

# EXPLORING THE FACTORS ASSOCIATED WITH SIGNIFICANT WEIGHT LOSS AND MAINTENANCE IN OBESE ADULTS

by

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(Under the Direction of DAVID M. DEJOY)

## ABSTRACT

Obesity is a major public health concern in the United States with an estimated 33.3% of noninstitutionalized U.S. adults age 20 years and over being obese. The purpose of this study has been to determine how some obese adults were able to lose a significant amount of weight and maintain that weight loss over time. The sample ( $N = 11$ ) included obese or previously obese adults, 18 years of age and older who intentionally lost a significant amount of body weight (10% or more) and maintained that weight loss for at least 1 year. In-depth, individual interviews were conducted with all the participants, and coding, constant comparison of the data, and memo writing were used to analyze the data. Additionally, participants were asked to take part in 2 components of the study; photo elicitation and 24-hour diet and physical activity recalls. The range of weight loss was 11.9% to 28.6% maintained for 1 to 7.5 years. Changes in dietary intake, self-regulating, self-monitoring, regular physical activity, regular self-weighing, were used for weight loss and maintenance. Social support was a facilitator for weight loss, but was not found to have an effect on weight maintenance. The most common motivation for weight loss was participant's self-appearance, and health-related reasons were also a significant motivator for both weight loss and weight maintenance. Weight maintenance transition

generally occurred when participants met their weight loss goal, felt comfortable at the weight loss they had achieved, or were unable to lose additional weight using the regimes they had developed.

INDEX WORDS: Weight Loss, Weight Maintenance, Obesity, Qualitative, Grounded Theory

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## CHAPTER 1

### INTRODUCTION

Obesity is a major public health concern in the United States. Obesity refers to excess body fat and is a term that is applied to anyone whose weight range is greater than what is considered healthy for a given height. People are classified as obese if they have a body mass index (BMI) of greater than or equal to  $30 \text{ kg/m}^2$  (Centers for Disease Control and Prevention, CDC, 2006). BMI is a formula that connects weight and height, and it is commonly used to assess the relationship between body weight and disease. BMI is advantageous to use because it accounts for height in the evaluation of weight and it provides an adequate classification for adults (Field, Barnoya, & Colditz, 2002). BMI is only one tool for defining obesity. In addition, waist circumference and other disease risk factors associated with obesity (e.g., high blood pressure) can also be used to assess obesity. Obesity is the result of a positive energy imbalance over a period of time. Weight gain occurs when calories consumed are greater than the calories burned. In addition, individual behavior, environmental factors, and genetics can all contribute to obesity (CDC, 2006). This chapter describes background information related to obesity as well as the suggested treatment of obesity, purpose and rationale of the study, research plan, and research questions.

#### Prevalence of Obesity

According to the 2005-2006 National Health and Nutrition Examination Survey (NHANES), an estimated 33.3% (over 72 million) of noninstitutionalized U.S. adults age 20 years and over are obese. This represents an increase of 10.4% from NHANES III, which took

place from 1988 to 1994. There are also approximately 5% of adults who are considered extremely obese (BMI greater than or equal to  $40 \text{ kg/m}^2$ ) (National Center for Health Statistics, 2007). Furthermore, globally there are an estimated 300 million people classified as obese (World Health Organization, WHO, 2003).

The prevalence of obesity continues to increase regardless of the publicity about the problem, the pressures to be thin, and the countless industries that promote dieting and weight loss (Horgan & Brownell, 2002). These rising numbers indicate a need for more research in obesity prevention and control to curb the spread of this epidemic (American Obesity Association, 2006).

### Etiology of Obesity

Over time obesity research has made progress in identifying causes and treatments. Research has provided a greater understanding of obesity as a chronic disease caused by a complex interaction of genetic, metabolic, behavioral, psychological, and environmental factors. The rising epidemic of obesity is a reflection of changes in society and behavioral patterns of communities over recent decades. As incomes rise and populations become more urban, diets once high in complex carbohydrates have been replaced with diets high in fats, saturated fats, and sugars. A decrease in physically demanding work, increased use of automated transportation, increased technology in the home and workplace, and more passive leisure pursuits have all contributed to less physical activity worldwide (WHO, 2003).

### Consequences of Obesity

The high rates of obesity raise concerns because of their implications for overall health. Being obese increases the risk of numerous diseases, such as hypertension, type 2 diabetes, and

heart disease, just to name a few (CDC, 2006). Significant weight loss and successful weight loss maintenance are needed to reduce the prevalence of these diseases.

An additional factor to consider is the medical expenditures that result from obesity. According to Finkelstein, Fiebelkorn, and Wang (2003) the average increase in annual medical spending associated with obesity is 37.4% (\$732). This spending ranges from 26.1% (\$125) for out-of-pocket expenses to individuals to 36.8% (\$1,486) for Medicare and 39.1% (\$864) for Medicaid. For the U.S. adult population, 5.3% of all medical spending is related to obesity.

There are also many social consequences of being obese in a society that values thinness and fitness. There is a strong prejudice against obesity with obese individuals reporting discrimination at work, at school, and in health care. Obese individuals are less likely to be hired for a job, more likely to receive poor grades in school, and more likely to be viewed negatively by health care professionals (Phul & Brownell, 2001). Obesity also plays a role in quality of life, and research has shown a linear relationship with increased BMI and decreased physical functioning and vitality (Field, Barnoya, & Colditz, 2002).

