

PARTICIPATION IN A WEIGHT REDUCTION PROGRAM  
RELATED TO SELF-CONCEPT SCORES

By

CATHERINE JEAN RAMSEY

Bachelor of Science

William Woods College

Fulton, Missouri

1980

Submitted to the Faculty of the Graduate College  
of the Oklahoma State University  
in partial fulfillment of the requirements  
for the Degree of  
MASTER OF SCIENCE  
December, 1985

Thesis  
1985  
A.185P  
cop. 2



PARTICIPATION IN A WEIGHT REDUCTION PROGRAM  
RELATED TO SELF-CONCEPT SCORES

Thesis Approved:

*Esther Minterfeed*

Thesis Adviser

*Lue L. L. L.*

*W. W. W.*

*Norman N. Norman*

Dean of the Graduate College

## ACKNOWLEDGEMENTS

I am grateful to everyone who has helped me with my research and thank the many people who have contributed to the completion of this thesis. In particular, I want to thank Dr. Esther Winterfeldt, my major adviser, for her time and assistance throughout this project. I also thank Dr. William Warde, for his assistance in data analysis; Dr. Lea Ebro, for her enthusiasm and guidance; and Dr. Thomas Warren, for his help in writing the thesis.

In addition, I want to acknowledge the women with the Oklahoma State Cooperative Extension Service who helped me collect the data: Barbara Brown, Joan McDaniels, Dee Renner, Joyce White, Martha Waters, Riletta Marshall, Janet Gibson, Karan Harzman, and Nadine Bailey. Special thanks are given to the 160 women who volunteered their time to provide the data for this study. And finally, I want to thank my family and friends. They have my utmost gratitude for all of the understanding, support, and encouragement they have given.

## TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION. . . . .	1
Purpose of Research. . . . .	2
Objectives . . . . .	2
Hypotheses of the Study. . . . .	3
Assumptions of the Study . . . . .	4
Limitations of the Study . . . . .	4
Definition of Terms. . . . .	4
II. REVIEW OF LITERATURE . . . . .	6
Determination of Overweight and Obesity. . . . .	6
Prevalence of Overweight . . . . .	8
Hazards of Obesity . . . . .	9
Medical Hazards . . . . .	9
Social Hazards. . . . .	10
Classification of Obesity . . . . .	10
Etiology of Obesity. . . . .	11
Genetic Obesity and Lipoprotein Lipase Activity. . . . .	12
Brown Adipose Tissue and Obesity. . . . .	14
Hypothalamic Obesity. . . . .	15
Dietary Obesity . . . . .	16
Other Causes of Obesity . . . . .	17
Control of Food Intake . . . . .	17
The Psychodynamic Approach to Obesity . . . . .	18
Externality Theory and Obesity. . . . .	22
The Relationship Between Psychodynamic and Externality Theories. . . . .	24
Self-concept and Obesity. . . . .	24
Defining Self-concept. . . . .	25
Measuring Self-concept . . . . .	26
The Tennessee (Department of Mental Health) Self Concept Scale . . . . .	27
Research Relating Obesity and Self-concept . . . . .	27
Treatment of Obesity . . . . .	30
Behavior Modification . . . . .	30
Weigh-Off Program . . . . .	33
Increasing the Effectiveness of Treatment . . . . .	34
Guidelines for Weight Control Programs. . . . .	35
Diet and Exercise Guidelines . . . . .	36
Behavioral and Psychological Guidelines. . . . .	36

Chapter	Page
Summary of Review of Literature . . . . .	37
III. METHODS . . . . .	38
Selection of Sample . . . . .	38
Development of the Instrument . . . . .	39
Collection of the Data. . . . .	40
Analysis of the Data. . . . .	40
IV. RESULTS AND DISCUSSION. . . . .	42
Characteristics of the Sample . . . . .	43
Weight Loss Program Participation . . . . .	44
Self-concept and Category of Weight . . . . .	46
Self-concept and Condition of Previous Weight Loss. . . . .	49
Previous Weight Loss Programs Followed. . . . .	53
Discussion of the Results . . . . .	54
V. SUMMARY AND RECOMMENDATIONS . . . . .	58
Characteristics of the Sample . . . . .	58
Summary of Findings . . . . .	59
Implications. . . . .	61
Recommendations for Future Research . . . . .	62
SELECTED BIBLIOGRAPHY . . . . .	63
APPENDIXES. . . . .	69
APPENDIX A--DISTRIBUTION OF SAMPLE. . . . .	70
APPENDIX B--STATEMENTS FROM THE TENNESSEE SELF CONCEPT SCALE. . . . .	72
APPENDIX C--BACKGROUND INFORMATION FORM AND COVER LETTER. . . . .	78
APPENDIX D--INSTRUCTIONS FOR ADMINISTERING THE QUESTIONNAIRES. . . . .	81
APPENDIX E--DATA FROM 138 PARTICIPANTS. . . . .	84

LIST OF TABLES

Table	Page
I. Some Variables That May Affect Eating Behavior. . . . .	19
II. Composition of Sample . . . . .	44
III. Mean Total Positive and Physical Self Scores Related to Weight Loss Program Participation. . . . .	45
IV. Analysis of Variance of Total Positive Scores and Physical Self Scores and Category of Weight for 25 Weigh-Off Participants . . . . .	47
V. Mean Self-Concept Scores of 25 Normal Weight, Overweight, and Obese Women in a Weigh-Off Program . . . . .	47
VI. Analysis of Variance of Total Positive Scores and Physical Self Scores and Category of Weights for 113 Homemakers. . . . .	48
VII. Mean Self-Concept Scores of 113 Normal Weight, Overweight, and Obese Homemakers . . . . .	49
IIX. Analysis of Variance of Total Positive Scores and Physical Self Scores and Condition of Previous Weight Loss for 41 Overweight Homemakers. . . . .	51
IX. Analysis of Variance of Total Positive Scores and Physical Self Scores and Condition of Previous Weight Loss for 25 Obese Homemakers . . . . .	51
X. Mean Self-Concept Scores of Overweight and Obese Women Grouped According to Condition of Previous Weight Loss . . . . .	53

LIST OF FIGURES

Figure	Page
1. Woman Imprisoned by Obesity . . . . .	31
2. Distribution of Sample. . . . .	71



## CHAPTER I

### INTRODUCTION

Obesity contributes significantly to the development of a variety of diseases, including adult-onset diabetes, renal and cardiovascular diseases, gout, gall bladder diseases, and others (Brownell, 1984). Even more significant, Hirsch (1985) and a panel of experts at the National Institutes of Health now classify obesity as a disease. In addition, obesity may cause psychological, emotional, and social problems because society tends to scold, ridicule, or even avoid overweight and obese individuals (Haskew and Adams, 1984).

For years, health professionals have recognized the social and physical hazards of obesity and have called obesity a primary public health problem (Berger, Berchtold, Gries, and Zimmerman, 1981). Yet, in the 1980's, the prevalence of obesity continues to increase: nearly 40 million Americans are overweight or obese (Haskew and Adams, 1984). For many of these people, obesity is nearly impossible to fight and is, in many respects, harder to "cure" than some forms of cancer (Brownell, 1984). Overweight people may lose weight, but many regain some or all of their weight, thus frustrating not only the overweight individual, but also the health professional.

Because of the physical and social disadvantages associated with obesity, scientists continue to research its cause. They have developed many theories to explain its origin that include various genetic,

dietary, and psychological factors. Existing research suggests the multicausal etiology of obesity, yet scientists have devoted little time to the relationship between self-concept and body weight. Does the obese individual have a low self-image? Do overweight people perceive themselves differently than others? The answers to these questions may provide health professionals with a more effective means of fighting obesity.

#### Purpose of Research

The purpose of this study was to determine if a difference existed in self-concept scores between groups of overweight, obese, and normal weight women; and to examine whether self-concept increased with weight loss. Thus, the researcher surveyed women who were currently participating in a weight loss program and other homemakers who were not trying to lose weight. If weight loss is associated with improved self-concept, then methods to increase self-concept become important to any weight loss program. In addition, differences in mean self-concept scores for the overweight women, as compared to scores for the obese women, may suggest the need for varied approaches based on the degree of excess weight.

#### Objectives

The objectives of this study were:

1. To determine the mean self-concept scores for normal weight, overweight, and obese women
2. To determine the difference between the mean self-concept scores for groups of women who a) were currently trying to lose weight,

- b) have lost weight previously, and c) have not tried to lose weight within the last three years
3. To determine the success rate for women successfully completing a weight loss program (percent of women losing and then maintaining their reduced weight for one year)
  4. To make suggestions for health professionals who are involved in weight loss programs or counseling

#### Hypotheses of the Study

To achieve the objectives of this study, the researcher examined these hypotheses:

1. No significant difference will exist in mean self-concept scores between women who were currently participating in a Weigh-Off Program and those who were not trying to lose weight.
2. No significant difference will exist in mean self-concept scores between groups of normal weight, overweight, and obese women.
3. No significant difference will exist in mean self-concept scores between groups of overweight women who had not tried to lose weight; who had lost weight, but regained it; and who had lost weight, and maintained their reduced weight.
4. Similarly, no significant difference will exist in mean self-concept scores between groups of obese women who had not tried to lose weight; who had lost weight, but regained it; and who had lost weight, and maintained their reduced weight.

### Assumptions of the Study

The researcher assumed that the participants reported their height and weight accurately, and that they answered the Tennessee Self Concept Scale sincerely. The researcher also assumed that the two scores from the Tennessee Self Concept Scale provided a valid and reliable evaluation of self-concept.

### Limitations of the Study

The sample consisted of women from seven Oklahoma counties who volunteered to participate, thus limiting the extent to which the researcher can make valid generalizations from the data. In addition, the evaluation of self-concept only reflects the Physical Self Score and the Total Positive Score as they are defined by the Tennessee Self Concept Scale.

### Definition of Terms

A brief definition of terms will provide a common understanding of their use in this study:

Adult--any person 18 years or more.

Body Mass Index--a ratio of weight to height used to reflect degree of overweight. This ratio is weight (in kilograms) divided by height (in meters) squared (Bray, 1980).

Goal Weight--an arbitrary weight the individual chooses as her target when she tries to lose weight.

Normal Weight--a Body Mass Index of 19.0 to 23.9 for women, or 20.0 to 24.9 for men.

Obese--a Body Mass Index of 30.0 or more for men and women.

Overweight--a Body Mass Index of 24.0 to 29.9 for women.

Self-concept--the individual's perception of self in terms of the measurements obtained from the Tennessee Self Concept Scale.

Successful Weight Loss--ability to lose weight and keep it off for one year.

Underweight--a Body Mass Index less than 19.0 for women, or less than 20.0 for men.

Weigh-Off Program--a program administered by the Oklahoma State Cooperative Extension Service to help adult women lose weight through group interaction, proper diet, and the understanding of the overweight problem.

## CHAPTER II

### REVIEW OF LITERATURE

While the multicausal nature of obesity demands attention from various disciplines, dietitians must assume the leadership role to develop, implement, and evaluate programs to meet the needs of the obese and overweight. They must work, not only to correct the obesity problem, but also to prevent its occurrence in future generations. This is a difficult task, because dealing with people and their behaviors involves personal likes and dislikes, habits, customs, religious and social beliefs, as well as other needs. In addition to communication and counseling skills, the dietitian must command knowledge of the disease: its possible causes, classification of obesity into types or "syndromes," its prevalence, and its inherent hazards.

#### Determination of Overweight and Obesity

Scientists generally define overweight as a weight above a desirable range for a given height. Yet, at what point does the overweight individual become obese? Vasselli, Cleary, and Van Itallie (1983) describe the obese person as being 20 percent or more above the average desirable weight for his height. But what is an "ideal" or "desirable" weight? Louis Dublin believed that the best single indicator of "ideal weight" was longevity. Thus, in 1942, he developed a set of ideal weights for women based on statistics from the Metropolitan Life Insurance Company (Olson, 1985a). Based on similar insurance statistics, members of the

Build and Blood Pressure Study developed height-weight tables in 1959 for both men and women (Weighley, 1984). Since that time, experts from the Framingham Heart Study and the 1982 Body Weight, Health and Longevity workshop have defined the term "desirable body weight" to be the weight associated with the lowest mortality as listed on the 1959 Metropolitan Life Insurance Company charts. Thus, most health professionals continue to use the 1959 charts as an estimate of desirable weight (Simopoulos, 1985).

In 1983, the Metropolitan Life Insurance Company released new height-weight tables that reflect an increase in weight for height based on lowest mortality. Because these new tables do not signify desirable weight, the American Heart Association and others urge Americans to refer to the 1959 Metropolitan Life Insurance Company tables as guides (American Heart Association news release, March 1, 1983; and Simopoulos, 1985).

While height-weight tables provide a useful index of desirable weight ranges, they do not provide information on the degree or percent of body fat. As seen in muscular, large-boned people and athletes, excess weight does not always correlate with excess fat. For this reason, professionals use a variety of methods to determine adiposity, including analysis of fat cell number and average size, body density measurements, total body conductivity, and isotope dilution methods (Berger et al., 1981; and Vasselli et al., 1983). These techniques have shown that young men within the desirable weight range have 15 to 18 percent body fat; whereas women normally have a higher percent of body fat: 20 to 25 percent (Bray, 1980).

Because these techniques are usually too complex or expensive for most purposes, clinicians and researchers generally use skinfold

measurements, weight to height ratios, or both. The most frequently used ratio of weight to height is the Body Mass Index (Bray, 1980). This index is determined by dividing weight (in kilograms) by height (in meters) squared. In 1982, the Body Mass Index was recognized as the preferred ratio to determine the degree of overweight because it correlates best with skinfold measurements (Simopoulos, 1985). As Bray (1980) describes, the Body Mass Index for men within normal weight ranges falls between 20 and 25; and for women, between 19 and 24. The Body Mass Index for the overweight individual falls between 24 (for women) or 25 (for men) and 30. The obese individual, whether male or female, has a Body Mass Index of 30 or more.

#### Prevalence of Overweight

Data from the Framingham Heart Study showed that over 70 percent of the adults (above age 40) were above their desired weight (Hubert, Feinleib, McNamara, and Castelli, 1983). Researchers have also compiled data from the Health Examination Survey and the Health and Nutrition Examination Surveys to reveal a general trend during the last 20 years. The average weight for height has increased, which suggests that Americans are becoming more overweight (Olson, 1985b).

A survey conducted in the 1970's showed that nearly 25 percent of school age children were overweight (Forbes, 1975). More recent research suggests that preschool and school age children, like adults, are becoming more obese (Bray, 1980).

