significantly higher active behavioral coping as compared to the three currently obese groups. This finding possibly reflects the NWP group's decision to take action when confronted with a difficult situation. There were no significant differences for active cognitive coping or avoidance coping. It appears that each of the six groups used a variety of coping styles.

The eleventh hypothesis was related to personal and demographic data. The six groups did not significantly differ with respect to age, race, marital status, and employment status. There were significant group differences among the following variables: body mass index, current weight in pounds, maximum weight as an adult in pounds, minimum adult weight in pounds, self weight perception, and sex of individuals.

With respect to self weight perception, approximately 97.6% of the currently obese individuals perceived themselves as obese. It is interesting to note that 51.4% of formerly obese individuals perceived themselves as obese despite being classified as having normal weight according to their BMI. In addition, approximately 12% of individuals defined as never having a weight problem perceived themselves as obese. These findings point to the importance of individual's perception of body image. Further research is needed to compare currently and formerly obese individuals on body image.

With respect to the sex of individuals, it was found that women and men differed in current weight loss efforts across the six groups. The results indicate that women were much more likely to be actively dieting than men. There is a growing literature that suggests that women are more weight and diet conscious than men (Klesges, 1983; Klesges, Beatty, & Berry, 1985). Thirty percent of the men classified as never having a weight problem (NWP group) stated that they were currently attempting weight loss. On the other hand, 51% of the women in the same weight group stated that they were trying to lose weight. Twenty nine percent of the men classified as formerly obese, but currently normal weight stated that they were currently attempting weight loss. Seventy five percent of the women classified as formerly obese stated that they were currently attempting weight loss. Thus, it was found that a larger number of women than men who were classified as normal weight (groups NWP, FO,NN,SH, & FO,NN,PH) were attempting weight loss. This finding points to the connection between one's body image and weight loss efforts. A possible explanation for this finding is that women may be more influenced than men by the American culture that differentially reinforces thinness and encourages women to be below normal body weight standards (Schwartz, Thompson, & Johnson, 1982).

The twelfth hypothesis was related to parental body weight. In all six groups, obesity was found for both the mother and father of the individual. One limitation associated with this factor is the lack of information regarding the biological versus adoptive relationship of the individual to the parents. The question in this study did not allow for individuals to indicate if their response was based on their biological or adoptive parents. Thus, conclusions could not be made regarding environmental versus genetic influences on individual's body weight. Consequently, the findings obtained from this question are tenuous and firm conclusions cannot be drawn. Future research should obtain information about the bias of the parental relationship. A second limitation is that for many individuals there was a lack of contact with parents because of death or poor relationships. This fact along with memory difficulties in recalling parental weight and uncertainty as to the actual weight of parents may have significantly affected individuals' evaluation of parental body weight. In addition, there may have been biases and distortions because of the subjective nature of the question.

Return to the Model of Obesity

After reviewing the findings from this study, revisions were needed to the proposed model of obesity. As stated earlier, the author of this paper views obesity as emerging from numerous factors in an individual's life which were outlined in the proposed model of obesity. It was emphasized that all of the factors need not be present in order for an individual to be obese. The model was not intended to predict whether a given individual will or will not be obese. The purpose was to outline the important factors associated with obesity. Table 24 outlines the proposed model of obesity based on the review of the literature on obesity. Table 25 outlines the

revised model of obesity based on the data of the present study. The factors in the models are not placed in any particular order.

Table 24
Model of Obesity

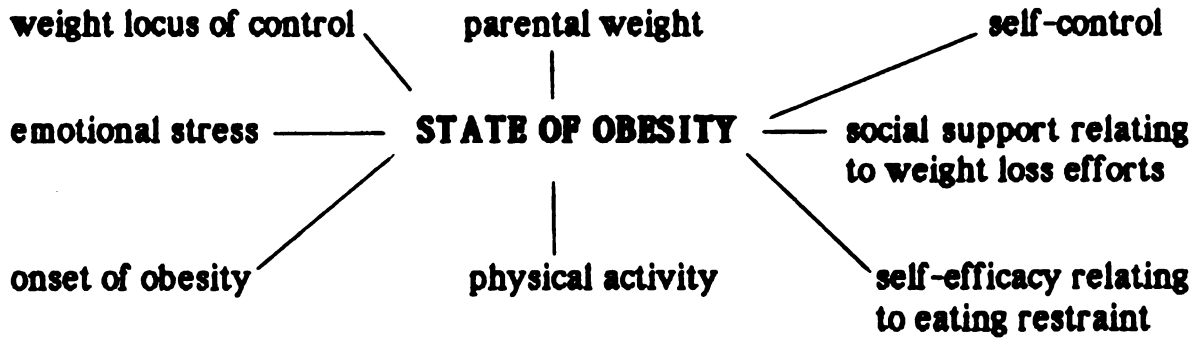
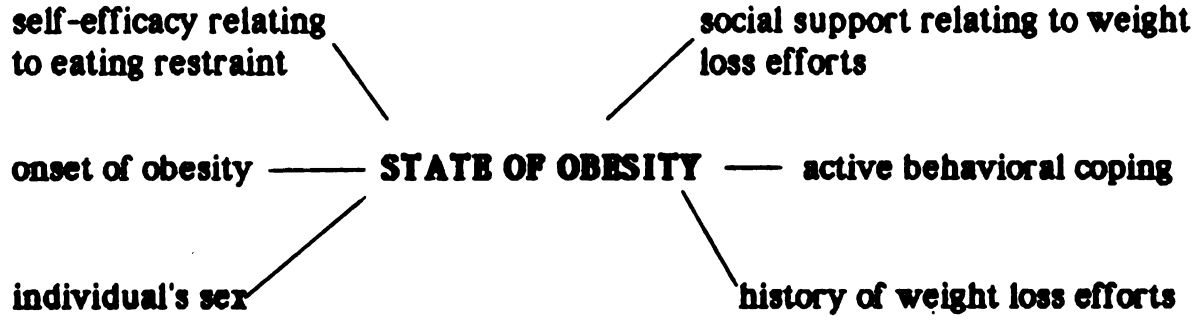


Table 25
Revised Model of Obesity



* Age of the sample may be responsible for the disappearance of physical activity from the revised model.

It is clear that obesity has multiple determinants and has many contributing factors. Based on the results of this study, it appears that there are six components that contribute to the condition of obesity. These factors include the following: self-efficacy relating to eating restraint, social support relating to weight loss efforts, active behavioral coping response, onset of obesity, history of weight loss efforts, and the individual's sex.

There are other possible contributing factors that this study did not examine, but are speculated as being important contributing factors. These factors include the following: physical activity, knowledge about nutrition, knowledge about exercise, severity of obesity, body image, and individual differences (e.g., genetics, family eating habits, childhood/adolescent reward patterns concerning food, poor eating habits, metabolism, and biological body weight regulators). Several of the individual difference factors are discussed in the following paragraphs.

The degree to which obesity is inherited is not fully understood. Man has known for thousands of years that domestic animals can be bred to be fat. Many people believe that obesity is equally inheritable in humans. Recently, researchers have found an enzyme in animals that may help in the understanding of genetic involvement in obesity (Moffat, 1988). The enzyme, adipsin, is thought to be a chemical regulator for fat. It may act as a signaling molecule to the body's fat metabolism. It is believed that adipsin affects fat stores by controlling appetite or heat production. Animals with normal levels of adipsin maintain normal weight; however, animals with little adipsin become fat on the same number of calories. The body's level of adipsin may be genetically determined. It may be possible for doctors to distinguish obesity that arises from genetic or metabolic defects from those that result from overeating by measuring adipsin. Research into the genetic

contribution to obesity is in its infancy. More research is needed in order to better understand the contributing factors to the development of obesity.

A child's weight problem may be inherited, but it is also possible that overweight parents teach their children poor eating habits, have fattening foods available, and pass along food preferences that contribute to the development of obesity. Again, researchers do not know the role of family eating patterns and environment that contributes to obesity. More studies examining environmental factors in the condition of obesity need to be conducted. This information would add to our knowledge about the process of developing and maintaining the condition of obesity. More information can help health care providers and obese individuals create conditions for successful weight loss and maintenance.