Numerous studies have tried to associate socio-economic factors with the prevalence of obesity. For example, the Health and Nutrition Examination Survey I study showed that men in higher income brackets had



a greater incidence of obesity; while women in lower income brackets had a greater incidence of obesity. In addition, one-third of all black women surveyed were obese; and women of all ages had a much higher incidence of obesity than the men, regardless of race and income (Lowenstein, 1978). Although some studies report similar findings, others disagree (Yudkin, 1978). Thus, further epidemiological studies will help to identify socio-economic factors that influence the prevalence of obesity.

### Hazards of Obesity

#### Medical Hazards

Obesity has been associated with as many as 25 medical conditions including diabetes, cardiovascular and renal disorders, osteoarthritis, gout, and gall bladder diseases (Haskew and Adams, 1984). Scientists have shown evidence of a relationship between obesity and diabetes for over 100 years. Although many questions remain unanswered, extensive studies suggest that obesity is the main environmental determinant of the clinical manifestation of diabetes, especially adult-onset diabetes (Berger, Muller, and Renold, 1978).

Yet, of all the problems related to obesity, "the most dangerous are its cardiovascular consequences since these are responsible for over half the annual toll of mortality in affluent societies" (Kannel and Gordon, 1975, p. 18). The Framingham Heart Study specifically determined that obesity is an independent risk factor predicting premature cardiovascular morbidity. This study indicated that even being moderately or slightly overweight is a risk, especially for those with a familial history of cardiovascular disease, diabetes, or high blood pressure (Simopoulos, 1985).

In general, overweight and obese people tend to be less healthy than others. Because of their excess weight, they are also poorer operation risks. In addition, overweight and obese people tend to die sooner than lean people. Yudkin (1978) reports that for every 10 percent increase above desired weight, there is a one year decrease in life expectancy. In addition to these hazards, the National Institutes of Health announced that the condition of obesity, alone, is a disease (Hirsch, 1985).

### Social Hazards

The medical hazards of obesity are overwhelming, yet the social disadvantages may be just as important. While scientists define desirable weight by lowest mortality, society determines desirable weight by certain cultural and social values. An obese person in a very poor country, for example, may be highly respected because his condition signifies social prominence and affluence. Yet, in affluent countries, such as the United States, there is a "social cult against being overweight" (Yudkin, 1978, p. 146). Americans generally believe that obese people are lazy, self-indulgent, weak willed, sloppy, and dirty (Haskew and Adams, 1984).

While there are many medical and social hazards associated with obesity, there are no apparent benefits. And, because this disease affects so many, researchers continue to examine its cause.

### Classification of Obesity

Scientists often classify obesity according to the location of body fat. People with generalized (diffuse) obesity have excess adipose tissue throughout the entire body (Vasseli et al., 1983). People with gynoid obesity, however, have excess fat around the hips and thighs, while

others with android obesity have excess fat around the chest, abdomen, and arms (Vasseli et al., 1983; and James, 1984). Epidemiologic studies indicate that a greater incidence of gout, diabetes, and atherosclerosis occurs in people with android obesity (James, 1984).

Scientists also classify obesity by adipose tissue morphology, age of onset, or both (Vasselli et al., 1983; and Brownell, 1984). Hypertrophic obesity indicates enlarged fat cell size, while hyperplastic obesity signifies increased fat cell number. Usually, people with juvenile onset obesity have hypertrophic-hyperplastic cells, and those with adult-onset obesity have hypertrophic cells (Brownell, 1984). Children with juvenile-onset obesity frequently have altered growth rates and activity patterns, hyperphagia, and endocrine abnormalities. The majority of grossly obese adults report juvenile-onset and respond very poorly to weight loss. In contrast, people with adult-onset, hypertrophic obesity generally respond more successfully to weight loss (Himms-Hagen, 1983).

Although many scientists associate age of onset with fat cell size and number, Hirsch and Batchelor have demonstrated that increased fat cell number correlates better with increased body weight than with age of onset (Vasselli et al., 1983). Thus, researchers must continue epidemiologic studies to determine the relationship between cell size and number and age of onset of obesity.

### Etiology of Obesity

The oldest method of categorizing obesity is by cause. For decades, scientists have agreed that obesity may result from internal factors such as endocrine or genetic disorders (endogenous obesity), or from external

factors such as dietary intake (exogenous obesity). Scientists now know that some strains of rats become obese due to genetic factors (Himms-Hagen, 1983). Three of these genetic factors that may cause obesity in rats and humans are increased lipoprotein lipase activity, defects in brown fat tissue and diet-induced thermogenesis, and damage to the hypothalamus.

Scientists also suggest that certain genetic and dietary factors interact resulting in obesity (Brownell, 1984). In addition, laboratory rats can become obese through diet intervention alone (Vasselli et al., 1983). Although scientists have enhanced their understanding of obesity, they continue to examine a broad spectrum of variables that may lead to its development.

#### Genetic Obesity and Lipoprotein Lipase Activity

Several strains of genetically obese rats and mice exhibit either hypertrophic or hypertrophic-hyperplastic obesity (Brunzell and Greenwood, 1983). For example, the obese hyperglycemic "ob/ob" mouse and the normoglycemic Zucker fatty rat have hypertrophic-hyperplastic obesity. The yellow obese mouse, however, has hypertrophic obesity. Yet, all three varieties of these genetically obese rats have an abnormal increase in lipoprotein lipase<sup>1</sup> activity and an increase in fat cell size during the first week of life (Vasselli et al., 1983).

Similarities exist between genetically obese Zucker fatty rats and

---

<sup>1</sup>Lipoprotein lipase is the enzyme that hydrolyzes the triglyceride moieties of circulating chylomicrons and very low density lipoproteins to free fatty acids, which are then transported across the fat cell membrane, re-esterified, and stored as lipid in the cell (Brunzell and Greenwood, 1983).

obese children: both are normoglycemic and have hyperinsulinemia, triglyceridemia, and hypertrophic-hyperplastic fat cells (Greenwood, Cleary, Steingrimsdottir, and Vasselli, 1981). Also, results of studies with children parallel previous studies with rats. Children who eventually became obese had an increase in the number and size of their fat cells during the second year of life, whereas normal weight children did not (Knittle, Ginsberg-Fellner, and Brown, 1977). These findings suggest that a genetic defect in rats (and possibly humans) causes an increase in lipoprotein lipase activity, and thus an increase in fat cell size and number, which leads to obesity.

Increased lipoprotein lipase activity may also stimulate weight regain in obese people (Brunzell and Greenwood, 1983). Scientists have consistently documented that there is an increase in lipoprotein lipase activity in genetically obese rats that are chronically denied food (Di Girolamo, Smith, and Björntorp, 1981). Once these rats are fed, they become more calorie-efficient, gaining a greater amount of weight per unit of calories consumed than leaner rats (adaptive hyperlipogenesis). Scientists suggest that adaptive hyperlipogenesis in both rats and humans may be due to an increase in lipoprotein lipase activity. This increase may explain why many obese people are more "thrifty" with the calories they consume, a condition called refractory obesity (Olson, 1983).

Scientists still have many unanswered questions concerning the role of genetic factors in the development of obesity. They do agree, however, that a definite familial pattern exists. When two parents are obese, there is a 73 percent probability that their children will also be obese; when one parent is obese, the probability decreases to

41 percent; and when neither parent is obese, there is only a 9 percent probability that their children will be obese (Vasselli et al., 1983).

### Brown Adipose Tissue and Obesity

Another area of research focuses on the role of brown adipose tissue and the development of obesity. Brown fat cells are distributed throughout the body in very small numbers, with the majority located near the neck, thorax, ribs, and abdomen. In animals, brown adipose tissue thermogenesis helps regulate body temperature and body weight by "switching on" when a stimulus activates the sympathetic nervous system to release norepinephrine (Himms-Hagen, 1983). The norepinephrine then interacts with the  $\beta$ -adrenergic receptors on the surface of the brown adipose cells and activates a lipase that accelerates lipolysis. The two main stimuli responsible for initiating this sequence in thermogenesis are exposure to cold (cold-induced, nonshivering thermogenesis) and over-eating (diet-induced thermogenesis).

During the last decade, research with laboratory rats has shown that energy expenditure for heat production in brown fat tissue buffers any changes in energy intake. A failure in this buffering function causes obesity in at least three strains of rats; and in all three, metabolic efficiency is high (Himms-Hagen, 1983). For example, the "ob/ob" mouse is extremely sensitive to cold due to the inability to switch on nonshivering thermogenesis in its brown fat tissue. This mouse also has a defect in diet-induced thermogenesis that appears to be in or on the brown fat tissue itself because the tissue does not respond to norepinephrine. The Zucker rat, on the other hand, is not cold sensitive because it does respond to norepinephrine by increasing its metabolic rate (Himms-Hagen, 1983). This rat, like the "ob/ob" mouse, has a defect

in diet-induced thermogenesis, but the defect seems to be in the control mechanism that would normally switch on in response to food.

Recent data from human research supports these findings from rat studies. Schutz and his associates found an inverse relationship between the percent of body fat and the occurrence of diet-induced thermogenesis (Schutz, Bessard, and Jequier, 1984). They concluded that as body weight increases, the thermogenic response to food decreases because of a decreased response to sympathetic nervous system stimuli. Unfortunately, existing methods of determining thermogenic response are inconsistent (Schutz et al., 1984). Yet, scientists can roughly estimate the functional capacity of brown fat tissue by measuring the increase in metabolic rate in response to norepinephrine (Himms-Hagen, 1983).

### Hypothalamic Obesity

Two other types of rats develop obesity due to a defect in diet-induced thermogenesis (Hirsch, 1984). In normal rats, hypothalamic stimulation influences brown fat tissue metabolism via the sympathetic nervous system and initiates diet-induced thermogenesis. Diet-induced thermogenesis does not occur in the gold-thio-glucose obese mouse and the ventromedial hypothalamic (VMH)-lesioned rat, however, because a lesion in the hypothalamus disrupts the sympathetic innervation of its brown fat tissue (Himms-Hagen, 1983; and Hirsch, 1984).

Scientists have documented similar cases of human obesity due to a tumor or accidental damage to the hypothalamus (Brownell, 1984). Thus, a genetic defect in the hypothalamus may be responsible for some forms of human obesity.

### Dietary Obesity

Another area of research is the role of environmental factors in the development of obesity. Early overfeeding and the continual presence of highly desirable foods may be the main reasons for the increasing numbers of obese individuals in our society. For example, Knittle and Hirsch (1968) have shown that the number of fat cells increases in young rats when they are fed an increased amount of mother's milk. Their Fat Cell theory suggests that genetic and nutritional influences early in life lead to hyperplasia (growth of cells) and that the number of fat cells stabilizes sometime in adolescence (Knittle and Hirsch, 1968). Thus, a brief "critical period" may exist when fat cells are growing and when they are especially sensitive to nutritional influences. Researchers estimate that the critical period for humans lasts from five months gestation to birth or shortly after (Vasselli et al., 1983). Other studies indicate that infants who are overfed tend to develop hypertrophic-hyperplastic fat cells by adulthood (Himms-Hagen, 1983). Weight loss for these adults is usually difficult because they must reduce their existing fat cells to a size smaller than normal.

A model of dietary obesity exists in rats that supports some of these findings. Extensive studies prove that rats become obese when they are fed either a high fat diet, a concentrated sugar solution, or a "super-market" diet (Brownell, 1984; and Himms-Hagen, 1983). This dietary-induced, hypertrophic-hyperplastic obesity in rats mimics the trend toward human obesity in wealthy societies where palatable foods are constantly available.

Scientists do not doubt that nutritional influences affect obesity. They must, however, develop better methods of discriminating between



existing fat cells and growth of new cells before concluding that nutritional factors actually cause excess growth of fat cells, rather than merely increase the size of existing fat cells (Brunzell and Greenwood, 1983).

#### Other Causes of Obesity

While many nutritional and genetic factors lead to obesity, other factors may also lead to obesity. Several researchers believe that the decrease of physical activity in western societies is responsible for the increasing prevalence of obesity. Keys (1970) showed a strong correlation between the percent of men in sedentary occupations and the occurrence of obesity. Furthermore, consistent exercise lowers the rate of weight gain in obese rats, and also slows the growth of new fat cells in genetically obese rats. Once they stop exercising, however, the beneficial effects disappear (Vasselli et al., 1983). Current research continues to focus on whether inactivity leads to obesity, or whether obesity leads to inactivity.

Researchers have identified some causes of obesity in rats, yet they know very little about man's balance of intake and expenditure. Man's control of food intake involves many interrelated variables. Thus, scientists are also examining emotional and physiological factors and their influence on obesity and food intake.

#### Control of Food Intake

The control of food intake and energy balance involves such variables as the taste, texture, caloric density, and nutritive value of the food; availability of food; nutritional status of the animal; metabolic rate of the animal; social setting; strength of competing motivations;

and activity level, general state of arousal, and health of the animal (Panksepp, 1976). Table I gives a more comprehensive list of factors that affect eating behavior.

Scientists have performed many animal studies to examine the effects of these variables. Wyrwicka (1976) gave cats electrical brain stimulation and studied their eating habits. She found that the cats chose to eat banana pieces (normally not the preferred choice) when they received a desirable, non-oral sensory reward (electrical brain stimulation). Wyrwicka also found that a kitten's mother influences its food choices: after seeing its mother eat the banana pieces, the kitten began to eat banana also, even though he was not rewarded with electrical brain stimulation. From these studies and others, Wyrwicka concluded that the act of eating is an instrumental response that animals use 1) to escape an undesirable sensory state due to food deprivation or other factors, 2) to receive desirable oral satisfaction related to the food eaten, or 3) to obtain other sensory satisfaction that is not related to the food consumed.

In principle, food intake is under cognitive control; people are able to store information in the cerebral cortex and make decisions based on that information (Haskew and Adams, 1984; and Van Itallie, 1980). Thus, they can override their basic instincts from the lower brain centers to directly influence their behavior. Yet in practice, many persons cannot restrict their food intake sufficiently to avoid gaining weight.

#### The Psychodynamic Approach to Obesity

The essence of the psychodynamic theory is that overweight people eat in response to emotional states, especially anxiety and depression,

TABLE I  
SOME VARIABLES THAT MAY AFFECT EATING BEHAVIOR

---

<p style="text-align: center;"><b>Food:</b></p> <p>Appearance Odor Taste (sweetness ↔ bitterness) Variety Physical consistency (liquid, solid, hard, soft, chewy, brittle, etc.) Energy density Nutrient composition</p>	<p style="text-align: center;"><b>Physical act of eating:</b></p> <p>Effort involved (drinking thick milk-shake through a narrow straw) Demanding schedule of reinforcement Manipulation of meal, number or intermeal interval Rate of eating – duration of eating Use of feeding machine, automat, other 'vending' devices Feeding by gavage or i.v.</p>
<p style="text-align: center;"><b>Context of eating:</b></p> <p>Proximity of food Saliency of food Time of day Social factors (eating alone or with someone) Occasion (Thanksgiving) Ambience (Candlelight, etc.)</p>	<p style="text-align: center;"><b>Cognitive factors:</b></p> <p>Attitudes toward food (effects of advertising) Religion, social class, family training, etc. Habit Concern about weight Concern about calories 'Clean plate' syndrome Judgment about calorie content of foods Judgment about appropriateness of time of day at which food is eaten Awareness of time and size of previous meal Awareness of nutritional factors (cholesterol salt, sugar, fiber) Cost of the food</p>
<p style="text-align: center;"><b>Emotional factors:</b></p> <p>Anxiety (use of food as tranquillizer) Boredom Anger Depression Fear Euphoria (manic phase)</p>	<p style="text-align: center;"><b>Physiological factors:</b></p> <p>Endocrine Gastrointestinal Status of fat stores Physiological conditioning Physical activity Metabolic status</p>
<p style="text-align: center;"><b>Physical state:</b></p> <p>Presence of internally or externally caused discomfort or pain State of 'well being': is there a chronic illness, fever, etc.?</p>	

---

Source: Van Itallie, T.B. Diets for weight reduction: mechanisms of action and physiological effects. In G.A. Bray (Ed.), Obesity: Comparative Methods of Weight Control. London: John Libbey and Company, 1980 (p. 16).

instead of internal hunger cues (Slochower, 1983). Psychodynamic theorists describe overeating and obesity in terms of fixations that may develop in infancy. For example, the first and most central love experience that develops is between the mother and infant. Since the mother feeds the child, the need for love may be confused with the need for food. The child may continue in adulthood to experience food as if it were the primary symbol of emotional care. When this adult is under intense emotional stress, he or she may turn to food to try to recapture the security and comfort experienced in infancy (Slochower, 1983).

Other psychodynamic theorists have identified different processes and experiences that lead to overeating. Moreover, they suggest that the act of overeating assumes different symbolic meanings depending on the individual. And for each individual, the meaning may vary through developmental stages (Kaplan and Kaplan, 1957).

Woodman (1980) conducted a simple word association experiment involving 20 obese and 20 lean women. At the end of the experiment, these women completed a background questionnaire. Analysis of the data revealed significant differences between the obese and lean women. The majority of obese women displayed fear, resistance, hesitation, or emotional distress. For example, some of the words and their responses were:

TRY:	harder, fail, again
HUNGER:	pain, empty, longing, lump, poor, fear
PLUM	fatness, round, plump, pudding
WAIT:	heavy, gain, fat, control, balloon, me
EVIL:	women, me, spirit, Satan, death, darkness
CHOICE:	none, blank, where?
SWIM:	water, drown, fear, cold, sink, fish

(Woodman, 1980, p. 15). According to Woodman, the responses to "try" and "choice" indicated a sense of failure. Further analysis of the data from

the questionnaires showed that when the obese women were angry, they punished themselves by eating; and when they were happy, they rewarded themselves by not eating. Only one obese woman said she avoided food as a punishment. In contrast, 19 of the lean women said they ate to reward themselves, and none ate to punish themselves.

Woodman's study (1980) revealed that the frustrations, aggressions, feelings of despair, and the inability of these obese women to adjust to some aspect of life, is expressed in their cravings for food; and is relieved through eating. Thus, food becomes "a scapegoat for every emotion, and forms the nucleus around which the personality revolves" (p. 21).

Other researchers have also examined the effects of anxiety on the control of food intake. Cantor (1981) assigned obese and nonobese volunteers a visual tracking task, and provided them with snack foods and drink. He compared the difficulty of the task to the amount of food eaten by both groups; and found that as the information load of the task increased, only the obese would become more aroused and eat more. He concluded that the obese overate in response to the induced anxiety. Yet, many researchers have not been able to relate the tendency of the obese to overeat in response to anxiety (Johnson, 1974). More recent studies by Slochower and Kaplan (1983) may help clarify: they suggest that overweight people overeat only when they cannot control or label the anxiety they experience.

In one of these more recent studies, Slochower, Kaplan, and Mann (1983) performed a two-session repeated measures experiment of 40 obese and nonobese college women. Session I was conducted prior to final exams and Session II was conducted after exams. The obese subjects ate more

food during both sessions than the leaner subjects. However, data from Session I revealed that when the obese subjects expressed anxiety, and felt they had little or no control of their feelings, they significantly overate. In contrast, the leaner subjects showed a nonsignificant decrease in eating.

Slochower (1983) suggests that a variety of uncontrollable emotional states may result in overeating for different (or for the same) obese people. Thus, "the dimension of controllability of emotion could be applied to virtually any feeling state and, hence, some obese people may even respond to uncontrollable elation by overeating" (p. 97). This idea agrees with Kaplan and Kaplan's (1957) belief that there is no single developmental fixation related to obesity.

#### Externality Theory and Obesity

Schachter (1971) has suggested that obese people and their leaner peers differ in their response to cues that control eating. While lean people respond to internal, physiological cues; obese people respond primarily to external cues--environmental and cognitive factors that are independent of nutritional and physiological aspects of food and eating. Some of these factors are the sight, smell, and taste of the food, and time of day. Pliner (1978) reviewed several studies concerning taste sensations for the lean and obese. Not surprisingly, the obese tended to eat larger quantities of food that were high in palatability or preference than the lean individuals. Yet, they also tended to consume smaller quantities of food low in palatability than the lean person.

More specifically, Schachter believes that the obese are more responsive to external cues only if they are highly salient or prominent.

Numerous studies have supported this hypothesis. For example, experiments by Ross (1974), Nisbett (1968), and Johnson (1974) showed that when food was visible, the obese ate up to two times as much as when the food was available, yet less visible. The lean subjects, however, ate nearly equal amounts of food under both conditions. These findings help explain why many obese people tend to eat larger, but fewer meals.

Several researchers suggest that the obese are also more responsive to non-food cues. Rodin (1976) examined the effects of distraction on performance, reaction time, and immediate recall of both obese and lean subjects. In all three cases, the obese were significantly more responsive. In another related study, Rodin tested overweight women for responsiveness at the beginning and end of a weight reduction camp. From this study, Rodin (1976) concluded that: 1) externality is not a consequence of overweight because the most external women were not the most overweight; 2) externality is not a consequence of deprivation as Nisbett (1968) had suggested, because despite considerable weight loss, the women's degree of responsiveness remained relatively constant; and 3) externality is a general response style acquired either biologically or through early experiences.

Another study supports these conclusions. Rodin and her associates (1976) used the controlled setting of a summer camp for children to relate degree of external responsiveness of a nonobese population to weight gain in a food-abundant environment. Despite their initial weight, the most external children gained the greatest amount of weight. Thus, these results indicate that external reactivity is a fairly stable response style found in obese and nonobese people. Unfortunately, such hyperresponsive individuals who live in societies where highly palatable food is constantly available may be unable to control their food intake.

### The Relationship between Psychodynamic and Externality Theories

Because the externality hypothesis focuses on the effect of environmental stimuli on eating, it states that obese people are relatively unresponsive to internal stimuli. This theory seems to contradict the psychodynamic hypothesis that overweight people are actually highly reactive to their internal (emotional) state.

A series of more recent experiments by Slochower (1983) and her associates, however, suggest that the two models may operate together to produce the overeating response. Slochower studied 98 college women to examine interactions between food salience and levels of anxiety. Lean subjects were unaffected by cue salience (a finding that is supported by experiments in externality). In addition, the lean women ate slightly less in high (as compared to low) anxiety levels. In contrast, when obese subjects were anxious, their pattern of external responsiveness became greater. Their response to anxiety level was greatest when food was of high (rather than of low) salience. Thus, the state of high, uncontrollable anxiety enhanced the overweight subject's reactivity to external cues. These results suggest that both high, uncontrollable anxiety and prominent food must be present for the obese to overeat.

### Self-concept and Obesity

Relatively few studies have dealt with self-concept in relation to obesity and the control of food intake. According to psychodynamic theorists, some people use food to cope with certain aspects of their lives (Woodman, 1980). Thus, identifying and improving self-concept may play a vital role in the control of food intake.



Defining Self-concept. According to Horrocks and Jackson (1972), man develops his self-concept as he learns to interpret and cope with himself as a human entity in relation to his physical and social environment. He gives all stimuli a meaning; and processes, organizes, and integrates them through his cognitive processes. Furthermore, self-conceptions change continually due to interaction with others. Self-concept, therefore, may be defined as "a value-based cognitive-affective symbolization of the organism growing over time through maturation and the accretion of experience" (Horrocks and Jackson, 1972, p. 52). Although personality theorists and psychologists differ in their approach and terminology, most agree that social interaction influences concept of self (Hogan, 1976; McDougall, 1976; and Kelly, 1976). Allport (1976) suggests that one's self-concept is comprised of his bodily image, his perception of his abilities and status relative to others, his knowledge of others' expectations of him, and his goals.

Murphy (1975) also states that one aspect of self-concept is body image, which he describes as the view of self in terms of physical appearance. This view of body influences the psychological evaluations of self made by the individual and others. And because society views certain physical attributes favorably (and others unfavorably) body image can influence self-esteem, another component of self-concept (Wells, 1983).

Many personality theorists suggest that self-esteem primarily determines one's overall self-concept. Horrocks and Jackson (1972) believe that an individual's choices, self-evaluations, behavior, and self-concept depends on his self-esteem as determined by the standards he has set for evaluating that self-concept. Thus, self-esteem can be defined

as the "degree of correspondence between an individual's ideal and actual concept of himself" (Cohen, 1968, p. 383). As such, the degree to which the individual meets his ideals and goals results in his feelings of failure or success. These feelings, then, become part of the entire concept of self.

Measuring Self-concept. Researchers use a variety of methods to measure self-concept, all having advantages and disadvantages. White (1972) believes the best method is an extensive personality study that involves several interviews, tests, and experimental situations performed by two or more examiners. This method allows the individual to gradually reveal his conception of self. While it is time-consuming, it is comprehensive.

Researchers can also measure self-concept with an interview of ability (White, 1972). The subject rates his ability to perform certain tasks, revealing actual abilities compared to his sense of competence; thus reflecting his degree of self-esteem (Cohen, 1969).

Another method, the adjective checklist, allows the respondents to check the qualities that they feel are representative of themselves (Gough, 1961). While this method may not provide as much information as personal interview techniques, it is less time-consuming and more economical. Similarly, the Q-sort technique is also used to measure self-concept. The respondents sort adjectival phrases into groups according to the degree that they feel each describes themselves (Stephenson, 1953).

Researchers also use Likert-type scales to determine self-concept. These rating scales consist of a set of attitude items, which have approximately equal "attitude value" (Kerlinger, 1964). The subject's

responses reflect how much they agree or disagree with each item. The instrument selected for this research study, a Likert-type rating scale, is described next.

The Tennessee (Department of Mental Health) Self Concept Scale. In 1955, William H. Fitts developed an instrument to provide a multi-dimensional description of self-concept that would benefit the study and understanding of human behavior. This scale consists of 100 self-descriptive statements that the individual uses to portray a picture of himself. The scale is self-administering for individuals and groups who have at least a sixth grade reading level (Fitts, 1965).

The Tennessee Self Concept Scale exists in two forms: a Counseling Form and a Clinical and Research Form. Both forms use the same statements and test booklets, but they require different scoring and profiling systems (Fitts, 1965). The Clinical and Research Form is not appropriate for self-interpretation or feed back to the subject, and is complex to analyze. The Counseling Form, which was selected for this research, is appropriate for self-interpretation and feedback to the subject; it deals with fewer variables, and is easier to analyze.

Research Relating Obesity and Self-concept. Most studies concerning self-concepts of the overweight and obese have dealt with body image and self-esteem. Bruch (1973), Hamburger (1951), and Kaplan and Kaplan (1957) note that many obese people exhibit affective states of low self-esteem and depression. Woodman's (1980) analysis of obese women revealed similar results. The majority of these women expressed feelings of despair and unworthiness. Seventeen out of 20 lacked self-confidence, had a negative body image, and felt they lacked control of self and body.

In contrast, only 5 out of 20 lean subjects expressed such feelings. In two other studies with overweight and obese college women, Slochower (1983) and her associates correlated excess eating with loss of self-esteem and feelings of depression, worthlessness, unhappiness, and anger.

Some researchers have examined the effects of self-concept on weight reduction. Pomerantz, Greenberg, and Blackburn (1977) studied 20 obese persons involved in a weight loss program. These men and women were unusually passive and non-assertive; they also lacked self-confidence, and had a negative body image. These researchers hypothesized that the characteristics of their subjects were due to their previous unsuccessful attempts to lose weight. Similarly, Allon (1979) demonstrated that unsuccessful weight reducers (especially women) consistently have a strongly negative body image.

Long (1981) compared the effectiveness of a behavioral self-management weight loss program to one that also included techniques to improve self-concept. Such techniques were making positive statements daily about one's self, listening and talking about individual strengths at group sessions, and stressing that losing weight was a way to be nice to one's self. Long measured self-concepts for each group before and after the 10-session program using the Tennessee Self Concept Scale. Although no significant group changes occurred in self-concepts; a one year post-treatment follow-up revealed a significant effect for self-concept enhancement techniques. The mean weight loss for the group practicing self-concept enhancement techniques was 18.0 pounds. In comparison, the mean weight loss for the group not using these techniques was only 7.8 pounds.

Thus, improving self-concept would seem to be a positive step to

successful weight loss. Yet, some research has shown no relationship between the two. For example, Schreiber (1980) conducted a four month follow-up of two eight-week weight reduction groups. He used the Tennessee Self Concept Scale to compare self-concept scores of successful and unsuccessful weight reducers, but found no significant difference. Peterson (1981) found somewhat conflicting results. She studied the degree of obesity, age of onset, and self-esteem of 127 obese women involved in a 12-week behavior modification weight loss program. She found that the three variables were fairly accurate predictors for weight loss (5 errors out of 127 predictions). Although the difference was not statistically significant, weight loss was greater for those who were less obese, older at age of onset, and had greater self-esteem.

Another researcher (Ludeman, 1979) examined self-concept related to age of onset, and other selected variables. She compared self-concepts of obese, overweight, and desired weight women using two scores from the Tennessee Self Concept Scale. The results showed that there was no significant difference between the three groups due to the following variables: age of onset, income, education, marital status, age, and number of children at home. However, a significant difference in self-concept was seen due to category of weight. Both self-concept scores decreased as the degree of weight increased. In addition, self-concept scores for both the overweight and obese groups were lower than the norms established for the Tennessee Self Concept Scale.