Metabolism or biological body weight regulation is another factor that may contribute to obesity. Animal studies have been the primary source of evidence in support of a natural biological mechanism for the regulation of body weight (Hoebel & Teitelbaum, 1966). Under normal circumstances, body weight remains stable or increases at a constant rate. When weight is experimentally increased by tube feeding, insulin injections, or high fat diets, animals automatically restrict their post-intervention food intake to reduce their body weight to original levels. Similarly, a pattern of increased consumption follows a period of starvation to restore weight to the baseline level.

Similar results have been found in studies of human weight regulation (Keys, Brozek, Henschel, Michelson & Taylor, 1950). These experimenters subjected volunteers to starvation diets which reduced their body weights by 25%. Then, the volunteers were allowed to eat without restrictions. The volunteers overate, increasing their body weight to pre-experimental levels.

Another study was conducted by Sims and Horton (1968) which found similar results. Thus, the evidence from controlled studies indicates that initially non-obese individuals regulate their body weight. Common sense suggests that obese individuals do not regulate their body weight. However, this is not true. Nisbett (1972) suggested that obese individuals regulate their body weight, but the set point about which their weight is regulated is higher than current standards. Thus, there is evidence for a physiologically determined weight regulator that sets body weight. This theory is called the set point theory. This theory postulates that each individual maintains weight within a fairly narrow range over a life time, whether he/she diets or overeats. If the individual diets, the body will compensate by burning fewer calories and increasing hunger. If the individual overeats, the body will burn more calories and help to maintain a set weight.

Some researchers believe that adipose tissue regulates one's set point (Bjorntorp, Carlgren, Isaksson, Krotkiewski, Larsson, & Sjostrom, 1975; Sjostrom, 1980). The number and size of fat cells play an important role in determining body weight. Short-term caloric restrictions of less than one to two years reduces the size of fat cells, but not the number of cells. Subsequent weight gain restores fat cell size and if weight gain surpasses past levels, new fat cells are formed. This creates a biological dilemma for grossly obese individuals. Bjorntorp and associates (1975) provided some support for this idea. Fat cell analyses from weight program participants indicated that obese individuals stopped losing weight and dropped out of treatment when fat cell size returned to normal levels. This suggests the existence of a biological limit of losing weight. Further research needs to be conducted in order to provide more information about the biological set point.

Other suggestions for future research are related to the process of surveying individuals from a large community. One difficulty encountered in this study was the lack of forwarding addresses. Because individuals had moved or changed their addresses, numerous questionnaires were not received; thus, the number of questionnaires received was decreased. More data could have been obtained if the financial budget would have allowed for extra questionnaires to have been mailed in order to compensate for the loss due to address changes. Further, based on the total design method of Dillman (1978), it is believed that the response rate would be higher if each individual received an immediate reward for completing the questionnaire. For example, the researcher could enclose five dollars in the envelope containing the questionnaire. Again because of financial burdens, this study was not able to provide rewards to every participant. The reward provided to individuals was determined by a raffle drawing. Thus, not every individual received a reward and the reward was delayed. Further research of this type should consider making procedural changes in order to obtain a higher response rate.

APPENDICES

APPENDIX A

Letters Mailed to Individuals

APPENDIX A

Letter Mailed to 20 Individuals for Procedure 1
Typed on MSU Department of Psychology letterhead paper

April 3, 1989

Hello:

Many Americans are currently concerned or have been concerned about being overweight. Unfortunately, we have very little information about differences, if any, between individuals who are normal weight and individuals who are overweight. Also, we have only a sketchy idea of how many people lose weight on their own, and how these individuals differ from individuals who lose weight with professional help. Without such information, comparisons cannot be made and effective weight loss programs are difficult to design.

The only way we can gather information about differences between normal weight individuals, currently overweight individuals, and individuals who were formerly overweight but lost weight through self-help or professional help is to ask you. The information you provide will be used to help improve weight loss programs and provide comparative information about normal weight, currently overweight, and formerly overweight individuals.

You are one out of twenty people who are being asked to give their responses to weight related questions. You were drawn from a random sample of the entire city of Lansing. In order that the results truly represent the people of Lansing, it is important that you complete a questionnaire. It is also important that we only have you, the person to whom this letter is addressed, respond to this questionnaire. The only other restriction is that you be 21 years of age or older. If you are <u>not</u> 21 years or older, please check the box "I am under 21 years of age" on the stamped, pre-addressed postcard. If you are <u>not</u> 21 years or older, please have one member of your household who is 21 years or older participate in the study.

Your participation is voluntary. You may choose not to participate at all, or not to answer certain questions without penalty. You may indicate your

willingness to voluntarily participate by coming to the Michigan State University campus to complete the questionnaire.

Information gathered from this study will be kept confidential. Your name will be removed and an identification number affixed. Data will be filed according to identification numbers only.

It will only take approximately 25 to 45 minutes of your time to help us gain crucial knowledge about differences between normal weight, currently overweight, and formerly overweight individuals. Plus, you will have a chance to win a prize for your participation. The prizes will be as follows for the completion of the questionnaire: 1st prize - $25 gift certificate from the Lansing Mall, 2nd prize - $15 gift certificate from the Lansing Mall, and 3rd prize - $10 gift certificate from the Lansing Mall. The only restriction on the raffle drawing is that you can win only one prize from the raffle drawing.

The raffle drawing will take place on May 25, 1989. It is not necessary for you to be present for the raffle drawing; however, if you would like to come you are welcome. The drawing will be held at 6:30 P.M. in room 2 in Olds Hall on the Michigan State University campus. If you win a prize, you will be notified by telephone. It is required that you come to the Michigan State University campus to receive your prize.

The results of this research will be made available to other researchers in the weight loss field. You may receive a summary of results by checking the box "Copy of results requested" on the stamped, pre-addressed postcard when you mail it.

Please choose ONE of the dates and times that you will be able to complete the questionnaire. After you have selected a day and a time that will fit into your schedule, write the date, time, and location on your calendar. Then, mail the pre-addressed, stamped postcard that has the date and time that you selected. Please complete and mail your postcard by April 17, 1989 in order to inform me of your date and time of preference.

I would be most happy to answer any questions you might have. Please write or call. The telephone number is (XXX) XXX-XXXX.

A sincere thanks in advance for your assistance,

Camala A. Riessinger, M.A.
Michigan State University
Department of Psychology

REMINDER:

1. If you are not 21 years or older, please check the box "I am under 21 years of age" on the stamped, pre-addressed postcard. If you are not 21 years or older, please have one member of your household who is 21 years or older participate in the study.

2. Please choose ONE of the dates and times that you will be able to complete the questionnaire. After you have selected a day and a time that will fit into your schedule, write the date, time, and location on your calendar.

3. If you would like to receive a summary of results, please check the box "Copy of results requested" on the stamped, pre-addressed postcard after you have chosen the date and time you prefer.

4. Mail the pre-addressed, stamped postcard that has the date and time that you selected. Please complete and mail your postcard by April 17, 1989 in order to inform me of your date and time of preference.

Letter Mailed to 20 Individuals for Procedure 2
Typed on MSU Department of Psychology letterhead paper

April 3, 1989

Hello:

Many Americans are currently concerned or have been concerned about being overweight. Unfortunately, we have very little information about differences, if any, between individuals who are normal weight and individuals who are overweight. Also, we have only a sketchy idea of how many people lose weight on their own, and how these individuals differ from individuals who lose weight with professional help. Without such information, comparisons cannot be made and effective weight loss programs are difficult to design.

The only way we can gather information about differences between normal weight individuals, currently overweight individuals, and individuals who were formerly overweight but lost weight through self-help or professional help is to ask you. The information you provide will be used to help improve weight loss programs and provide comparative information about normal weight, currently overweight, and formerly overweight individuals.

You are one out of twenty people who are being asked to give their responses to weight related questions. You were drawn from a random sample of the entire city of Lansing. In order that the results truly represent the people of Lansing, it is important that the questionnaire be completed and returned. It is also important that we only have you, the person to whom this letter is addressed, respond to this questionnaire. The only other restriction is that you be 21 years of age or older. If you are <u>not</u> 21 years or older, please have one member of your household who is 21 years or older complete and return the questionnaire.