Unfortunately, research concerning self-concept and obesity has primarily focused on women. Brown (1971) studied 79 freshmen men to examine the effect of obesity on self-concept and attitude toward physical fitness and exercise. He found that as the degree of obesity

increased, self-concept (as measured by the Tennessee Self Concept Scale) decreased. In addition, the Tennessee Self Concept Scale scores improved significantly with weight loss.

Existing research, although sometimes contradictory, suggests that self-concept may be an important factor in losing and maintaining weight. And as such, methods to improve self-concept may enhance the effectiveness of current weight loss programs.

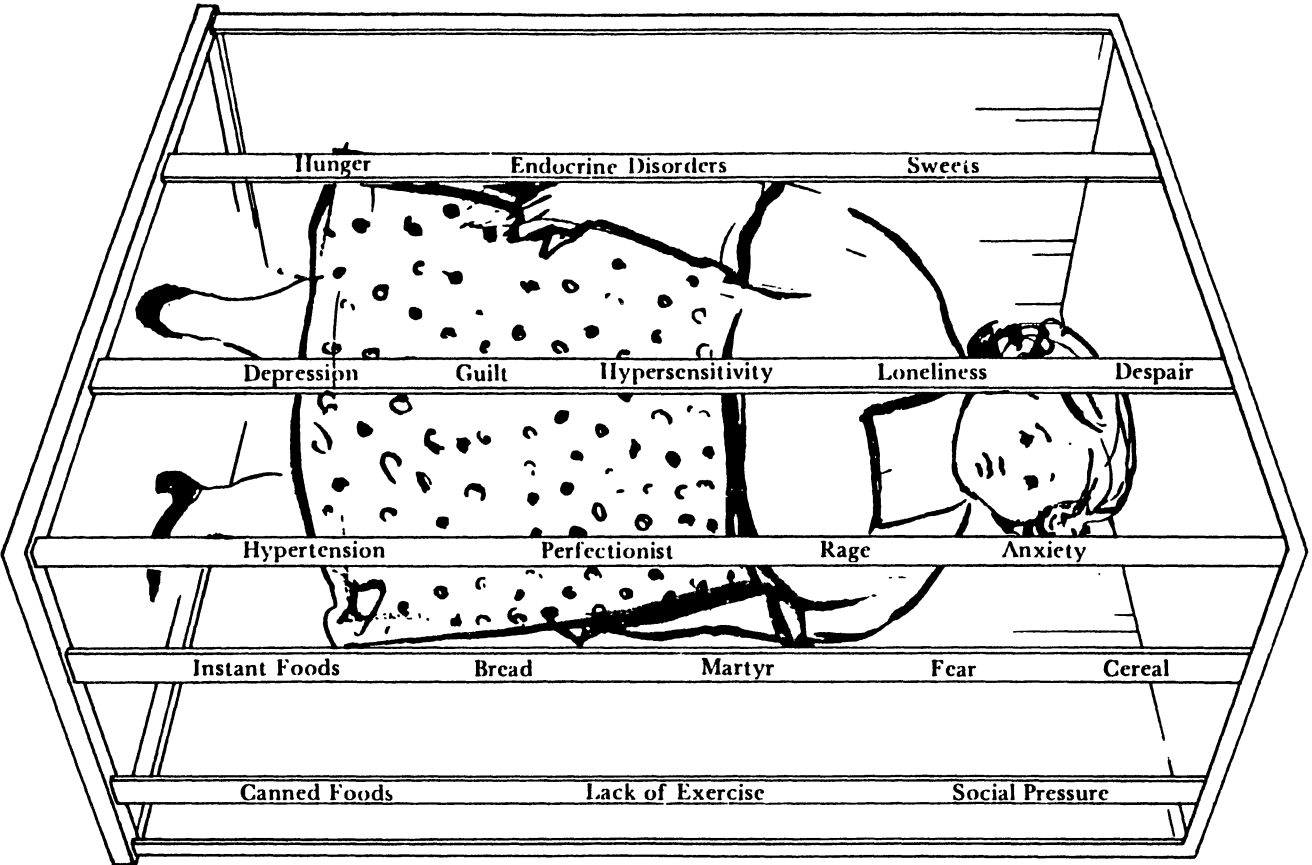
### Treatment of Obesity

Throughout time, various methods have been used to treat the overweight and obese. Some persons rely exclusively on changes in diet or in activity levels. Others have used surgical and pharmaceutical regimens. Yet, many researchers maintain that successful weight loss can only be achieved through behavioral modifications, while others suggest that a combination of methods yields the best results. Currently, most health professionals use a multi-therapeutic approach to treat obesity. Despite their efforts, the effectiveness of weight loss programs has not changed appreciably for over 100 years (Vasselli et al., 1983).

Regardless of the cause, millions of people are unable to fight their overweight problem; and as Figure 1 suggests, are hopelessly entrapped. Continued evaluation of existing weight loss regimes and the development of new programs have helped some of those millions to conquer obesity.

### Behavior Modification

Stuart's landmark study (1967) aroused interest in the psychological treatment of obesity and led to major advances in the scientific study of



Source: Woodman, M. The owl was a baker's daughter.  
Toronto: Inner City Books, 1980 (p. 6).

Figure 1. Woman Imprisoned by Obesity

psychotherapy. With his three-dimensional program, he taught individuals to analyze and correct their behaviors through self-scrutiny and task assignment. His results were significant because his treatment resulted in greater weight losses than any other outpatient treatment at that time (Stunkard, 1980).

Since then, many researchers have based their behavioral approaches on Stuart's model. The primary approaches to weight reduction have focused on weight loss through operant conditioning, positive and negative reinforcement; or on eating habits through either covert or overt control (Le Bow, 1981).

When Stunkard reviewed behavioral modification programs (1980), he found that they generally have a much lower attrition rate than other programs (probably because the clients also experience less anxiety, irritability, and depression that is sometimes associated with weight loss). Weight losses, although fairly consistent, have been modest; and maintenance of that reduced weight has been comparable to other methods. He concluded that behavior therapy has advanced the treatment of obesity, yet its results are still of limited clinical significance.

Thus, Stunkard (1980) suggested that increased effectiveness of weight loss programs may only result from multi-therapeutic approaches. He cited studies that had combined behavior modification with either a protein-sparing modified fast; a couples' training program (using cooperative efforts to control stimuli and reinforcement techniques); or pharmacological treatment with fenfluramine. All three programs were directed more to maintenance of weight loss, rather than speed of weight loss. And, all resulted in greater weight losses than groups using only behavior modification.



Blackburn and Greenberg (1980) have also used a multi-disciplinary approach to weight loss. They designed a program for the obese (Body Mass Index greater than 30) that included nutrition education, exercise, mental conditioning, relaxation and assertiveness training, and diet modification. They reasoned that because the mind controls eating behavior directly (through stress control, self-confidence, and education) and indirectly (through environmental control); high priority must be placed on cue control. By controlling certain cues, the clients could begin to develop substitute behaviors. The weight loss program, therefore, included training of positive behaviors in the areas of nutrition and health, fitness and exercise, and general lifestyle.

#### Weigh-Off Program

Weigh-Off is a 12-week weight loss program for adults that is sponsored by the Oklahoma State Cooperative Extension Services. The program is initiated by Extension Home Economists in each county as the need arises. The Home Economist discusses the Basic Four Food Groups and provides individual meal plans to the participants. She also describes the overweight problem and suggests ways to change eating habits through behavior modification.

The participants are weighed at the beginning of each session. For the rest of the meeting, they discuss their weight losses and give each other suggestions, support, and encouragement. At these Weigh-Off sessions, the participants receive low-calorie recipes and learn ways to plan nutritious, appetizing meals. They also learn tips for eating out and food purchasing, and discuss food fallacies and fad diets. Other parts of the Weigh-Off program deal with exercise, interpersonal

relationships, and self-image. Near the end of the program, the participants learn how to choose clothes that flatter their figures.

Although the Extension Services provide a guideline for the Weigh-Off program, the County Home Economists can modify the program to suit the needs of participants. Six months after the end of the program, the Home Economists ask the participants to evaluate the program. Yet, no information exists that states the overall effectiveness of the Weigh-Off program. Long term follow-up has been negligible. Extension specialists are currently updating the program and are developing better methods to evaluate the program.

#### Increasing the Effectiveness of Treatment

The various forms of treatment all work well for some, but fail for others. Thus, researchers recognize the need for a multi-disciplinary approach that is tailored to the needs of the individual.

Perhaps this approach requires two steps: 1) identifying characteristics (or conditions) that are present in persons who have been successful at weight loss, and 2) learning how to cultivate those characteristics or attributes to all people trying to lose weight.

Stuart and Guire (1980) identified certain common characteristics of successful weight reducers. They had lower initial weights than those unable to maintain their reduced weight, and had attended follow-up sessions after reaching their goal weights. In addition, the successful weight reducers had a better self-concept, saying that they felt they had control over their body and self. These people had also made more lifestyle changes that helped them to maintain their weight. Likewise, they continued to use many of the techniques that they originally used to lose

weight. These successful weight reducers also indicated that they felt they had been instrumental in bringing about changes in themselves and thus, felt better able to maintain their weight.

Other researchers have observed these same characteristics in people who had been able to maintain their reduced weight. Tashev and Balabanski (1978) also revealed the importance of patient-clinician follow-up after the initial treatment. They found that four years after the initial treatment, the group who regularly attended follow-up sessions maintained 68 percent of their reduced weight, whereas the group who had not attended follow-up sessions maintained only 28 percent of their reduced weight.

Allon (1979) also showed the effect of a positive body image and concept of self. She suggests that a negative self-image comes from self-blame, self-punishment, and guilt. Thus, she believes that treatment must focus on the individual's worthwhile traits, and build self-confidence, rather than focus only on weight.

#### Guidelines for Weight Control Programs

In 1983, the International Congress on Obesity organized a panel to describe the minimum recommended guidelines for a professional weight control program (Weinsier, Wadden, Ritenbaugh, Harrison, Johnson, and Wilmore, 1984). The four elements described were patient selection; goals, success criteria, and evaluation of outcome; criteria for program and patient monitoring; and therapeutic guidelines. The panel recommended that most clients should be provided with diet, exercise, and behavioral and psychological support since all are closely interrelated, interdependent, and mutually supportive. Weinsier and other members of

the panel documented the suggested guidelines for diet, exercise, and behavioral and psychological therapy.

#### Diet and Exercise Guidelines

The diet regime should satisfy all nutrient needs except energy, meet individual needs, be readily obtainable and socially acceptable, and help establish a lasting pattern of eating.

Exercise should be included to increase odds of success, help offset the diet-induced decline in metabolic rate, and encourage altered lifestyle activity patterns. Above all, the type and duration of the exercise program must be individually tailored, and safe (Weinsier et al., 1984).

#### Behavioral and Psychological Guidelines

The program should include a psycho-social assessment prior to treatment, and should include self-monitoring of food choices for a minimum of four months. In addition, the program must help clients to control the conditions surrounding eating, modifying eating behaviors and reinforcing prescribed behaviors. Clients must learn to deal with special holidays and other occasions that may lead to excessive eating. They must learn to eat controlled amounts of highly desirable foods to prevent the "all or none," "on-off" attitude toward dieting. Cognitive restructuring techniques should be used to encourage positive, coping self-statements. In addition, the program should provide psycho-social intervention where needed. For example, assertion training to cope with food-related social situations; couples' training to provide a stronger support system; and psychotherapy to address problems related to weight

control, changes in self-concept, and social functioning accompanying weight loss.

Perhaps most important, the treatment should be individualized and should emphasize maintenance of weight during treatment and after. Post treatment follow-up is suggested at least monthly for six months (Weinsier et al., 1984). These guidelines for therapy provide minimum standards for weight loss programs and incorporate many of the suggestions made by numerous researchers and health professionals.

#### Summary of Review of Literature

This chapter described the scope and severity of obesity, and reviewed some possible causes and methods of treatment for this disease. Existing literature reveals the multicausal nature of obesity; and as such, most health professionals agree (as is reflected in standards developed for weight loss programs) that the most effective treatment will result from an individually tailored, multi-disciplinary program.

Thus, individualized treatment warrants consideration of the individual's self-concept. Although the literature is not conclusive, improvement of self-concept remains a plausible link to increasing the effectiveness of weight loss programs.

## CHAPTER III

### METHODS

This chapter briefly reviews the procedures followed to accomplish the objectives that were outlined in Chapter I, and describes selection of the sample, development of the instrument, collection of the data, and analysis of the data.

This study was concerned with self-concepts among women who were within normal weight range, who were overweight, and who were obese. Self-concept for these three weight groups was determined from two scores on the Tennessee Self Concept Scale. The Total Positive Score indicated the overall self-esteem, while the Physical Self Score reflected personal body image and physical appearance. Self-concept was also compared between women who had been successful at weight loss and those who had not.

#### Selection of Sample

The Cooperative Extension Nutrition Specialist at Oklahoma State University directs the activities of the County Home Economists and the Weigh-Off programs. She selected several counties that consisted of fairly homogenous, rural communities. These counties represented a broad area of Oklahoma and had Weigh-Off programs already in progress at the time of the study. County Home Economists and homemakers from seven Oklahoma counties agreed to take part in this study. A total of

160 women from Muskogee, Pawnee, Grant, Harper, Marshall, Pontotoc, and Kiowa counties completed the questionnaires. These women were members of an Oklahoma State Cooperative Extension Homemaker group, a Weigh-Off program, or both. Appendix A lists the sample size from each county, and shows the location of these counties within Oklahoma. Twenty-eight women were currently participating in a Weigh-Off program, while 132 were not.

#### Development of the Instrument

Permission was obtained from Mr. Gregg Gilmar<sup>1</sup> to use the Tennessee Self Concept Scale. Based on personality theory and research, the Tennessee Self Concept Scale should differentiate between groups of people who differ on certain psychological dimensions. As expected, analysis of the Tennessee Self Concept scores has shown statistically significant differences in self-concepts between psychiatric patients and nonpatients, between delinquents and nondelinquents, and between the average person and the psychologically integrated person (Fitts, 1965). The statements that Fitts developed to measure self-concept were unanimously accepted by several clinical psychologists. In addition, Fitts found a remarkable similarity in profile patterns (scores) with repeated measures of the same individuals over long periods of time. (Fitts, 1965). The Tennessee Self Concept Scale has been recognized, therefore, as a valid and reliable tool to measure self-concept.

After selecting the Counseling Form of this scale, the researcher developed a form for participants to record background information such

---

<sup>1</sup>Gregg Gilmar is Director of Operations at Western Psychological Services.

as height, weight, and participation in a weight loss program. A cover letter was included with this form to explain the purpose of the study, to assure anonymity, and to express appreciation for participation in the research project. Appendix B lists the 100 statements as printed on the Tennessee Self Concept Scale test booklet. Appendix C shows a copy of the background information form and cover letter developed by the researcher and checked for content validity and clarity by the researcher's graduate committee.

#### Collection of the Data

Based on telephone conversations with the seven County Home Economists, the researcher mailed a specified amount of questionnaires, and a set of instructions for their distribution (see Appendix D) to each Home Economist. These women administered the questionnaires at various group meetings throughout the months of March, April, and May of 1985. After the participants completed the questionnaires, the County Home Economists mailed the forms to the Food, Nutrition and Institution Administration Department at Oklahoma State University.

#### Analysis of the Data

A t-test was used to determine if a difference existed in mean self-concept scores due to participation in a weight loss program. Self-concept scores were compared for women who were currently participating in a Weigh-Off program and women who were not participating in a Weigh-Off program. In addition, an Analysis of Variance procedure was used to determine if a significant difference existed in mean self-concept scores between groups of women based on two factors: 1) category of



weight (normal weight, overweight, and obese); and 2) condition of previous weight loss (successful, unsuccessful, and no previous attempts). A summary of the different weight loss programs that the subjects have followed, and their relative success with these programs, has also been described.

## CHAPTER IV

### RESULTS AND DISCUSSION

The Tennessee Self Concept Scale was chosen for this research project to measure self-concept. Ten of its statements are from the 1951 L-Scale of the Minnesota Multiphasic Personality Inventory. These determine the Self Criticism Score, and are mildly derogatory statements that most people admit as being true for them (Fitts, 1965).

The other 90 descriptive statements were developed by Fitts (1965). They are arranged on the answer sheet in a two-dimensional, three by five scheme. The scores from the three horizontal columns represent an internal frame of reference that the individual uses to describe himself. Its statements refer to (1) identity or what he is, (2) self-satisfaction or how he accepts himself, and (3) behavior or how he acts. The five vertical columns, however, provide an external frame of reference. Scores from these columns reflect (1) physical self, (2) moral-ethical self, (3) family self, (4) personal self, and (5) social self (Fitts, 1965). The sum of all these columns determines the Total Positive Score. This score reflects overall level of self-esteem: a high Total Positive Score indicates that the individual likes himself, feels he has worth, and is self-confident. A low score indicates that the individual has doubts about his worth, sees himself as undesirable, often lacks confidence; and is anxious, depressed, and unhappy.

The Tennessee Self Concept Scale measures a variety of aspects

dealing with self-concept. This study examined only the Total Positive Score (described above) and the Physical Self Score, which measures concept of body image and physical appearance. The 160 participants responded to the 100 statements on the Tennessee Self Concept Scale by using a 5-point Likert-type scale: a score of "1" indicated that the statement was completely false for the individual; a score of "2," mostly false; a score of "3," somewhat false and true; a score of "4," mostly true; and a score of "5," completely true. Possible Total Positive scores range from 150 to 450 points, with an established mean of 345.57 and a standard deviation of 30.7. The possible Physical Self scores range from 35 to 90, with a mean of 71.78 and a standard deviation of 7.67. The higher the scores, the higher the self-concept of the individual.

#### Characteristics of the Sample

The Total Positive Scores and Physical Self Scores of the 160 participants were analyzed in relation to three selected variables: participation in a weight loss program, category of weight, and condition of previous weight loss attempts. Category of weight was determined from the respondents' height and weight using the Body Mass Index (weight, in kilograms, divided by height, in meters, squared). Thirty participants with a Body Mass Index of 30.0 or more were categorized as obese, 65 with a Body Mass Index of 24.0 to 29.9 were categorized as overweight, and 43 with a Body Mass Index of 19.0 to 23.9 were categorized as normal weight. The responses from two participants were excluded from the data analysis because they were underweight (Body Mass Index less than 19.0). The responses from 20 other subjects were also

discarded because their questionnaires were incomplete. Thus, total sample size used for data analysis was 138. These 138 subjects were divided into groups based on their participation in Weigh-Off programs. Twenty-five women were currently participating in a Weigh-Off program while 113 homemakers were not participating in a Weigh-Off program. Table II indicates the number of respondents in each category.

TABLE II  
COMPOSITION OF SAMPLE

Homemakers Not Participating in a Weigh Off-Program		Homemakers Currently Participating in a Weigh Off-Program	
<u>Condition of Weight</u>	<u>Size</u>	<u>Condition of Weight</u>	<u>Size</u>
Normal weight	37	Normal weight	6
Overweight	51	Overweight	14
Obese	25	Obese	5
	Total--113		Total-- 25

#### Weight Loss Program Participation

The first hypothesis listed in Chapter I stated that no significant difference would exist in mean self-concept scores between women currently participating in a weight loss program and those not participating in a weight loss program. A t-test was used to determine whether a significant difference existed in self-concept due to the subjects' current participation in a weight loss program. As Table III shows, the

mean Body Mass Index for the two groups did not differ significantly ( $p = 0.673$ ). Any differences in self-concept, then, would probably not be due to a difference in weight for the two groups. Yet, there was no significant difference between the mean Total Positive Scores or the mean Physical Self Scores of the two groups. The statistical analysis of the data therefore failed to reject hypothesis one.

TABLE III  
MEAN TOTAL POSITIVE AND PHYSICAL SELF  
SCORES RELATED TO WEIGHT LOSS  
PROGRAM PARTICIPATION

Group	Body Mass Index	Total Positive Score	Physical Self Score
Weigh-Off Participants (n = 25)	27.130	353.000	64.720
Homemakers (n = 113)	26.668	341.212	61.743
t-value	-0.422	-1.650	-1.659
p-value	0.673*	0.101*	0.099*
*not significant ( $p > 0.05$ )			

Although the results were not statistically different ( $p > 0.05$ ), Table III shows that the Weigh-Off participants tended to weigh slightly more, and had a higher mean Total Positive Score and Physical Self Score than the other homemakers. In fact, the mean Total Positive Score for the Weigh-Off participants (353.000) was above the established norm for

that score. The mean Physical Self Score, however, was below the norm for both groups. Yet, the mean Physical Self Score was slightly higher for the group of Weigh-Off participants; and this difference was significant at the 0.1 level ( $p = 0.099$ ). The more positive scores for the group of Weigh-Off participants suggests that those who were actively seeking to lose weight and improve their personal appearance felt better about themselves, and thus had more positive conceptions about their bodies and self-images.

#### Self-concept and Category of Weight

A second hypothesis stated that no significant difference would exist in mean self-concept scores between groups of normal weight, overweight and obese women. An Analysis of Variance procedure tested this hypothesis for both the Weigh-Off participants and the Homemaker group.

The Analysis of Variance procedure for the Total Positive Scores of the Weigh-Off participants did not reveal a significant difference between the three weight categories ( $p > 0.05$ ). There was also no significant difference in the mean Physical Self Scores for the three groups (Table IV).

While these self-concept scores were not statistically different, Table V shows that as the groups' mean Body Mass Index increased, their mean Total Positive Score and Physical Self Score decreased. The mean Physical Self Score for all three weight groups was below the national norm, while only the mean Total Positive Score for the obese group was below the established norm. The data presented in Tables IV and V suggest that the category of weight slightly influenced self-concept scores.

TABLE IV  
ANALYSIS OF VARIANCE OF TOTAL POSITIVE SCORES  
AND PHYSICAL SELF SCORES AND CATEGORY OF  
WEIGHT FOR 25 WEIGH-OFF PARTICIPANTS

	Group Mean Square	Error Mean Square	F-Value	p-Value
Total Positive	1,337.554	1,025.313	1.30	0.291*
Physical Self	146.306	64.746	2.26	0.128*
Degrees of Freedom	2	22		

\*not significant ( $p > 0.05$ )

TABLE V  
MEAN SELF-CONCEPT SCORES OF 25 NORMAL WEIGHT,  
OVERWEIGHT, AND OBESE WOMEN IN A  
WEIGH-OFF PROGRAM

Category of Weight	Body Mass Index	Total Positive Score	Physical Self Score
Normal Weight (n = 6)	22.20	369.17	67.500
Overweight (n = 14)	27.13	351.29	65.929
Obese (n = 5)	33.04	338.40	58.000

Similarly, an Analysis of Variance procedure was used to determine whether a significant difference existed in mean self-concept scores of normal weight, overweight, and obese women in the Homemaker group. The analysis showed that there was no significant difference in mean Total Positive Scores between the three weight categories ( $p > 0.05$ ). Yet, as Table VI indicates, there was a significant difference in mean Physical Self Scores between the three groups ( $p = 0.0009$ ).

TABLE VI  
ANALYSIS OF VARIANCE OF TOTAL POSITIVE SCORES  
AND PHYSICAL SELF SCORES AND CATEGORY OF  
WEIGHT FOR 113 HOMEMAKERS

	Group Mean Square	Error Mean Square	F-Value	p-Value
Total Positive	2,592.406	1,014.910	2.55	0.0823
Physical Self	432.633	57.948	7.47	0.0009**
Degrees of Freedom	2	110		

\*\*significant ( $p < 0.05$ )

Because there was a statistically significant difference between the mean Physical Self Scores of the three Homemaker groups due to category of weight, hypothesis two cannot be wholly rejected. Furthermore, the difference in mean Total Positive Scores for the Homemaker groups was significant at the 0.1 level ( $p = 0.0823$ ).



Like the self-concept scores for the Weigh-Off participants, Table VII shows that the mean self-concept scores of the homemakers decreased as the degree of weight increased. The mean Physical Self Scores for all three weight categories was lower than the established norm. On the other hand, the mean Total Positive Score for the normal weight women (349.05) was slightly above the norm, while the mean Total Positive Scores for the overweight and obese women were below the norm. These results suggest that the more overweight the subject, the lower her self-esteem and image of her physical self.

TABLE VII  
MEAN SELF-CONCEPT SCORES OF 113 NORMAL WEIGHT,  
OVERWEIGHT, AND OBESE HOMEMAKERS

Category of Weight	Body Mass Index	Total Positive Score	Physical Self Score
Normal Weight (n = 37)	21.86	349.05	65.189
Overweight (n = 51)	26.30	340.80	61.235
Obese (n = 25)	34.53	330.44	57.680

#### Self-concept and Condition of Previous Weight Loss

The overweight and obese women in the Homemaker group were categorized according to their previous attempts at weight loss within the last

three years. Thirty-one women reported that they had lost weight, but regained it; therefore "failing" to lose weight. Eighteen of the overweight and obese women had lost weight and had maintained their reduced weight, thus "succeeding" to lose weight. The remaining 27 women had not tried to lose weight in the last three years, and were categorized as "satisfied" with their weights.

The third hypothesis stated that no significant difference would exist in mean self-concept scores of overweight women who were not trying to lose weight; those who had lost weight, but regained it; and those who had successfully lost weight. An Analysis of Variance procedure was used to determine if there was a significant difference in self-concept scores in relation to condition of previous weight loss attempts (success, failure, or satisfied). As Table IIX indicates, the condition of weight loss did not significantly affect the mean Total Positive Scores or Physical Self Scores of the three groups. The researcher therefore failed to reject hypothesis three.

An Analysis of Variance procedure was also used to test the fourth hypothesis which stated that no significant difference would exist in mean self-concept scores between groups of obese women who were not trying to lose weight; those who had lost weight, but regained it; and those who had successfully lost weight. As Table IX shows, there was no statistically significant difference in mean Total Positive Scores or Physical Self Scores of the three groups of women. Like hypothesis three, the researcher failed to reject hypothesis four.

TABLE IIX  
 ANALYSIS OF VARIANCE OF TOTAL POSITIVE SCORES  
 AND PHYSICAL SELF SCORES AND CONDITION  
 OF PREVIOUS WEIGHT LOSS FOR 41  
 OVERWEIGHT HOMEMAKERS

	Group Mean Square	Error Mean Square	F-Value	p-Value
Total Positive	2,554.939	1,106.086	2.31	0.11*
Physical Self	49.795	61.491	0.81	0.45*
Degrees of Freedom	2	48		

\*not significant ( $p > 0.05$ )

TABLE IX  
 ANALYSIS OF VARIANCE OF TOTAL POSITIVE SCORES  
 AND PHYSICAL SELF SCORES AND CONDITION OF  
 PREVIOUS WEIGHT LOSS FOR 25  
 OBESE HOMEMAKERS

	Group Mean Square	Error Mean Square	F-Value	p-Value
Total Positive	2,080.406	690.970	3.01	0.069*
Physical Self	35.446	33.207	1.07	0.361*
Degrees of Freedom	2	22		

\*not significant ( $p > 0.05$ )

Although the mean self-concept scores were not statistically different at the 0.05 level, the difference in the mean Total Positive

Scores for the obese homemakers was significant at the 0.1 level ( $p = 0.069$ ). In addition, comparison of the group means shows a general trend related to condition of previous weight loss (Table X). On the average, those overweight and obese women who were "satisfied" with their present weight had a slightly lower Body Mass Index than the women who had tried to lose weight. Furthermore, the mean Body Mass Index for both the overweight and obese groups was higher for women "failing" to lose weight than for those "succeeding." In addition, the overweight women who had succeeded at weight loss had a higher mean Total Positive Score (353.92) and a higher Physical Self Score (63.75) than the women who were satisfied with their current weight. Of these overweight women, those who had failed to lose weight previously had the lowest self-concept scores: their mean Total Positive Score was 327.85, and their mean Physical Self Score was 60.35.

As is shown in Table X, the mean self-concept scores for the obese homemakers demonstrated somewhat different results. The obese women who were satisfied with their present weight had higher self-concept scores than the other two groups who had previously tried to lose weight. Like the overweight women, however, the obese women who had failed to lose weight had lower scores than the women who had succeeded. Furthermore, the obese homemakers who failed to lose weight had the lowest mean Total Positive Score (319.64) and the lowest mean Physical Self Score (56.61) of all the groups examined in this study.

TABLE X  
 MEAN SELF-CONCEPT SCORES OF OVERWEIGHT AND  
 OBESE WOMEN GROUPED ACCORDING TO  
 CONDITION OF PREVIOUS  
 WEIGHT LOSS

Overweight Homemakers	Body Mass Index	Total Positive Score	Physical Self Score
Succeeding (n = 12)	26.74	353.92	63.75
Satisfied (n = 22)	25.67	343.68	60.55
Failing (n = 17)	26.81	327.82	60.35
Obese Homemakers	Body Mass Index	Total Positive Score	Physical Self Score
Succeeding (n = 6)	34.56	338.33	57.33
Satisfied (n = 5)	32.96	351.20	61.00
Failing (n = 14)	35.07	319.64	56.64

#### Previous Weight Loss Programs Followed

One of the objectives for this study was to determine the success rate of the previous programs the subjects had followed within the last three years. The majority of the women who had tried to lose weight had participated in a Weigh-Off program. Of the 40 previous Weigh-Off participants, only 16 were able to lose weight and keep it off for one year or more. Thus, the success rate for this group of women attending a past Weigh-Off program was 40 percent.