Your participation is voluntary. You may choose not to participate at all, or not to answer certain questions without penalty. You may indicate your willingness to voluntarily participate by completing and returning the questionnaire.

Please answer all questions candidly. Information gathered from this study will be kept confidential. Your name will be removed and an identification number affixed. Data will be filed according to identification numbers only.

It will only take approximately 25 to 45 minutes of your time to help us gain crucial knowledge about differences between normal weight, currently overweight, and formerly overweight individuals. Plus, you will have a chance to win a prize for your participation. The prizes will be as follows for the completion of the questionnaire: 1st prize - $25 gift certificate from the Lansing Mall, 2nd prize - $15 gift certificate from the Lansing Mall, and 3rd prize - $10 gift certificate from the Lansing Mall. The only restriction on the raffle drawing is that you can win only one prize from the raffle drawing.

The raffle drawing will take place on May 25, 1989. It is not necessary for you to be present for the raffle drawing; however, if you would like to come, you are welcome. The drawing will be held at 6:30 P.M. in room 2 in Olds Hall on the Michigan State University campus. If you win a prize, you will be notified by telephone. It is required that you come to the Michigan State University campus to receive your prize.

The results of this research will be made available to other researchers in the weight loss field. You may receive a summary of results by checking the box "Copy of results requested" on the last page of the questionnaire.

Please complete and mail your questionnaire as soon as possible in order to provide me with your information. The questionnaire must be completed and mailed by May 20, 1989 in order to be eligible for a raffle prize. You will receive a postcard as a reminder to complete the questionnaire.

I would be most happy to answer any questions you might have regarding the study or items on the questionnaire. Please write or call. The telephone number is (XXX) XXX-XXXX.

A sincere thanks in advance for your assistance,

Camala A. Riessinger, M.A.
Michigan State University
Department of Psychology

REMINDER:

1. If you are not 21 years or older, please give the questionnaire to another member of your household who is 21 years or older to complete and return.

2. If you would like to receive a summary of results, please check the box "Copy of results requested" on the last page of the questionnaire.

3. Please read and sign the Informed Consent form and mail it with your questionnaire.

4. Please complete and mail the questionnaire in the stamped, pre-addressed envelope as soon as possible. Remember that it must be completed and mailed by May 20, 1989 in order to provide me with your information and to be eligible for a raffle prize.

Letter Mailed to 1000 Individuals for Main Study
Typed on MSU Department of Psychology letterhead paper

July 10, 1989

Hello:

Many Americans are currently concerned or have been concerned about being overweight. Unfortunately, we have very little information about differences, if any, between individuals who are normal weight and individuals who are overweight. Also, we have only a sketchy idea of how many people lose weight on their own, and how these individuals differ from individuals who lose weight with professional help. Without such information, comparisons cannot be made and effective weight loss programs are difficult to design.

The only way we can gather information about differences between normal weight individuals, currently overweight individuals, and individuals who were formerly overweight but lost weight through self-help or professional help is to ask you. The information you provide will be used to help improve weight loss programs and provide comparative information about normal weight, currently overweight, and formerly overweight individuals.

You are one out of one thousand people who are being asked to give their responses to weight related questions. You were drawn from a random sample of the entire city of Lansing. In order that the results truly represent the people of Lansing, it is important that the questionnaire be completed and returned. It is also important that we only have you, the person to whom this letter is addressed, respond to this questionnaire. The only other restriction is that you be 21 years of age or older. If you are not 21 years or older, please have one member of your household who is 21 years or older complete and return the questionnaire.

Your participation is voluntary. You may choose not to participate at all, or not to answer certain questions without penalty. You may indicate your willingness to voluntarily participate by completing and returning the questionnaire.

Please answer all questions candidly. Information gathered from this study will be kept confidential. Your name will be removed and an identification number affixed. Data will be filed according to identification numbers only.

It will only take approximately 25 to 45 minutes of your time to help us gain crucial knowledge about differences between normal weight, currently overweight, and formerly overweight individuals. Plus, you will have a chance to win a prize for your participation. The prizes will be as follows for the completion of the questionnaire: 1st prize - $25 gift certificate from the Lansing Mall, 2nd prize - $25 gift certificate from the Lansing Mall, and 3rd prize - $25 gift certificate from the Lansing Mall, 4th prize - $25 gift certificate from the Lansing Mall, 5th prize - $25 gift certificate from the Lansing Mall, 6th prize - $25 gift certificate from the Lansing Mall, 7th prize - $15 gift certificate from the Lansing Mall, 8th prize - $15 gift certificate from the Lansing Mall, 9th prize - $15 gift certificate from the Lansing Mall, 10th prize - $15 gift certificate from the Lansing Mall, 11th prize - $15 gift certificate from the Lansing Mall, 12th prize - $15 gift certificate from the Lansing Mall, 13th prize - $10 gift certificate from the Lansing Mall, 14th prize - $10 gift certificate from the Lansing Mall, 15th prize - $10 gift certificate from the Lansing Mall, 16th prize - $10 gift certificate from the Lansing Mall, 17th prize - $10 gift certificate from the Lansing Mall, 18th prize - $10 gift certificate from the Lansing Mall. The only restriction on the raffle drawing is that you can win only one prize from the raffle drawing.

The raffle drawing will take place on September 5, 1989. It is not necessary for you to be present for the raffle drawing; however, if you would like to come, you are welcome. The drawing will be held at 6:30 P.M. in room 2 in Olds Hall on the Michigan State University campus. If you win a prize, you will be notified by telephone. It is required that you come to the Michigan State University campus to receive your prize.

The results of this research will be made available to other researchers in the weight loss field. You may receive a summary of results by checking the box "Copy of results requested" on the last page of the questionnaire. Also, send a self-addressed, 25 cent, stamped envelope with your completed questionnaire if you would like to receive the results of the study.

Please complete and mail your questionnaire as soon as possible in order to provide me with your information. The questionnaire must be completed and mailed by August 11, 1989 in order to be eligible for a raffle prize. After you complete the questionnaire, you will receive a postcard with your raffle number printed on it.

I would be most happy to answer any questions you might have regarding the study or items on the questionnaire. Please write or call. The telephone number is (XXX) XXX-XXXX.

A sincere thanks in advance for your assistance,

Camala A. Riessinger, M.A.
Michigan State University
Department of Psychology

REMINDER:

1. If you are not 21 years or older, please give the questionnaire to another member of your household who is 21 years or older to complete and return.

2. If you would like to receive a summary of results, please check the box "Copy of results requested" on the last page of the questionnaire and send a self-addressed, 25 cent, stamped envelope with your completed questionnaire.

3. Please read and sign the Informed Consent form which is on the back of the 4 pages titled "Questionnaire Continued Part 2" and mail it with your questionnaire.

4. Please complete and mail the questionnaire in the stamped, pre-addressed envelope as soon as possible. The postage for returning the questionnaire has been paid for you and if you participate, you will have a chance to win a raffle prize. Remember that it must be completed and mailed by August 11, 1989 in order to provide me with your information and to be eligible for a raffle prize.

APPENDIX B

Informed Consent for Participants

APPENDIX B

Informed Consent for Participants in Procedure 1

Informed Consent Form

1. I have freely consented to participate in this study being conducted by the Departments of Psychiatry and Psychology, under the direction of Camala Riessinger, M.A. I understand that the study involves a comparison of normal weight individuals, formerly overweight individuals, and currently overweight individuals on various characteristics.

2. I understand that I must be 21 years or older in order to participate. If I am not 21 years old, I understand that I cannot not complete this questionnaire.

3. The study has been explained to me in a letter that I received. I understand that, at my request, I can receive information on the results of the study after my participation is completed.

4. I understand that I have the opportunity to win one prize from a raffle drawing for my participation in this study. I understand that I can only win one prize from the raffle drawing. The procedures for winning the prizes and the prize amounts have been explained to me in a letter.

5. I understand that I do not need to be present for the raffle drawing. I understand that if I win a raffle prize, I must come to the Michigan State University to sign my name in order to receive the prize.