The second most frequently used program was a personal plan that included exercise. This type of program yielded a much higher success

rate. Ten of the 13 women that followed a personal weight loss plan were able to lose weight and maintain their reduced weight (76% success rate).

Three of the eight women who had followed a weight loss program prescribed by a physician successfully lost weight (a success rate of 38%). Three out of five women who had followed Weight Watcher's weight loss plan successfully lost weight. Three of the other women had used a liquid nutrition formula, but only one lost weight successfully. Six of the eight remaining women who had followed various other weight loss programs were successful.

In summary, 39 of the 77 women who had followed a weight loss program in the last three years were successful (a success rate of 51%). The Weigh-Off program and the physician-prescribed weight loss plans had success rates lower than 50 percent, while the most successful program was a personal plan that included exercise (76% success rate). The relatively small number of women following the other programs does not permit any generalization from that data.

#### Discussion of the Results

This study examined the Total Positive Scores and Physical Self Scores of 138 women. The Total Positive Score measured overall level of self-esteem, while the Physical Self Score reflected self-concept in terms of physical appearance and body image. These scores were analyzed in relation to three variables: category of weight (normal weight, overweight, and obese); participation in a Weigh-Off program; and condition of previous weight loss (failed, succeeded, or satisfied).

Americans generally have a negative view of overweight and obese

people. They may even think of them as lazy, stupid, and weak willed (Haskew and Adams, 1984). According to personality theorists and psychologists, the values and judgments of society directly influence one's self-esteem and body image (Wells, 1984). Thus, self-concepts of many overweight and obese people may vary greatly from the self-concepts of people with slim, "desirable" figures. In this study, an Analysis of Variance procedure showed that there was a significant difference ( $p = 0.0009$ ) in mean Physical Self Scores between groups of normal weight, overweight, and obese homemakers. And at the 0.1 level, the difference in mean Total Positive Scores was also significant ( $p = 0.0823$ ). A comparison of the Total Positive Scores and Physical Self Scores for the three weight categories indicated that, as the degree of weight increased, the self-concept scores decreased. Furthermore, the self-concept scores for the obese homemakers and Weigh-Off participants were below the norms established for those scores. This supports the view that obese persons may have poorer conceptions of self than their leaner counterparts (Allon, 1979).

If an individual's self-concept decreases as his weight increases, what effect does participation in a weight loss program have on self-concept? Will a significant difference exist in self-concept scores of women currently trying to lose weight and those who were not?

This study examined self-concept scores of 25 Weigh-Off participants; and 113 homemakers, who were not trying to lose weight at the time of the study. A t-test revealed that there was no significant difference ( $p > 0.05$ ) in mean self-concept scores between the Weigh-Off participants and the Homemaker group. Yet, at the 0.1 level, the difference in mean Physical Self Scores was significant ( $p = 0.099$ ). In

addition, the mean self-concept scores for the women participating in the Weigh-Off Program were higher (more positive) than the scores for the Homemaker group. The slightly higher self-concept scores of the women currently trying to lose weight may suggest that they felt good about their decision to lose weight and to improve their physical appearance, thus positively influencing their conceptions of self.

Various researchers have suggested that the level of self-esteem of overweight and obese people will vary due to their success or failure at previous weight loss attempts, and some have suggested that a poor body image and low self-esteem may actually hinder successful weight loss (Allon, 1979). An Analysis of Variance procedure was used in this study to determine the difference in self-concept scores of overweight and obese homemakers in relation to condition of previous weight loss (success, failure, or satisfied). At the 0.1 level, there was a significant difference ( $p = 0.069$ ) in the mean Physical Self Scores of the obese homemakers. In general, the overweight and obese women who failed to lose weight previously had lower self-concept scores than the women who had succeeded or had not tried to lose weight (satisfied). The most obese group who had failed at previous weight loss attempts had the lowest mean Total Positive Score and mean Physical Self Score of all the groups examined in the study.

The results of this study indicate that the degree of overweight of obesity, and success or failure of previous weight loss attempts, does affect self-concept. The differences in mean self-concept scores in relation to the selected variables were not statistically significant in every case, however. This may be due to three factors: the relatively small sample (especially for the group of Weigh-Off participants); the



unequal groups used for data analysis; and the great amount of variability within each group analyzed. The participants Total Positive Scores ranged from 256 to 416, and their Physical Self Scores ranged from 41 to 78. (Appendix E shows the individual self-concept scores of all the participants in the study). This broad range of scores for the overweight and obese participants indicates the need for individually tailored weight loss programs.

## CHAPTER V

### SUMMARY AND RECOMMENDATIONS

Obesity is a serious problem that affects millions of Americans daily. How these people see themselves in relation to others determines not only their self-esteem, but also their body image. Their conceptions of self influence how they respond to events and people around them. Studies of obese and lean people have shown that the obese people had lower levels of self-esteem, lacked self-confidence, had a strongly negative body image, and felt they lacked control of self and body (Woodman, 1980; Slochower, 1983; and Allon, 1979). Thus, enhancing self-concept may be necessary to enable the overweight and obese to control their eating habits and to lose weight. This study examined the differences in self-concept scores of groups of women in relation to three variables: participation in a weight loss program; category of weight (normal weight, overweight, or obese); and condition of previous weight loss attempts (success, failure, or satisfied).

#### Characteristics of the Sample

One hundred sixty women from seven Oklahoma counties agreed to participate in this study. These women were either members of an Oklahoma State Cooperative Extension Homemaker group, Weigh-Off participants, or both. They completed the Tennessee Self Concept Scale and recorded their height, weight, and information concerning previous

weight loss attempts. Based on their height and weight, the women were categorized as normal weight, overweight, or obese. The overweight and obese homemakers were also grouped according to whether they: 1) had not tried to lose weight within the last three years (satisfied with weight); 2) had lost weight, but regained it (failed); or 3) had lost weight and maintained their reduced weight (succeeded).

Two of the participants were categorized as underweight, and were excluded from the sample. Twenty other womens' responses were incomplete, and thus were also excluded from data analysis. The total sample used in data analysis consisted of 138 women: 25 were participating in a Weigh-Off program and 113 were members of a Homemaker group.

The mean Total Positive and Physical Self Scores from the Tennessee Self Concept Scale were analyzed for each of the groups in the study. The Total Positive Score measured overall level of self-esteem, while the Physical Self Score measured concept of physical appearance and body image. The higher the scores, the higher (or more positive) the self-concept of the individual.

#### Summary of Findings

Self-concept scores of the 113 homemakers were compared to scores of the 25 Weigh-Off participants. A t-test indicated that there was no significant difference ( $p > 0.05$ ) in either the mean Total Positive or Physical Self Scores between the two groups. The mean self-concept scores of the Weigh-Off participants were slightly higher, however, than the mean scores for the Homemaker group. This difference for the mean Physical Self Scores was significant at the 0.1 level ( $p = 0.099$ ).

Mean self-concept scores were also examined in relation to category

of weight. An analysis of Variance procedure revealed a significant difference ( $p = 0.0009$ ) in mean Physical Self Scores between the normal weight, overweight, and obese groups of homemakers. At the 0.1 level, the difference in mean Total Positive Scores was also significant ( $p = 0.0823$ ). The difference in mean self-concept scores for the normal weight, overweight, and obese groups of Weigh-Off participants, however, was not significant ( $p > 0.05$ ). Yet, a trend in mean scores was evident. Both the obese homemakers and the obese Weigh-Off participants had lower mean self-concept scores than the overweight and normal weight groups. Comparison of the scores demonstrated that as degree of weight increased, self-concept scores decreased (became less positive).

A second Analysis of Variance procedure was used to compare mean self-concept scores of overweight and obese women who had failed to lose weight, succeeded to lose weight, or had not tried to lose weight in the last three years. No significant difference in mean scores existed between the three groups ( $p > 0.05$ ). At the 0.1 level, though, there was a significant difference ( $p = 0.069$ ) in the mean Physical Self Scores of the three groups (failed, succeeded, or satisfied) of obese homemakers. In general, the overweight and obese women who had previously failed to lose weight had the lowest self-concept scores.

One of the objectives for this study was to determine the success rate of the previous weight loss programs that the participants had followed within the last three years. The average success rate of all the programs was 51 percent. The most successful program was a personal plan that included exercise (76% success rate).

### Implications

Although the difference in self-concept scores was not statistically significant in every case, this study tends to support some of the previous research concerning the relationship of self-concept to obesity and weight loss. As the degree of obesity increased, self-concept decreased. Yet, women who were actively seeking to lose weight and to control their eating had slightly higher self-concept scores, even though they weighed slightly more than the other homemakers. And as observed in other studies (Allon, 1979), women who failed at weight loss had the lowest self-concept scores. Thus, efforts to enhance self-concept may increase the effectiveness of existing weight loss programs.

The nonsignificant difference in mean scores between the various groups may be partially explained by the great amount of variability of scores within each group examined. This variability is important to consider because it demonstrates that all people (whether lean or obese) have different conceptions of self and body. Weight loss programs may need to be designed to treat the whole person as an individual.

The success rates of the weight loss programs that the participants had followed also emphasizes the necessity of individually tailored weight loss programs. The program with the highest success rate (76%) was a personal diet plan developed by each woman that included exercise. The need for individually tailored programs that treat the physical, emotional, economic, and social needs of the individual has been substantiated by members from the 1983 International Congress on Obesity (Weinsier et al., 1984). They established minimum recommended

guidelines for weight control programs that included techniques to improve self-concept, behavior modification, self-monitoring of food choices, and individual follow-up sessions.

#### Recommendations for Future Research

The following recommendations are based on the findings of this study:

1. Duplicate this study using a larger sample to determine whether the sample size will affect the results.
2. Replicate this study with men to determine whether the findings will be consistent with the findings from this study.
3. Conduct a twin study with men and women, and correlate the results.
4. Compare self-concepts of obese and lean children and adolescents.
5. Compare the self-concept scores of individuals at the beginning and end of a weight loss program.
6. Study self-concept scores of individuals rather than groups. Collect data for a longer period and prepare Case Studies for each subject.

## SELECTED BIBLIOGRAPHY

- AHA news release, March 1, 1983.
- Allon, N. Self-perceptions of the stigma of overweight in relation to weight-losing patterns. The American Journal Of Clinical Nutrition, 1979, 32, 470-480.
- Allport, G. The self-concept. In R. Hogan (Ed.), Personality Theory. Englewood Cliffs, N.J.: Prentice Hall, 1976.
- Berger, M., Berchtold, P., Gries, F A., and Zimmerman, H. Indications for the treatment of obesity. In P. Björntorp, M. Cairella, and A.N. Howard (Eds.), Recent advances in obesity research: III. Proceedings of the 3rd international congress on obesity. London: John Libbey, 1981.
- Berger, M., Muller, W. A., and Renold, A. E. Relationship of obesity to diabetes: Some facts, many questions. In H. M. Katzen, R. J. Mahler (Eds.), Advances in modern nutrition. Vol. 2: Diabetes, obesity, and vascular disease. Metabolic and molecular interrelationships pt. 1. New York: John Wiley and Sons, 1978.
- Blackburn, G. L., and Greenberg, I. Multi-disciplinary approach to adult obesity therapy. In G. A. Bray (Ed.), Obesity: Comparative methods of weight control. London: John Libbey and Company, 1980.
- Bray, G. A. Definition, measurement, and classification of the syndromes of obesity. In G. A. Bray (Ed.), Obesity: Comparative methods of weight control. London: John Libbey and Company, 1980.
- Brown, V. E. Obesity as a factor in self-concept and attitude toward physical fitness and exercise. Dissertation Abstracts International, 1971, 32A, 2462.
- Brownell, K. D. The psychology and physiology of obesity: Implications for screening and treatment. Journal of the American Dietetic Association, 1984, 84, 406-414.
- Bruch, H. Eating disorders. New York: Basic Books, 1973.
- Brunzell, J. D., and Greenwood, M. R. C. Lipoprotein lipase and the regulation of body weight. In P. B. Curtis-Prior (Ed.), Bio-chemical pharmacology of obesity. Amsterdam: Elsevier, 1983.

- Cantor, M. B. Bad habits: Models of induced ingestion in satiated rats and people. In S. A. Miller (Ed.), Nutrition and behavior: New research directions. Philadelphia: Franklin Institute Press, 1981.
- Cohen, A. R. Some implications of self-esteem for social influence. In C. Gordon and K. J. Gergen (Eds.), The self in social interaction. New York: John Wiley and Sons, Inc., 1968.
- Di Girolamo, M., Smith, U., and Björntorp, P. Refeeding effects on adipocyte metabolism. In P. Björntorp, M. Cairella, and A. N. Howard (Eds.), Recent advances in obesity research: III. London: John Libbey, 1981.
- Fitts, W. H. Tennessee (Department of Mental Health) Self Concept Scale Manual. Los Angeles: Western Psychological Services, 1965.
- Forbes, G. B. Prevalence of obesity in childhood. In G. A. Bray (Ed.), Obesity in perspective. Vol. 2. Department of Health, Education, and Welfare Publication No. (NIH) 75-708, 1975.
- Greenwood, M. R. C., Cleary, M., Steingrimsdottir, L., and Vasselli, J.R. Adipose tissue metabolism and genetic obesity: The LPL hypothesis. In P. Björntorp, M. Cairella, and A. N. Howard (Eds.), Recent advances in obesity research: III. Proceedings of the 3rd international congress on obesity. London: John Libbey, 1981.
- Gough, H. G. The adjective checklist. Palo Alto, CA.: Consulting Psychologists Press, 1961.
- Hamburger, W. W. Emotional aspects of obesity. Medical Clinics of North America, 1951, 35, 483-499.
- Haskew, P. and Adams, H. When food is a 4-letter word. Englewood Cliffs, N.Y.: Prentice Hall, 1984.
- Himms-Hagen, J. Brown adipose tissue thermogenesis in obese animals. Nutrition Reviews, 1983, 41(9), 261-267.
- Hirsch, J. Hypothalamic control of appetite. Hospital Practice, 1984, 19(2), 131-138.
- Hirsch, J. Quoted in news insert. People Magazine, March 7, 1985.
- Hogan, R. Personality Theory. Englewood Cliffs, N.J.: Prentice Hall, 1976.
- Horrocks, J. E. and Jackson, D. W. Self and role. A theory of self-process and role behavior. New York: Houghton Mifflin Company, 1972.
- Hubert, H. B., Feinleib, M., McNamara, P. M. and Castelli, W. P. Obesity as an independent risk factor for cardiovascular disease.