6. I understand that I am free to discontinue my participation in the study at any time. However, if I decide to discontinue I understand that I will lose the opportunity to win a prize in the raffle drawing.

7. I agree to complete a questionnaire and to have my body weight and height measured.

8. I understand that there is a possibility that I will be contacted by telephone for further follow-up questions. This will only occur if there is ambiguity in any of my responses on the questionnaire.

9. I understand that the results of the study will be **strictly confidential**. I understand that my name will be removed and an identification number will be affixed. Data will be filed according to identification numbers.

Signed: _____ Date: _____

Informed Consent for Participants in Procedure 2

Informed Consent Form

1. I have freely consented to participate in this study being conducted by the Departments of Psychiatry and Psychology, under the direction of Camala Riessinger, M.A. I understand that the study involves a comparison of normal weight individuals, formerly overweight individuals, and currently overweight individuals on various characteristics.

2. I understand that I must be 21 years or older in order to participate. If I am not 21 years old, I understand that I cannot not complete this questionnaire.

3. The study has been explained to me in a letter that I received. I understand that, at my request, I can receive information on the results of the study after my participation is completed.

4. I understand that I have the opportunity to win one prize from a raffle drawing for my participation in this study. I understand that I can only win one prize from the raffle drawing. The procedures for winning the prizes and the prize amounts have been explained to me in a letter.

5. I understand that I do not need to be present for the raffle drawing. I understand that if I win a raffle prize, I must come to the Michigan State University to sign my name in order to receive the prize.

6. I understand that I am free to discontinue my participation in the study at any time. However, if I decide to discontinue I understand that I will lose the opportunity to win a prize in the raffle drawing.

7. I understand that I must return the completed questionnaire by May 20, 1989 in order to be eligible for the raffle prize.

8. I agree to complete the questionnaire.

9. I understand that there is a possibility that I will be contacted by telephone for further follow-up questions. This will only occur if there is ambiguity in any of my responses on the questionnaire.

10. I understand that the results of the study will be **strictly confidential**. I understand that my name will be removed and an

identification number will be affixed. Data will be filed according to identification numbers.

Signed: _____ Date: _____

Informed Consent for Participants in Main Study

Informed Consent Form

1. I have freely consented to participate in this study being conducted by the Departments of Psychiatry and Psychology, under the direction of Camala Riessinger, M.A. I understand that the study involves a comparison of normal weight individuals, formerly overweight individuals, and currently overweight individuals on various characteristics.

2. I understand that I must be 21 years or older in order to participate. If I am not 21 years old, I understand that I cannot not complete this questionnaire.

3. The study has been explained to me in a letter that I received. I understand that, at my request, I can receive information on the results of the study after my participation is completed.

4. I understand that I have the opportunity to win one prize from a raffle drawing for my participation in this study. I understand that I can only win one prize from the raffle drawing. The procedures for winning the prizes and the prize amounts have been explained to me in a letter.

5. I understand that I do not need to be present for the raffle drawing. I understand that if I win a raffle prize, I must come to the Michigan State University to sign my name in order to receive the prize.

6. I understand that I am free to discontinue my participation in the study at any time. However, if I decide to discontinue I understand that I will lose the opportunity to win a prize in the raffle drawing.

7. I understand that I must return the completed questionnaire by August 11, 1989 in order to be eligible for the raffle prize.

8. I agree to complete the questionnaire.

9. I understand that there is a possibility that I will be contacted by telephone for further follow-up questions. This will only occur if there is ambiguity in any of my responses on the questionnaire.

10. I understand that the results of the study will be strictly confidential. I understand that my name will be removed and an identification number will be affixed. Data will be filed according to identification numbers.

Signed: _____ Date: _____

APPENDIX C

Standard Weight Table and Instructions For Completing the Questionnaire

APPENDIX C

Standard Weight Table and Instructions For Completing the Questionnaire

STANDARD WEIGHT TABLE

Height in Feet and inches	Normal Weight Standard (pounds) MEN	WOMEN	Overweight Standard (pounds) MEN	WOMEN
4'10"	----	115	----	135
4'11"	----	117	----	137
5'0"	----	120	----	140
5'1"	134	122	154	142
5'2"	136	126	156	146
5'3"	139	129	159	149
5'4"	142	133	162	153
5'5"	145	136	165	156
5'6"	148	140	168	160
5'7"	151	143	171	163
5'8"	154	146	174	166
5'9"	157	149	177	169
5'10"	160	152	180	172
5'11"	163	155	183	175
6'0"	167	----	187	----
6'1"	171	----	191	----
6'2"	175	----	195	----
6'3"	179	----	199	----
6'4"	183	----	203	----

Note: All numbers given are for height without shoes and weight without clothes. This table comes from the 1983 Metropolitan Life Insurance Table.

INSTRUCTIONS FOR COMPLETING THE QUESTIONNAIRE:

1. You will need a pencil to complete the questionnaire. The reason for using a pencil is that a computer optical scanner will read the information that you provide on your questionnaire. The optical scanner can only read pencil markings. Please use ONLY a pencil. DO NOT use ink pens, felt pens, or ink markers.

2. Please DO NOT make any stray marks on the computer sheet. If you darken one circle and then change your mind and would rather darken another circle, please use a clean eraser to completely erase the mark. Then, darken the circle that you intended to mark.

3. Please DO NOT fold or bend the computer sheet or allow it to get dirty in any way. The computer's optical scanner cannot read the sheet if it is bent or dirty.

4. Find "side 1" on your computer sheet. At the right-hand side of the sheet it will say "side 1." Then, read the first question on the questionnaire. Once you are sure of your response, find the number "1" on the computer sheet. Using ONLY a pencil, darken the circle that corresponds with your response on the computer sheet, next to number "1." For example, the first question asks about your sex. If you are a female, you would find "1" ON THE COMPUTER ANSWER SHEET and using a pencil, darken the circle with the number "1" in it. You would darken the circle with the number "1" because "1" refers to female according to the coding on the questionnaire.

5. Now read the second question on the questionnaire. Then, go to the computer sheet, find number "2" and darken the circle with the number that corresponds with your response. For example, the second question asks about your marital status. If you are divorced, you would find "2" ON THE COMPUTER ANSWER SHEET and using a pencil, completely darken the circle with the number "2" in it. You would darken the circle with the "2" because "2" refers to divorced according to the coding on the questionnaire. Please continue in this manner until you come to the last question on the questionnaire.

6. Accurate recording of your responses is crucial to the success of this study. PLEASE BE VERY CAREFUL TO CHECK YOURSELF TO MAKE SURE THAT THE RESPONSE NUMBER ON THE COMPUTER SHEET ON WHICH YOU ARE DARKENING THE CIRCLE IS THE SAME NUMBER AS THE QUESTION NUMBER ON THE QUESTIONNAIRE.

7. Darken only ONE circle for each question. Make sure you completely darken the circle.

8. If you get tired, take a short break! Then, continue working on the questionnaire. Depending on your speed of reading, it will take you approximately 25 to 45 minutes to complete this questionnaire.

Thank you in advance for your participation in this study.

APPENDIX D

Questionnaire

APPENDIX D
Questionnaire

PART 1

Write your name on the line _____

Remember to read each question, then darken the circle ON THE COMPUTER SHEET that corresponds to your response.

1. **What is your sex?** (0) Male (1) Female

2. **What is your marital status?**
(0) single, never married (1) married (2) divorced or separated
(3) widowed

3. **How many years of school did you FINISH?**
(0) grade 8 or less in high school
(1) grade 9 in high school
(2) grade 10 in high school
(3) grade 11 in high school
(4) grade 12 in high school
(5) first year of college
(6) second year of college
(7) third year of college
(8) fourth year of college
(9) fifth year or more of college

4. **What is your ethnic background?**
(0) black (1) white (2) asian (3) hispanic (4) other

5. **What is your current occupation? (If you are currently retired or unemployed, indicate what your occupation was at one time).**
(0) secretarial, school teacher, librarian, etc.
(1) manual labor (involves physical work such as factory, construction, mechanic)
(2) health care professional (nurse, X-ray technician, etc.)
(3) owner of business, insurance business
(4) professional (lawyer, doctor, college professor, accountant, architect, etc.)
(5) serve the public (salesperson, waitress, bank teller, retail store employee, etc.)
(6) homemaker
(7) police or fireperson
(8) student
(9) bank or large business executive

6. What is the current status of your employment?
(0) full time (1) part time (2) unemployed at this time (3) retired at this time

7. I am currently under a doctor's care for:
(0) high blood pressure
(1) diabetes
(2) arthritis
(3) pregnancy
(4) cancer
(5) obesity
(6) menopause
(7) another medical condition that is NOT listed here
(8) I do NOT have a medical condition
(9) I have two or more of the conditions listed here

8. Were you overweight as a child or teenager? (0) yes (1) no

For this questionnaire, overweight is defined as being 20 pounds over the standard weight given in the standard weight table. Please refer to the standard weight table provided for you. Find the standard weight for your sex and height. The table provides you with the standard, which is the weight considered normal for a person of a particular height. The table also provides you with the weight that is considered to be overweight. Use the weight that you read from the column titled "Overweight Standard" when answering questions about you being overweight. For example, if you are a female who is 5' 6", your overweight standard according to the table is 160 pounds. So, if you weighed 160 pounds or currently weigh 160 pounds or more, you should consider yourself as being overweight.

9. At some time in the past, were you overweight as AN ADULT (age 21 years or older)? The past refers to the time period occurring more than 6 months ago. Remember to refer to the overweight standard weight given in the standard weight table. First find your height, then read across the table until you find your sex under the column titled "Overweight Standard." If you were at or above this weight, you should consider yourself as being overweight. (0) yes, I was overweight (1) no, I was NOT overweight (2) I have never had a weight problem

10. In the past, did you <u>try</u> to lose five pounds or more?
(0) yes (1) no
If you said yes, go to question #11. If you said no, go to question #14.

11. In the past, did you <u>lose</u> five pounds or more? (0) yes (1) no

12. In the past, when you tried to lose weight, were you under a doctor's care for weight loss or were you involved in an organized weight loss group (for example, Weight Watchers, Physician's Weight Loss Clinic, etc.)? (0) yes (1) no

13. In the past, did you REGAIN five or more pounds of the weight that you had lost?
(0) yes, I regained five pounds or more
(1) no, I did NOT regain five pounds or more
(2) this does not apply to me because I did not LOSE five or more pounds

14. Are you CURRENTLY overweight? Remember to refer to the "overweight standard" in the standard weight table (0) yes (1) no
(2) I have never had a weight problem If you said that you have never had a weight problem, go to question #17.

15. Are you CURRENTLY trying to lose five pounds or more?
(0) yes (1) no If you said yes, go to question #16. If you said no, to question #17.

16. Are you CURRENTLY under a doctor's care for weight loss or are you involved in an organized weight loss group (for example, Weight Watchers, Physician's Weight Loss Clinic, etc.)? (0) yes
(1) no

17. Approximately how many times in your life have you attempted to lose at least five pounds or more?
(0) I have never had a weight problem
(1) zero times
(2) one time
(3) two times
(4) three times
(5) four times
(6) five times
(7) six times
(8) seven times
(9) eight times or more

18. Approximately how many times in your life have you regained weight (at least 5 pounds or more) after you lost weight?
(0) Does not apply because I have never had a weight problem
(1) Does not apply because I have never lost weight, even though I am overweight
(2) zero times
(3) one time
(4) two times
(5) three times
(6) four times
(7) five times
(8) six times
(9) seven times or more

19. How would you describe yourself? For this question refer to the standard weight table provided for you.
(0) I have never had a weight problem in my life
(1) In the past, I was overweight, but I am currently at the standard weight (or within 5 pounds from my standard weight) according to the standard weight table
(2) In the past I was overweight, and today I am still overweight according to the standard weight table

20. How would you describe the CURRENT WEIGHT of yourself?
(0) very overweight (1) slightly overweight (2) about average
(3) slightly underweight

21. How would you describe the CURRENT WEIGHT of your spouse or significant other?
(0) very overweight (1) slightly overweight (2) about average
(3) slightly underweight
(4) I do not have spouse/significant other

22. How would you describe the CURRENT WEIGHT of your children?
(0) very overweight (1) slightly overweight (2) about average
(3) slightly underweight
(4) I do not have children

23. How would you describe the CURRENT WEIGHT of your mother?
(0) very overweight (1) slightly overweight (2) about average
(3) slightly underweight
(4) I do not have contact with her or my mother is not living

Now, you should have darkened all of the circles in the first column (from left to right) on your computer sheet. You should be ready to darken the circle at the top of the second column from the left side of your computer sheet. Check to make sure that you are reading question #24 and you are darkening the circle next to question #24 on your computer sheet.

24. How would you describe the CURRENT WEIGHT of your father?
(0) very overweight (1) slightly overweight (2) about average
(3) slightly underweight
(4) I do not have contact with him or my father is not living

25. How would you describe the CURRENT WEIGHT of your employer or supervisor?
(0) very overweight (1) slightly overweight (2) about average
(3) slightly underweight
(4) I do not have an employer/supervisor

26. How would you describe the CURRENT WEIGHT of your best friend?
(0) very overweight (1) slightly overweight (2) about average
(3) slightly underweight

For questions #27-34, think of the past times that you have lost weight or your current attempt to lose weight. If you have never attempted weight loss, think of a situation in which you had to make a change in your life (for example, quit smoking, adjust to a new job, go through a divorce, etc.). When you answer questions #27-34 think of this situation, instead of weight loss attempt.

27. What is(was) the attitude of your spouse (significant other) about your attempt to lose weight?
Would you say the attitude is(was):
(0) Negative-disapprove or are resentful
(1) Positive-encourage me
(2) He/she is unaware of my attempt to lose weight
(3) Indifferent-neither disapprove or encourage
(4) I do not have a spouse

28. What are(were) the attitudes of your children about your attempt to lose weight?
Would you say the attitudes are(were):
(0) Negative-disapprove or are resentful
(1) Positive-encourage me
(2) They are unaware of my attempt to lose weight
(3) Indifferent-neither disapprove or encourage
(4) I do not have children

29. What is(was) the attitude of your mother about your attempt to lose weight?
Would you say the attitude is(was):
(0) Negative-disapprove or are resentful
(1) Positive-encourage me
(2) She is unaware of my attempt to lose weight
(3) Indifferent-neither disapprove or encourage
(4) my mother is not living

30. What is(was) the attitude of your father about your attempt to lose weight?
Would you say the attitude is(was):
(0) Negative-disapprove or are resentful
(1) Positive-encourage me
(2) He is unaware of my attempt to lose weight
(3) Indifferent-neither disapprove or encourage
(4) my father is not living

31. What are(were) the attitudes of your brothers and sisters about your attempt to lose weight?
Would you say the attitudes are(were):
(0) Negative-disapprove or are resentful
(1) Positive-encourage me
(2) They are unaware of my attempt to lose weight
(3) Indifferent-neither disapprove or encourage
(4) I do not have brother/ sisters

32. What are(were) the attitudes of your employer/supervisor about your attempt to lose weight?
Would you say the attitudes is(was):
(0) Negative-disapprove or are resentful
(1) Positive-encourage me
(2) He/she is unaware of my attempt to lose weight
(3) Indifferent-neither disapprove or encourage
(4) I do not have an employer

33. What is(was) the attitude of your best friend about your attempt to lose weight?
Would you say the attitude is(was):
(0) Negative-disapprove or are resentful
(1) Positive-encourage me
(2) He/she unaware of my attempt to lose weight
(3) Indifferent-neither disapprove or encourage
(4) I do not have a best friend

34. What are(were) the attitudes of your co-workers about your attempt to lose weight?
Would you say the attitudes are(were):
(0) Negative-disapprove or are resentful
(1) Positive-encourage me
(2) They are unaware of my attempt to lose weight
(3) Indifferent-neither disapprove or encourage
(4) I do not have co-workers

35. <u>DURING THE LAST MONTH,</u> have you attended an athletic event together with another family member? (0) yes (1) no