- A 26 year follow-up of participants in the Framingham heart study. Circulation, 1983, 67, 968-977.
- James, W. The shape of fatness. Lancet, 1984, 3, 889.
- Johnson W. G. The effects of cue prominence and obesity on the effort to obtain food. In S. Schachter and J. Rodin (Eds.), Obese humans and rats. Potomac, Md.: Erlbaum Associates, Inc., 1974.
- Kannel, W. B., and Gordon, T. Some determinants of obesity and its impact as a cardiovascular risk factor. In Alan Haward (Ed.), Recent advances in obesity research: I. London: Newman Publishing Ltd., 1975, pg. 18.
- Kaplan, H. I., and Kaplan, H. S. The psychosomatic concept of obesity. Journal of Nervous and Mental Disease, 1957, 125, 181-201.
- Kelly, G. Socialization and the self-concept. In R. Hogan (Ed.), Personality theory. Englewood Cliffs, N.J.: Prentice-Hall, 1976.
- Kerlinger, F. N. Foundations of behavioral research. New York: Holt, Rhinehart and Winston, Inc., 1964.
- Keys, A. Coronary heart disease in seven countries. Circulation, 1970, 41 (suppl.), 1-211.
- Knittle, J. L., Ginsberg-Fellner, F., and Brown R. E. Adipose tissue development in man. The American Journal of Clinical Nutrition, 1977, 30, 762-766.
- Knittle, J. L., and Hirsch, J. Effect of early nutrition on the development of rat epididymal fat pads: Cellularity and metabolism. Journal of Clinical Investigations, 1968, 47, 2091-2098.
- Le Bow, M. D. Weight control. New York: John Wiley and Sons, 1981.
- Long, B. R. Self-monitoring of urges to over-eat and self-concept enhancement in a weight loss program. Dissertation Abstracts International, 1981, 42B, 3827.
- Lowenstein, F. W. Some preliminary findings from the first health and nutrition examination survey in the USA relating to leanness and obesity in adults. In J. C. Somogyi (Ed.), Nutritional, psychological, and social aspects of obesity. Basel, Switzerland: Tanner and Boshardt AG, 1978.
- Ludeman, P. J. Difference in self-concept of individuals enrolled and not enrolled in a weight reduction program. (Unpublished M. S. thesis, Oklahoma State University, 1979).
- McDougall, W. The self-concept and socialization. In R. Hogan (Ed.), Personality theory. Englewood Cliffs, N.J.: Prentice Hall, 1976.

- Murphy, G. Outgrowing self deception. New York: Basic Books, Inc., 1975.
- Nisbett, R. E. Determinants of food intake in human obesity. Science, 1968, 159, 1254-1255.
- Olson R. E. (Ed.) Refractory obesity and energy homeostasis. Nutrition Reviews, 1983, 41(12): 349-352.
- Olson, R. E. (Ed.) Statistical bulletin October 1942: Ideal weights for women. In Nutritional Reviews, 1985a, 43(2), 50-53.
- Olson, R. E. (Ed.) Body weight, health and longevity: Conclusions and recommendations of the workshop. Nutrition Reviews, 1985b, 43(2), 61-63.
- Panksepp, J. On the nature of feeding patterns--primarily in rats. In D. Novin, W. Wyrwicka, G. A. Bray (Eds.), Hunger: basic mechanisms and clinical implications. New York: Raven Press, 1976.
- Peterson, M. A. Obesity, age of onset, and physical self-esteem and the outcome in a behavioral treatment program for women. Dissertation Abstracts International, 1981, 42B, 2999.
- Pliner, P. Influence of psychological (exogenous) and endogenous factors in the regulation of nutritional uptake. In H. M. Katzen and R. J. Mahler (Eds.), Advances in modern nutrition: II. Diabetes, obesity, and vascular disease, part 1. New York: Hemisphere Publishing Corp., 1978.
- Pomerantz, A. S., Greenberg, I., and Blackburn, G. I. MMPI Profiles of obese men and women. Psychological Reports, 1977, 41, 731-734.
- Rodin, J. The relationship between external responsiveness and the development and maintenance of obesity. In D. Novin, W. Wyrwicka, and G. A. Bray (Eds.), Hunger: Basic mechanisms and clinical implications. New York: Raven Press, 1976.
- Ross, L. Effects of manipulating salience of food upon consumption by obese and normal eaters. In S. Schachter and J. Rodin (Eds.), Obese humans and rats. Potomac, Md.: Erlbaum Associates, Inc., 1974.
- Schachter, S. Emotion, obesity and crime. New York: Academic Press, 1971.
- Schreiber, F. M. The contribution of role playing techniques to self-concept enhancement and weight loss in overweight college women. Dissertation Abstracts International, 1980, 41B, 3589.
- Schutz, Y., Bessard, T., and Jequier, E. Diet-induced thermogenesis measured over a whole day in obese and non obese women. The American Journal of Clinical Nutrition, 1984, 40, 542-547.

- Simopoulos, A. P. The health implications of overweight and obesity. Nutrition Reviews, 1985, 43(2), 33-40.
- Slochower, J. A. Excessive eating. The role of emotions and environment. New York: Human Sciences Press Inc., 1983.
- Slochower, J. A., and Kaplan, S. P. Uncontrollable arousal and eating. In J. A. Slochower, Excessive eating. The role of emotions and environment. New York: Human Sciences Press Inc., 1983.
- Slochower, J. A., Kaplan, S. P., and Mann, L. Uncontrollable stress and overeating. In J. A. Slochower, Excessive eating. The role of emotions and environment. New York: Human Sciences Press Inc., 1983.
- Stephenson, W. The study of behavior. Chicago: The University of Chicago Press, 1953.
- Stuart, R. B. Behavioral control of eating. Behavioral Research and Therapy, 1967, 5, 357-365.
- Stuart, R. B., and Guire, K. Some correlates of the maintenance of weight lost through behavior modification. In G. A. Bray (Ed.), Obesity: Comparative methods of weight control. London: John Libby and Company, 1980.
- Stunkard, A. J. Behavioral treatment of obesity: The current status. In G. A. Bray (Ed.), Obesity: Comparative methods of weight control. London: John Libby and Company, 1980.
- Tashev, T., and Balabanski, L. Psychological significance of a regular contact between treated obese patients and their physicians for maintaining reduced body weight. In J. C. Somogyi (Ed.), Nutritional, psychological and social aspects of obesity. Basel, Switzerland: Tanner and Bosshardt, AG, 1978.
- Van Itallie, T. B. Diets for weight reduction: Mechanisms of action and physiological effects. In G. A. Bray (Ed.), Obesity: Comparative methods of weight control. London: John Libby and Company, 1980.
- Vasselli, J. R., Cleary, M. P., and Van Itallie, T. B. Modern concepts of obesity. Nutrition Reviews, 1983, 41(12), 361-372.
- Weighley, E. S. Average? Ideal? Desirable? A brief overview of height-weight tables in the United States. Journal of the American Dietetic Association, 1984, 84(4), 417-423.
- Weinsier, R. L., Wadden, T. A., Ritenbaugh, C., Harrison, G. G., Johnson, F. S., and Wilmore, J. H. Recommended therapeutic guidelines for professional weight control programs. The American Journal of Clinical Nutrition, 1984, 40, 865-872.

- Wells, B. W. P. Body and personality. New York: Longman Inc., 1983.
- White, R. W. The enterprise of living. New York: Holt, Rinehart and Winston, Inc., 1972.
- Woodman, M. The owl was a baker's daughter. Toronto: Inner City Books, 1980.
- Wyrwicka, W. The problem of motivation in feeding behavior. In D. Novin, W. Wyrwicka, and G. A. Bray (Eds.), Hunger: Basic mechanisms and clinical implications. New York: Raven Press, 1976.
- Yudkin, J. Obesity and Society. In J. C. Somogyi (Ed.), Nutritional psychological and social aspects of obesity. Basel, Switzerland: Tanner and Bosshardt AG, 1978.

## APPENDIXES

**APPENDIX A**  
**DISTRIBUTION OF SAMPLE**

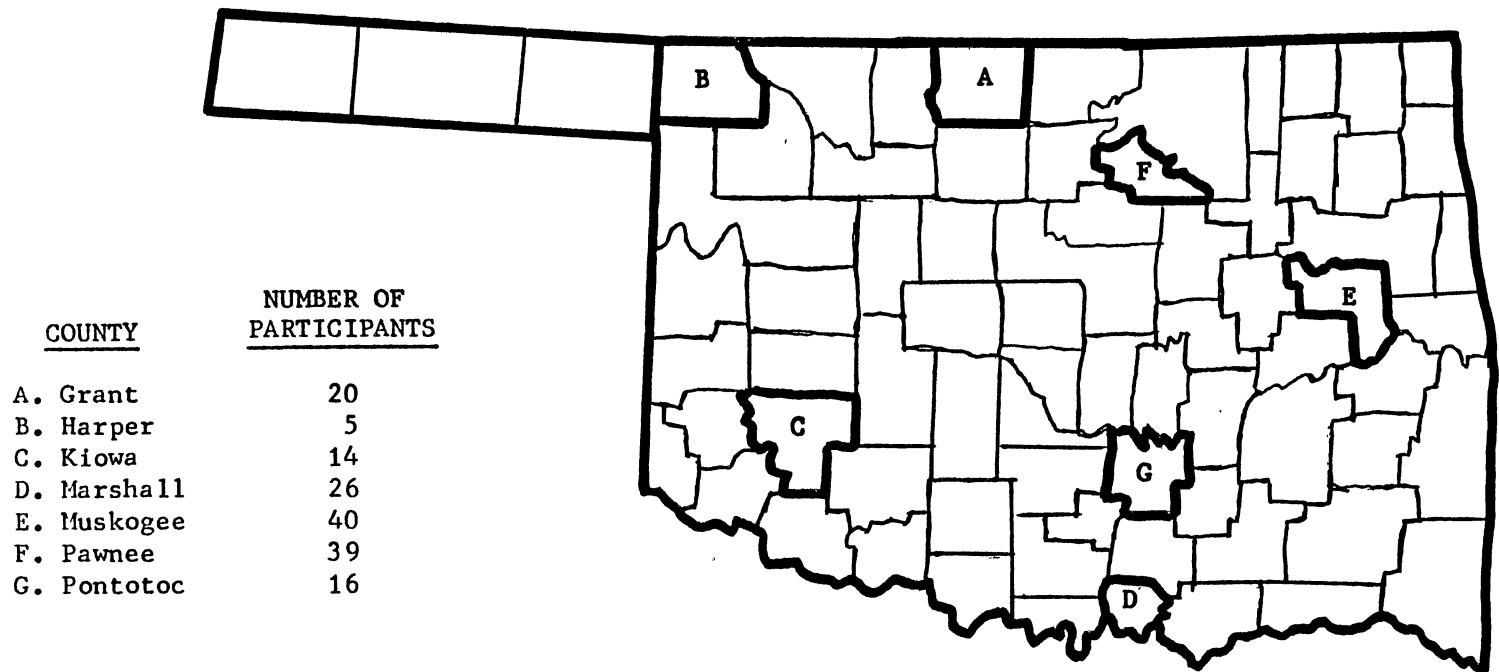


Figure 2. Distribution of Sample

APPENDIX B  
STATEMENTS FROM THE TENNESSEE  
SELF CONCEPT SCALE



## STATEMENTS FROM THE TENNESSEE

## SELF CONCEPT SCALE

The following 100 statements comprise the Tennessee Self Concept Scale developed by William H. Fitts in 1965. The respondents mark their responses on the answer sheet using the key below.

<b>Completely False</b>	<b>Mostly False</b>	<b>Partly False and Partly True</b>	<b>Mostly True</b>	<b>Completely True</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

I have a healthy body

I am an attractive person

I consider myself a sloppy person

I am a decent sort of person

I am an honest person

I am a bad person

I am a cheerful person

I am a calm and easy-going person

I am a nobody

I have a family that would always help me in any kind of trouble

I am a member of a happy family

My friends have no confidence in me

I am a friendly person

I am popular with men

I am not interested in what other people do

I do not always tell the truth

I get angry sometimes

I like to look nice and neat all the time  
I am full of aches and pains  
I am a sick person  
I am a religious person  
I am a moral failure  
I am a morally weak person  
I have a lot of self-control  
I am a hateful person  
I am losing my mind  
I am an important person to my friends and family  
I am not loved by my family  
I feel that my family doesn't trust me  
I am popular with women  
I am mad at the whole world  
I am hard to be friendly with  
Once in a while I think of things too bad to talk about  
Sometimes, when I am not feeling well, I am cross  
I am neither too fat nor too thin  
I like my looks just the way they are  
I would like to change some parts of my body  
I am satisfied with my moral behavior  
I am satisfied with my relationship to God  
I ought to go to church more  
I am satisfied to be just what I am  
I am just as nice as I should be  
I despise myself

I am satisfied with my family relationships

I understand my family as well as I should

I should trust my family more

I am as sociable as I want to be

I try to please others, but don't overdo it

I am no good at all from a social standpoint

I do not like everyone I know

Once in a while, I laugh at a dirty joke

I am neither too tall nor too short

I don't feel as well as I should

I should have more sex appeal

I am as religious as I want to be

I wish I could be more trustworthy

I shouldn't tell so many lies

I am as smart as I want to be

I am not the person I would like to be

I wish I didn't give up as easily as I do

I treat my parents as well as I should (Use past tense if parents are not living)

I am too sensitive to things my family says

I should love my family more

I am satisfied with the way I treat other people

I should be more polite to others

I ought to get along better with other people

I gossip a little at times

At times I feel like swearing

I take good care of myself physically

I try to be careful about my appearance  
I often act like I am "all thumbs"  
I am true to my religion in my everyday life  
I try to change when I know I'm doing things that are wrong  
I sometimes do very bad things  
I can always take care of myself in any situation  
I take the blame for things without getting mad  
I do things without thinking about them first  
I try to play fair with my friends and family  
I take a real interest in my family  
I give in to my parents (Use past tense if parents are not living)  
I try to understand the other fellow's point of view  
I get along well with other people  
I do not forgive others easily  
I would rather win than lose in a game  
I feel good most of the time  
I do poorly in sports and games  
I am a poor sleeper  
I do what is right most of the time  
I sometimes use unfair means to get ahead  
I have trouble doing the things that are right  
I solve my problems quite easily  
I change my mind a lot  
I try to run away from my problems  
I do my share of work at home  
I quarrel with my family  
I do not act like my family thinks I should

I see good points in all the people I meet

I do not feel at ease with other people

I find it hard to talk with strangers

Once in a while I put off until tomorrow what I ought to do today

**APPENDIX C**  
**BACKGROUND INFORMATION FORM**  
**AND COVER LETTER**

1. Current weight \_\_\_\_\_ (lbs) Height \_\_\_\_\_
2. Body Frame (circle one).....SMALL.....MEDIUM.....LARGE
3. Member of a homemaker group..... (circle one) Y N
4. Currently participating in a Weigh Off program..... Y N
5. Have you participated in a Weigh Off program in the last 2 years?..... Y N  
 If so, did you lose the weight you wanted?..... Y N N/A  
 Weight lost \_\_\_\_\_ (lbs)  
 Have you kept those pounds off?..... Y N
6. Have you tried any other weight loss programs in the last 3 years?..... Y N  
 If so, please place a check (✓) next to the name of the program(s), then fill in the length of the program, weight lost (in pounds), and circle whether you have kept off those pounds.