36. DURING THE LAST MONTH, have you played board games (chess, Scrabble) together with another family member? (0) yes (1) no

37. DURING THE LAST MONTH, have you played card games together with another family member? (0) yes (1) no

38. DURING THE LAST MONTH, have you attended a concert, opera, or museum together with another family member? (0) yes (1) no

39. DURING THE LAST MONTH, have you had a long talk together with another family member? (0) yes (1) no

40. DURING THE LAST MONTH, have you helped out on some project together with another family member? (0) yes (1) no

41. DURING THE LAST MONTH, have you taken a hike or long walk together with another family member? (0) yes (1) no

42. DURING THE LAST MONTH, have you gone hunting or fishing together with another family member? (0) yes (1) no

43. DURING THE LAST MONTH, have you attended a meeting of a club or organization together with another family member? (0) yes (1) no

44. DURING THE LAST MONTH, have you attended a party together with another family member? (0) yes (1) no

45. DURING THE LAST MONTH, have you had a picnic together with another family member? (0) yes (1) no

46. DURING THE LAST MONTH, have you gone swimming or played some other sport together with another family member? (0) yes (1) no

Now, you should have darkened all of the circles in the second column (from left to right) on your computer sheet. You should be ready to darken the circle at the top of the third column from the left side of your computer sheet. Check to make sure that you are reading question #47 and you are darkening the circle next to question #47 on your computer sheet.

47. **DURING THE LAST MONTH, have you attended an athletic event together with one or more friends?** (0) yes (1) no

48. **DURING THE LAST MONTH, have you played board games (chess, Scrabble) together with one or more friends?** (0) yes (1) no

49. **DURING THE LAST MONTH, have you played card games together with one or more friends?** (0) yes (1) no

50. **DURING THE LAST MONTH, have you attended a concert, opera, or museum together with one or more friends?** (0) yes (1) no

51. **DURING THE LAST MONTH, have you had a long talk together with one or more friends?** (0) yes (1) no

52. **DURING THE LAST MONTH, have you helped out on some project together with one or more friends?** (0) yes (1) no

53. **DURING THE LAST MONTH, have you taken a hike or long walk together with one or more friends?** (0) yes (1) no

54. **DURING THE LAST MONTH, have you gone hunting or fishing together with one or more friends?** (0) yes (1) no

55. **DURING THE LAST MONTH, have you attended a meeting of a club or organization together with one or more friends?** (0) yes (1) no

56. **DURING THE LAST MONTH, have you attended a party together with one or more friends?** (0) yes (1) no

57. **DURING THE LAST MONTH, have you had a picnic together with one or more friends?** (0) yes (1) no

58. **DURING THE LAST MONTH, have you gone swimming or played some other sport together with one or more friends?** (0) yes (1) no

59. IN THE PAST 12 MONTHS, how many hours EACH WEEK do you exercise? (For example, ride a bicycle, play tennis, swim, go for a long walk, etc.)

(0) zero, I do NOT exercise
(1) one hour
(2) two hours
(3) three hours
(4) four hours
(5) five hours
(6) six hours
(7) seven hours
(8) eight hours
(9) nine or more hours

60. Select the ONE exercise that you do on a regular basis EACH WEEK:

(0) none, I do NOT exercise
(1) running
(2) basketball
(3) walking
(4) skiing
(5) swimming
(6) softball
(7) aerobics
(8) racquet sports
(9) another exercise that is not listed here

61. Indicate the MOST RESTRICTIVE medical reason that prevents you from physical activity. Choose only ONE.

(0) I do NOT have a medical exercise restriction
(1) pregnancy
(2) high blood pressure
(3) recently broke a bone
(4) arthritis
(5) heart trouble
(6) diabetes
(7) back trouble
(8) asthma
(9) other medical condition

62. Is there a NON-medical reason (for example, do not have enough time, do not have someone to watch my children, etc.) that prevents you from exercising?

(0) yes (1) no

Questions #63-66 are statements about weight beliefs. Read each statement, and choose the response that best expresses the degree to which you agree with the statement.

63. Whether I gain, lose, or maintain my weight is entirely up to me.

(0) strongly DISAGREE
(1) somewhat DISAGREE
(2) slightly DISAGREE
(3) slightly AGREE
(4) somewhat AGREE
(5) strongly AGREE

64. Being the right weight is largely a matter of good fortune.

(0) strongly DISAGREE
(1) somewhat DISAGREE
(2) slightly DISAGREE
(3) slightly AGREE
(4) somewhat AGREE
(5) strongly AGREE

65. No matter what I intend to do, if I gain or lose weight, or stay the same in the near future, it is just going to happen.

(0) strongly DISAGREE
(1) somewhat DISAGREE
(2) slightly DISAGREE
(3) slightly AGREE
(4) somewhat AGREE
(5) strongly AGREE

66. If I eat properly, and get enough exercise and rest, I can control my weight in the way I desire.

(0) strongly DISAGREE
(1) somewhat DISAGREE
(2) slightly DISAGREE
(3) slightly AGREE
(4) somewhat AGREE
(5) strongly AGREE

Questions #67-102 are statements about your response to specific situations. Read each statement, and choose the response that indicates how characteristic or descriptive the statements ARE OF YOU.

67. When I do a boring job, I think about the less boring parts of the job and the reward that I will receive once I am finished.

(0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

68. When I have to do something that is anxiety arousing for me, I try to visualize how I will overcome my anxieties while doing it.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

69. Often by changing my way of thinking I am able to change my feelings about almost everything.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

Now, you should have darkened all of the circles in the third column (from left to right) on your computer sheet. You should be ready to darken the circle at the top of the fourth column from the left side of your computer sheet. Check to make sure that you are reading question #70 and you are darkening the circle next to question #70 on your computer sheet.

70. I often find it difficult to overcome my feelings of nervousness and tension without any outside help.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

71. When I am feeling depressed I try to think about pleasant events.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

72. I cannot avoid thinking about mistakes I have made in the past.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

73. When I am faced with a difficult problem, I try to approach its solution in a systematic way.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

74. I usually do my duties quicker when somebody is pressuring me.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

75. When I am faced with a difficult decision, I prefer to postpone making a decision, even if all the facts are at my disposal.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

76. When I find that I have difficulties in concentrating on my reading, I look for ways to increase my concentration.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

77. When I plan to work, I remove all the things that are not relevant to my work.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

78. When I try to get rid of a bad habit, I first try to find out all the factors that maintain this habit.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

79. When an unpleasant thought is bothering me, I try to think about something pleasant.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

80. If I would smoke two packages of cigarettes a day, I probably would need outside help to stop smoking.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

81. When I am in a low mood, I try to act cheerful so my mood will change.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

82. If I had the pills with me, I would take a tranquilizer whenever I felt tense and nervous.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

83. When I am depressed, I try to keep myself busy with things that I like.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

84. I tend to postpone unpleasant duties even if I could perform them immediately.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

85. I need outside help to get rid of some of my bad habits.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

86. When I find it difficult to settle down and do a certain job, I look for ways to help me settle down.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

87. Although it makes me feel bad, I cannot avoid thinking about all kinds of possible catastrophes in the future.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

88. First of all, I prefer to finish a job that I have to do and then start doing the things I really like.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

89. When I feel pain in a certain part of my body, I try not to think about it.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

90. My self-esteem increases once I am able to overcome a bad habit.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

91. In order to overcome bad feelings that accompany failure, I often tell myself that it is not so catastrophic and that I can do something about it.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

92. When I feel that I am too impulsive, I tell myself "stop and think before you do anything."

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

Now, you should have darkened all of the circles in the fourth column (from left to right) on your computer sheet. You should be ready to darken the circle at the top of the fifth column from the left side of your computer sheet. Check to make sure that you are reading question #93 and you are darkening the circle next to question #93 on your computer sheet.