Name of Program (✓ as appropriate)	Weight lost (lbs)	Length of program (weeks)	Have you kept those pounds off?
___ Consulting R.D.....	___	___	Y N
___ Diet Center.....	___	___	Y N
___ Exercise only.....	___	___	Y N
___ Liquid Nutrition Formula.....	___	___	Y N
___ Nutri-Systems.....	___	___	Y N
___ Personal Diet Plan.....	___	___	Y N
___ Physician.....	___	___	Y N
___ Weight Watchers.....	___	___	Y N
___ Other: _____	___	___	Y N

THANK YOU. PLEASE BEGIN THE QUESTIONNAIRE.

BACKGROUND INFORMATION FORM

Hello! As you know, the reasons why we become overweight are still unclear. This makes it difficult for us to lose even a few extra pounds. For my research, I want to better understand the overweight problem. Your Extension Home Economist is helping me conduct this research.

Please participate by completing the attached questionnaire and information sheet. Your responses, along with others, will determine if overweight and non-overweight women see themselves differently, and if these perceptions change with weight loss. This information will help dietitians, doctors, and others plan more effective weight loss programs.

Your answers will be confidential--we do not need names for this study. If you want a brief summary of the research findings, please leave your name and address with the Home Economist.

I appreciate your participation in this study and thank you for your time.

Sincerely,



Esther Winterfeldt, Ph.D.  
Major Advisor



Catherine J. Ramsey, R.D.  
Graduate Student in FNIA

PLEASE COMPLETE THE INFORMATION SHEET ON THE NEXT PAGE BEFORE ANSWERING THE QUESTIONNAIRE.

COVER LETTER TO PARTICIPANTS



APPENDIX D  
INSTRUCTIONS FOR ADMINISTERING  
THE QUESTIONNAIRES

## COOPERATIVE EXTENSION SERVICE

OKLAHOMA STATE UNIVERSITY

HOME ECONOMICS PROGRAMS

413 Home Economics West



COLLEGE OF HOME ECONOMICS

STILLWATER, OKLAHOMA 74078

(405) 624-6824

March 14, 1985

Ms. Nadine Bailey, M.S.  
Kiowa County Extension Office  
Courthouse Basement  
Hobart, OK 73651

Dear Ms. Bailey:

After we spoke, I mailed 60 questionnaires to your office. Please distribute these at your meetings within the next two weeks.

It will take between twenty and thirty minutes to give instructions, have participants fill out the questionnaires, and collect the completed forms.

Attached is an outline to help you administer the questionnaires. Although you will probably want to use your own words, the example shows the points you'll need to explain. Please note that each participant's completed answer sheet must be placed inside their own booklet for accurate data analysis. (See #11 on the next page.)

After participants complete the questionnaire, please place booklets in the envelopes I have provided and mail them back to me by April 25, 1985. I have included stamps to cover mailing costs. You may mail the envelopes at separate times.

Please review the outline. I will call you before you administer the questionnaires to see if you have any questions.

Thanks again,

*Cathy Ramsey*

Cathy Ramsey, R.D.

*Barbara J. Brown*

Barbara Brown, M.S., R.D.

jm

enclosure

This is an example of what you will want to say when you administer the questionnaires.

1. Cathy Ramsey, a graduate student in Foods & Nutrition at O.S.U., is conducting a research project. She hopes to:
  - see whether self-perceptions are different for overweight and non-overweight women,
  - see whether self-perceptions become more positive after women lose weight, and
  - gather information to evaluate our Weigh Off program.
2. She wants you to help by completing this questionnaire before you leave today. It should only take 20 to 30 minutes to answer.
3. Please turn to the inside of the booklet. On the answer sheet, record your age, marital status, and ethnic background. ONLY THESE 3 THINGS ARE NEEDED. (Allow time to fill in.)
4. Please begin by reading Miss Ramsey's note to you. (You may want to point to the yellow form on the inside of the booklet.)
5. Then complete the 6 questions on the inside. (Flip open yellow sheet.)
6. When you are ready to begin the questions in the booklet, you will need to align your answer sheet with the corresponding statement in the booklet. (You will probably want to demonstrate. Place answer sheet under page one, align statements 1, 3, 5, 19, etc. in the booklet to those lines on the answer sheet--these are all white spaces. You may even want to turn the page and show how to line up the second page--these are all gray spaces.)
7. You will be completing the right side of your answer sheet first, working toward the middle, and then the left side.
8. Respond by circling the choice (1 to 5) that describes how you generally see yourself. Use first instincts, it is best not to debate.
9. If you make a mistake, put an "X" through it, then circle the correct response.
10. Be sure to answer all the questions.
11. When you are finished, place your answer sheet inside the test booklet, this will ensure accurate data analysis.
12. Thank you for your time.

APPENDIX E

DATA FROM 138 PARTICIPANTS

## DATA FROM 138 PARTICIPANTS

## KEY

## CONDITION OF PREVIOUS WEIGHT LOSS:

SS = succeeded

FL = failed

OK = satisfied

## PREVIOUS WEIGHT LOSS PROGRAMS

NONE = no weight loss program

WO = Weigh-Off

PP = personal plan with exercise

LN = Liquid nutrition formula

MD = Physician

WW = Weight Watchers

HL = Herbal Life

JOG = Runner's diet

RD = Registered Dietitian

SD = Scarsdale diet

TOPS = Take Off Pounds Sensibly

DC = Diet Center

OT = Other

## NORMAL WEIGHT HOMEMAKERS

<u>Body Mass Index</u>	<u>Condition of Previous Weight Loss</u>	<u>Previous Weight Loss Program</u>	<u>Total Positive Score</u>	<u>Physical Self Score</u>
21.40	OK	NONE	284	41
23.40	FL	WO	332	58
22.50	OK	NONE	354	74
23.70	OK	NONE	360	62
23.10	OK	NONE	340	63
22.70	SS	PP	370	65
21.50	SS	PP	395	75
21.10	SS	PP	316	59
22.20	OK	NONE	335	58
20.50	OK	NONE	352	68
23.70	SS	WO	365	58
21.60	SS	WO	352	74
21.90	SS	LN*PP	293	63
23.50	OK	NONE	324	53
23.30	OK	NONE	386	76

<u>Body Mass Index</u>	<u>Condition of Previous Weight Loss</u>	<u>Previous Weight Loss Program</u>	<u>Total Positive Score</u>	<u>Physical Self Score</u>
21.90	FL	PP	382	69
19.10	OK	NONE	355	57
23.90	SS	PP	341	69
20.60	OK	NONE	313	54
19.40	OK	NONE	319	58
21.36	OK	NONE	382	75
23.40	OK	NONE	331	65
20.90	OK	NONE	352	68
22.10	OK	NONE	361	63
22.20	OK	NONE	390	84
20.10	OK	NONE	374	78
23.40	OK	NONE	344	60
21.40	OK	NONE	355	69
20.20	OK	NONE	343	70
20.50	SS	PP	261	60
19.60	OK	NONE	375	74
21.90	SS	PP	341	62
23.60	OK	NONE	352	66
21.70	OK	NONE	344	63
22.40	OK	NONE	355	59
20.60	SS	WW	383	73
22.60	OK	NONE	404	69

## OVERWEIGHT HOMEMAKERS

<u>Body Mass Index</u>	<u>Condition of Previous Weight Loss</u>	<u>Previous Weight Loss Program</u>	<u>Total Positive Score</u>	<u>Physical Self Score</u>
25.70	SS	MD*WO	326	58
28.10	SS	WO	317	48
24.70	SS	MD*PP	373	64
28.50	SS	WW	339	54
26.70	SS	WO	372	76
27.70	SS	WO	287	55
27.40	SS	WO	405	62
22.70	SS	WO	374	75
26.70	SS	HL	344	70
26.00	SS	JOG	384	67
28.40	SS	PP	378	77
28.24	SS	MD	348	59
26.60	OK	NONE	340	58
26.00	OK	NONE	346	59
26.30	OK	NONE	370	56
24.10	OK	NONE	353	60
27.50	OK	NONE	379	75
24.20	OK	NONE	344	56

<u>Body Mass Index</u>	<u>Condition of Previous Weight Loss</u>	<u>Previous Weight Loss Program</u>	<u>Total Positive Score</u>	<u>Physical Self Score</u>
24.50	OK	NONE	354	61
24.90	OK	NONE	346	71
24.30	OK	NONE	337	62
23.90	OK	NONE	349	55
28.50	OK	NONE	342	57
25.20	OK	NONE	335	54
26.70	OK	NONE	285	51
25.70	OK	NONE	322	62
26.80	OK	NONE	358	60
27.10	OK	NONE	378	71
25.50	OK	NONE	348	66
25.00	OK	NONE	371	73
24.90	OK	NONE	303	52
25.30	OK	NONE	366	59
24.20	OK	NONE	369	61
27.60	OK	NONE	271	53
24.40	FL	WW	326	58
25.00	FL	WO	256	43
25.90	FL	LN	300	59
29.10	FL	LN*WO	314	54
27.70	FL	RD	322	59
25.90	FL	PP*WO	336	57
24.50	FL	WO	294	70
26.90	FL	WO	317	57
26.60	FL	MD	273	54
26.70	FL	LN*MD	285	56
24.20	FL	WO	407	73
27.90	FL	WO	375	70
25.90	FL	WO	365	64
27.60	FL	SD*WO	356	59
28.90	FL	WO	342	62
29.40	FL	PP	347	57
29.20	FL	WO	358	74

## OBESE HOMEMAKERS

<u>Body Mass Index</u>	<u>Condition of Previous Weight Loss</u>	<u>Previous Weight Loss Program</u>	<u>Total Positive Score</u>	<u>Physical Self Score</u>
31.70	SS	PP	371	65
38.50	SS	PP	321	58
35.10	SS	PP*WO	356	54
38.90	SS	WO	333	59
32.35	SS	MD	350	65
30.80	SS	WO	304	43
32.50	OK	NONE	328	56

<u>Body Mass Index</u>	<u>Condition of Previous Weight Loss</u>	<u>Previous Weight Loss Program</u>	<u>Total Positive Score</u>	<u>Physical Self Score</u>
35.00	OK	NONE	339	60
31.12	OK	NONE	380	62
32.80	OK	NONE	327	60
33.40	OK	NONE	382	67
32.00	FL	WO	320	59
31.40	FL	WO	327	61
32.80	FL	WO	345	61
31.20	FL	MD*WO	272	51
34.20	FL	OT	313	48
36.30	FL	OT	315	58
38.60	FL	MD	298	54
31.10	FL	DC*MD*RD*WW	288	62
45.60	FL	OT	288	50
34.20	FL	MD	350	55
38.00	FL	WO	322	64
37.90	FL	WO	324	52
30.90	FL	WO	364	57
36.80	FL	WO	349	61

NORMAL WEIGHT  
WEIGH-OFF PARTICIPANTS

<u>Body Mass Index</u>	<u>Condition of Previous Weight Loss</u>	<u>Previous Weight Loss Program</u>	<u>Total Positive Score</u>	<u>Physical Self Score</u>
21.50	OK	NONE	337	64
22.70	OK	NONE	360	59
23.20	OK	NONE	392	77
20.30	SS	PP*WO	348	55
22.90	SS	PP	416	78
22.60	SS	WO	362	72



## OVERWEIGHT WEIGH-OFF PARTICIPANTS

<u>Body Mass Index</u>	<u>Condition of Previous Weight Loss</u>	<u>Previous Weight Loss Program</u>	<u>Total Positive Score</u>	<u>Physical Self Score</u>
24.20	OK	NONE	361	66
26.60	OK	NONE	379	78
27.46	OK	NONE	371	69
24.90	OK	NONE	369	63
26.60	SS	PP*WO	316	58
29.50	SS	TOPS	340	68
28.50	SS	WW	288	48
28.70	SS	WO	330	61
25.90	FL	PP	371	74
29.40	FL	WW	298	58
26.60	FL	WO	351	65
26.70	FL	WO	348	67
28.20	FL	WO	398	74
26.60	FL	MD*WW	398	74

## OBESE WEIGH-OFF PARTICIPANTS

<u>Body Mass Index</u>	<u>Condition of Previous Weight Loss</u>	<u>Previous Weight Loss Program</u>	<u>Total Positive Score</u>	<u>Physical Self Score</u>
31.40	OK	NONE	312	64
31.80	SS	PP	366	62
30.50	FL	WO	372	59
39.50	FL	WO	325	55
32.00	FL	MD*PP	317	50

VITA

Catherine Jean Ramsey

Candidate for the Degree of

Master of Science

Thesis: PARTICIPATION IN A WEIGHT REDUCTION PROGRAM RELATED TO  
SELF-CONCEPT SCORES

Major Field: Food, Nutrition and Institution Administration

Biographical:

Personal Data: Born the daughter of Roland R. and Joann V. Ramsey  
on May 20, 1958, in Kansas City, Missouri.

Education: Graduated from Hickman Mills High School in May, 1976,  
received Bachelor of Science degree in May, 1980; completed  
requirements for Master of Science degree from Oklahoma State  
University in December, 1985.

Professional Experience: Dietetic Technician at Kansas University  
Medical Center, May, 1980 to June, 1981; Dietetic Technician  
Supervisor at Kansas University Medical Center, July, 1981 to  
July, 1983; Administrative Dietetic Intern at Oklahoma State  
University, August, 1983 to May, 1984; Teaching Assistant at  
Oklahoma State University, August, 1984 to May, 1985;  
Nutritionist for a Weight Management Camp for Adolescents at  
Camp Redlands in Stillwater, Oklahoma, June, 1985 to July,  
1985.

Professional Organizations: American Dietetic Association,  
Oklahoma Dietetic Association, and Omicron Nu.