93. Even when I am terribly angry at somebody, I consider my actions very carefully.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

94. Facing the need to make a decision, I usually find out all the possible alternatives instead of deciding quickly and spontaneously.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

95. Usually I do first the things I really like to do, even if there are more urgent things to do.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

96. When I realize that I cannot help but be late for an important meeting, I tell myself to keep calm.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

97. When I feel pain in my body, I try to divert my thoughts from it.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

98. I usually plan my work when faced with a number of things to do.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

99. When I am short of money, I decide to record all my expenses in order to plan more carefully for the future.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

100. If I find it difficult to concentrate on a certain job, I divide the job into smaller segments.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

101. Quite often I cannot overcome unpleasant thoughts that bother me.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

102. Once I am hungry and unable to eat, I try to divert my thoughts away from my stomach or try to imagine that I am satisfied.

0) very characteristic, extremely descriptive
(1) rather characteristic, quite descriptive
(2) somewhat characteristic, slightly descriptive
(3) somewhat uncharacteristic, slightly undescriptive
(4) rather uncharacteristic, quite undescriptive
(5) very uncharacteristic, extremely nondescriptive

Questions * 103-117 are events that may happen to anyone. Read each of the events and indicate if you have experienced any of them personally **DURING THE LAST 12 MONTHS** and how long ago it occurred?

103. You lost something of sentimental value

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

104. Death of a close friend

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

105. Trouble with friends or neighbors

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

106. Separation

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

107. Divorce

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

108. Trouble with in-laws

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

109. Death of a spouse

((0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

110. Death of immediate family member (other than spouse)

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

111. Trouble with superiors at work

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

112. Laid off or fired from a job

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

113. Unemployed for a month or more

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

114. Income decreased substantially

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

115. Went deeply into debt

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

Now, you should have completed question #115 and the entire front side (side 1) of your computer sheet. Turn your computer sheet over and begin at the top of the first column from the left of your computer sheet. If you have not completed the front side, maybe you have made a mistake. If you have made a mistake, start with question #1 and read each question and check that you answered it on the computer sheet. Please continue doing this until you find your mistake.

116. Legal problems

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

117. Assaulted or robbed

(0) this did NOT occur to me
(1) it occurred 1 month ago
(2) it occurred 2 months ago
(3) it occurred 3 months ago
(4) it occurred 6 months ago
(5) it occurred 7 months ago
(6) it occurred 8 months ago
(7) it occurred 9 months ago
(8) it occurred 10 months ago
(9) it occurred 12 months ago

From the following list, pick the MOST IMPORTANT problem that happened to you in the **PAST YEAR**.

lost something of sentimental value
death of a close friend
trouble with friends or neighbors
separation
divorce
trouble with in-laws
death of a spouse
death of immediate family member (other than spouse)
trouble with superiors at work
laid off or fired from a job
unemployed for a month or more
income decreased substantially
went deeply into debt
legal problems
assaulted or robbed

If none of the above problems have occurred, think of another problem, even a minor one, that you have dealt with in the **PAST YEAR**. And answer the following questions with regard to that situation.

Now, read questions #118-150 and answer each question about what you did in connection with the MOST IMPORTANT problem that happened to you in the **PAST YEAR**.

118. Tried to find out more about the situation
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

119. Talked with spouse or other relative about the problem
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

120. Talked with friend about the problem
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

121. Talked with professional person (for example, doctor, lawyer, clergy)
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

122. Prayed for guidance and/or strength
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

123. Prepared for the worst
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

124. Didn't worry about it. Figured everything would probably work out
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

125. Took it out on other people when I felt angry or depressed
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

126. Tried to see the positive side of the situation
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

127. Got busy with other things to keep my mind off the problem
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

128. Made a plan of action and followed it
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

129. Considered several alternatives for handling the problem
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

130. Drew on my past experiences; I was in a similar situation before
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

131. Kept my feelings to myself
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

132. Took things a day at a time, one step at a time
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

133. Tried to step back from the situation and be more objective
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

134. Went over the situation in my mind to try to understand it
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

135. Tried not to act too hastily or follow my first hunch
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

136. Told myself things that helped me feel better
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

137. Got away from things for a while
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

138. I knew what had to be done and tried harder to make things work
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

Now, you should have darkened all of the circles in the first column (from left to right) on the back side (side 2) of your computer sheet. You should be ready to darken the circle at the top of the second column from the left side of your computer sheet. Check to make sure that you are reading question #139 and you are darkening the circle next to question #139 on your computer sheet.

139. Avoided being with people in general
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

140. Made a promise to myself that things would be different next time
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

141. Refused to believe that it happened
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

142. Accepted it; nothing could be done
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

143. Let my feelings out somehow
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

144. Sought help from persons or groups with similar experiences
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

145. Bargained or compromised to get something positive from the situation
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

146. Tried to reduce tension by drinking more
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

147. Tried to reduce tension by eating more
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

148. Tried to reduce tension by smoking more
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

149. Tried to reduce tension by exercising more
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

150. Tried to reduce tension by taking more tranquilizing drugs
(0) no (1) yes, one or twice (2) yes, sometimes (3) yes, fairly often

Questions #151-215 is a set of words that describe feelings people have. Please read each statement carefully. Then respond to EACH statement with the number which best describes HOW YOU HAVE BEEN FEELING **DURING THE PAST WEEK INCLUDING TODAY.**

151. Friendly	**152. Tense**	**153. Angry**	**154. Worn out**
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

155. Unhappy	156. Clear-headed	157. Lively	158.Confused
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

159. Sorry for things done	160. Shaky	161. Listless	162. Peeved
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

Now, you should have darkened all of the circles in the second column (from left to right) on your computer sheet. You should have already darkened the circle for question #162 at the top of the third column from the left side of your computer sheet. Check to make sure that you are reading question #163 and you are darkening the circle next to question #163 on your computer sheet.

163. Considerate	164. Sad	165. Active	166. On edge
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

167. Grouchy	168. Blue	169. Energetic	170. Panicky
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

171. Hopeless	172. Relaxed	173. Unworthy	174. Spiteful
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

175. Sympathetic	176. Uneasy	177. Restless	178.Unable to concentrate
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

179. Fatigued	180. Helpful	181. Annoyed	182.Discouraged
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

183. Resentful	184. Nervous	185. Lonely	186. Miserable
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

Now, you should have darkened all of the circles in the third column (from left to right) on your computer sheet. You should have already darkened the circles for question #185 and #186 at the top of the fourth column from the left side of your computer sheet. Check to make sure that you are reading question #187 and you are darkening the circle next to question #187 on your computer sheet.

187. Muddled	188. Cheerful	189. Bitter	190. Exhausted
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

191. Anxious	192. Ready to fight	193. Good natured	194. Gloomy
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

195. Desperate	196. Sluggish	197. Rebellious	198. Helpless
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

199. Weary	200. Bewildered	201. Alert	202. Deceived
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

203. Furious	204. Efficient	205. Trusting	206. Full of pep
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

207. Bad tempered	208. Worthless	209. Forgetful	210. Carefree
(0) Not at all	(0) Not at all	(0) Not at all	(0) Not at all
(1) A little	(1) A little	(1) A little	(1) A little
(2) Moderately	(2) Moderately	(2) Moderately	(2) Moderately
(3) Quite a bit	(3) Quite a bit	(3) Quite a bit	(3) Quite a bit
(4) Extremely	(4) Extremely	(4) Extremely	(4) Extremely

Now, you should have darkened all of the circles in the fourth (from left to right) on your computer sheet. You should have already darkened a circle for questions #208, #209, and #210 at the top of the fifth column from the left side of your computer sheet. Check to make sure that you are reading question #211 and you are darkening the circle next to question #211 on your computer sheet.

211. Terrified

(0) Not at all
(1) A little
(2) Moderately
(3) Quite a bit
(4) Extremely

212. Guilty

(0) Not at all
(1) A little
(2) Moderately
(3) Quite a bit
(4) Extremely

213. Vigorous

(0) Not at all
(1) A little
(2) Moderately
(3) Quite a bit
(4) Extremely

214. Uncertain about things

(0) Not at all
(1) A little
(2) Moderately
(3) Quite a bit
(4) Extremely

215. Bushed

(0) Not at all
(1) A little
(2) Moderately
(3) Quite a bit
(4) Extremely

* End of questions in which you write your responses on the computer sheet. Now answer the questions on the sheet titled "QUESTIONNAIRE CONTINUED PART 2."

QUESTIONNAIRE CONTINUED PART 2

Write your name on the line _____
For these next questions, **write your responses ON THIS SHEET**. Place your responses on the appropriate lines and place a checkmark in the appropriate boxes. You DO NOT write your responses on the computer sheet. Please use a pencil to write your responses **ON THIS SHEET**. Please try to write clearly so the researcher can read your responses.

1. **What is your current age?** _____years

2. **What is your current weight?** _____pounds

3. **What is your current height?** _____feet _____inches

4. **What was your approximate weight at age 21?** _____pounds

5. **What is the maximum weight you have been in your adult life (since age 21) (excluding pregnancy and any time periods when an illness may have caused you to gain weight)?** _____pounds

6. **What is the minimum weight you have been in your adult life (since age 21) (excluding any time periods when an illness may have caused you to lose weight?** _____pounds

7. **Please list ALL medications that you are currently taking, and approximately how long you have been taking them. If you do not know the name of the medication, please write what the medication is for (for example, blood pressure, sinuses, etc.). Write NA if you are NOT taking any medications.**

Name of Medication	Length of Time on Medication
_____	_____
_____	_____
_____	_____

8. **DURING THE LAST MONTH, how many times did friends visit at your home?** _____times

9. **DURING THE LAST MONTH, how many times did you get together with friends outside your home?** _____times

10. DURING THE LAST MONTH, how many times did relatives visit at your home? _____times

11. DURING THE LAST MONTH, how many times did you visit with relatives outside your home? _____times

12. About how many friends do you have, people you know more than just casually? _____friends

13. How many close friends do you have, people you feel at ease with and can talk to about personal problems? _____friends

14. How many people do you know from whom you can expect real help in times of trouble? _____friends

15. How many clubs and organizations (e.g., church group, union, PTA, bowling team, etc.) do you belong to? _____clubs and organizations

16. Do you belong to a close circle of friends, a group of people who keep in touch with each other? [ ] yes (1) [ ] no (2)

On the next pages is a list of situations in which people frequently eat. Please read each one carefully. Then write one number (either 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, or 100) next to each item which best describes THE PROBABILITY THAT YOU WILL **NOT** EAT IN THAT SITUATION.

If you are absolutely certain that you would **NOT** eat in a given situation, if it should arise, write 100%. If you are absolutely certain that you would eat in a given situation, write 0%.

More likely your confidence will vary. For example, if you are pretty sure that you would **NOT** eat if and when you are feeling really happy, but not absolutely certain that you would NOT eat, you might write 80%. If, on the other hand, you are pretty sure you would eat if that situation arises, but not absolutely certain that you would eat, you might write 20%.

Use this as your answer code:

Absolutely confident I would EAT										Absolutely confident I would NOT EAT
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

17. When you feel anxious _____%

18. When you are nervous _____%

19. When you feel annoyed _____%

20. When you are worried _____%

21. When you are angry _____%

22. When you feel depressed _____%

23. When you feel upset _____%

24. When you feel frustrated _____%

25. When you are angry with yourself _____%

26. When a crisis occurs _____%

27. When you feel you need more energy _____%

28. When you want to reward yourself for something you've done (e.g., you tell yourself that you can have food if you complete some task) _____%

29. When you want to cheer up _____%

30. When you want to take a break from work and some other activity _____%

31. When you are resting _____%

32. When you feel embarrassed _____%

Absolutely confident I would EAT — Absolutely confident I would NOT EAT

0% - 10% - 20% - 30% - 40% - 50% - 60% - 70% - 80% - 90% - 100%

33. When you feel uncomfortable _____%

34. When you are overly excited _____%

35. When you feel tense _____%

36. When you feel impatient _____%

37. When you want to sit back and enjoy a cigarette _____%
check here [ ] if you do not smoke

38. When you are drinking an alcoholic beverage _____%
check here [ ] if you do not drink alcoholic beverages

39. When you want to avoid smoking or drinking _____%
check here [ ] if you do not smoke.and do not drink alcoholic beverages

40. When you have finished a planned meal or snack _____%

41. When you are drinking coffee or tea _____%

42. When you feel bored _____%

43. When you see others eating _____%

44. When someone offers you some food _____%

45. Special celebrations such as birthdays, Christmas or Thanksgiving _____%

46. When you think food would aid some other activity you are doing (for example, writing a letter, studying, reading, etc.) _____%

Check here [ ] if you would like to receive a summary of the results from this study. The results will NOT be available until approximately May 1990. THANK YOU very much for your participation!

APPENDIX E

Non-significant ANOVA Data Analyses

APPENDIX E
Non-significant ANOVA Data Analyses

ANOVA for Family Social Activities by Group

Source	df	MS	F
Between Groups	5	5.18	0.70
Within Groups	357	7.35	

$p > .05$

ANOVA for Social Activities with Friends by Group

Source	df	MS	F
Between Groups	5	6.63	0.99
Within Groups	357	6.67	

$p > .05$

ANOVA for Social Network Contacts by Group

Source	df	MS	F
Between Groups	5	194.57	0.82
Within Groups	357	236.03	

$p > .05$

ANOVA for Number of Close Relationships by Group

Source	df	MS	F
Between Groups	5	184.19	1.19
Within Groups	357	154.79	

$p > .05$

ANOVA for Number of Friends by Group

Source	df	MS	F
Between Groups	5	320.23	0.89
Within Groups	357	361.53	

$p > .05$

ANOVA for Physical Activity by Group

Source	df	MS	F
Between Groups	5	5.52	0.80
Within Groups	357	6.94	

$p > .05$

ANOVA for Weight Locus of Control by Group

Source	df	MS	F
Between Groups	5	1.91	0.14
Within Groups	357	13.16	

$p > .05$

ANOVA for Self-Control by Group

Source	df	MS	F
Between Groups	5	199.27	0.36
Within Groups	357	559.74	

$p > .05$

ANOVA for Emotional Stress by Group

Source	df	MS	F
Between Groups	5	0.42	1.08
Within Groups	357	0.39	

$p > .05$

ANOVA for Active Cognitive Coping by Group

Source	df	MS	F
Between Groups	5	63.77	1.57
Within Groups	357	40.74	

$p > .05$

ANOVA for Avoidance Coping by Group

Source	df	MS	F
Between Groups	5	15.86	1.48
Within Groups	357	10.75	

$p > .05$

ANOVA for Tension-Anxiety of the POMS by Group

Source	df	MS	F
Between Groups	5	23.08	0.98
Within Groups	357	23.59	

$p > .05$

ANOVA for Depression-Dejection of the POMS by Group

Source	df	MS	F
Between Groups	5	114.85	1.40
Within Groups	357	82.00	

$p > .05$

ANOVA for Anger-Hostility of the POMS by Group

Source	df	MS	F
Between Groups	5	60.47	1.27
Within Groups	357	47.57	

$p > .05$

ANOVA for Vigor-Activity of the POMS by Group

Source	df	MS	F
Between Groups	5	28.61	0.79
Within Groups	357	36.19	

$p > .05$

ANOVA for Fatigue-Inertia of the POMS by Group

Source	df	MS	F
Between Groups	5	51.72	1.50
Within Groups	357	34.43	

$p > .05$

ANOVA for Confusion-Bewilderment of the POMS by Group

Source	df	MS	F
Between Groups	5	10.11	1.05
Within Groups	357	9.62	

$p > .05$

ANOVA for Age by Group

Source	df	MS	F
Between Groups	5	307.63	1.32
Within Groups	357	233.05	

$p > .05$

APPENDIX F

Non-significant Chi-Square Data Analysis

APPENDIX F
Non-significant Chi-Square Data Analysis

Variable	NWP	FO.NN.SH	FO.NN.PH	CO.SH	CO.PH	CO.NH
Close Circle of Friends	(X^2- 2.59, df- 5 , p › .05)					
Yes	127 (71.3%)	22 (61.1%)	17 (70.8%)	47 (69.1%)	14 (66.7%)	22 (61.1%)
No	51 (28.7%)	14 (38.9%)	7 (29.2%)	21 (30.9%)	7 (33.3%)	14 (38.9%)
Individuals per group:	178	36	24	68	21	36

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