#### Attempting Weight Loss and Regular Physical Activity

The Behavioral Risk Factor Surveillance System (BRFSS, 2000) is a random telephone survey of residents from 49 states and the District of Columbia. In the 1996 survey, respondents were asked if they were trying to either lose weight or maintain weight. Trying to lose weight was reported by 28.8% of men and 43.6% of women, and weight maintenance was reported by 35.1% of men and 34.4% of women. In addition, respondents were asked if they used dietary changes or physical activity to lose or maintain their weight. Using dietary changes to lose weight or to maintain weight was reported by 86.6% of men and 92.2% of women and using physical activity to lose weight or to maintain weight was reported by 66.9% of men and 65.7%

of women (Serdula et al., 1999). These data indicate that a fair percentage of the population is trying to lose weight and many of these individuals are using diet and physical activity to do so.

Another component of the BRFSS (2000) is to ask questions about participation in moderate and vigorous physical activities. Respondents were asked if they do moderate activities for at least 10 minutes at a time, such as brisk walking, bicycling, vacuuming, gardening, or anything else that causes some increase in breathing or heart rate in a usual week. In addition, respondents were asked whether they do vigorous activities for at least 10 minutes at a time, such as running, aerobics, heavy yard work, or anything else that causes large increases in breathing or heart rate in a usual week. If they answered “yes”, the respondents were then asked how many days per week they engaged in the activities and the amount of time spent in activities on each of those days. Respondents were considered to be engaging in regular physical activity if they performed at least 30 minutes per day of moderate-intensity activity on three or more days per week. The prevalence of regular physical activity was 46.7% of women and 49.7% of men. These data indicate that only about half of the population is currently engaging in regular physical activity.

### Treatment of Obesity

The National Heart, Lung, and Blood Institute (NHLBI, 1998) has published the *Clinical Guidelines for the Identification, Evaluation, and Treatment of Overweight*. This report suggests that weight loss interventions should include a low-calorie diet, physical activity, and behavior therapy. A low-calorie diet should consist of an energy deficit of 500 to 1,000 kilocalories per day. This will yield a 1 to 2 pound weight loss per week. Successful weight reduction is more likely to occur when individuals are provided with dietary education. This education should include these components: (1) energy value of foods; (2) food composition; (3) reading nutrition



labels; (4) purchasing healthier foods; (5) using healthy food preparation techniques; (6) avoiding over consumption of high-calorie foods; (7) consuming adequate water; (8) reducing portion sizes; and (9) minimizing alcohol consumption. In addition, individuals who have regular (greater than once a month) contact with weight loss professionals during the periods of active weight loss appear to be more successful. However, no clinical trials have tested the efficacy of the frequency of treatment contact on weight loss success.

Physical activity is an essential component of weight loss because it leads to greater energy expenditure. The NHLBI (1998) clinical guidelines recommend that obese individuals initiate physical activity slowly and increase the intensity gradually. Moderate intensity exercises are recommended for 30 to 45 minutes, 3 to 5 days per week. In addition, a reduction in sedentary time is also recommended. This includes parking farther away from work or shopping centers, taking the stairs instead of elevators, gardening, dog walking, etcetera. Weight loss professionals should encourage overweight or obese individuals to plan a weekly schedule of physical activity, budget the time into their schedule, and keep a diary or journal of the activities performed. Behavioral therapy includes the idea that behavior is learned and therefore can be changed or modified.

Behavior therapy techniques suggested by the NHLBI clinical guidelines (1998) include these: (1) self-monitoring of dietary intake and physical activity; (2) stress management; (3) stimulus control of situations that may prompt unhealthy behavior; (4) problem solving to correct unhealthy behavior; (5) use of rewards for positive behavior changes; (6) cognitive restructuring of weight loss myths and unrealistic goals or expectations; and (7) social support.

During the 1990s, participants involved in behavioral programs were, on average, successful at losing weight. These participants lost an average of 9 kg, or 10% of their body

weight. Even though adults have proven to be successful in losing weight, they have not been as successful in maintaining this loss. Over the first year of follow-up, participants regained approximately one-third of their weight loss and were generally back to baseline weight after 5 years (Wing, 2002). In addition, one study that followed participants ( $N = 717$ ) long-term found that only 5% of women and 7% of men were successful in maintaining a 5% reduction in weight over 9 years (Sarlio-Lähteenkorva, Rissanen, & Kaprio, 2000).

Much of the information about successful weight loss maintenance comes from individuals who are part of the National Weight Control Registry (NWCR, 2006). The NWCR was created to study long-term successful weight loss maintenance. Currently there are over 5,000 members in the NWCR. Results from studies examining members of the NWCR have resulted in positive strategies because their members are required to have lost at least 30 pounds and kept it off for at least 1 year. The average weight loss and maintenance of NWCR members is 30 kg (66 pounds) for 5.5 years. Ninety percent of participants have been unsuccessful at losing weight in the past. The only explanation for this is that NWCR members report a greater commitment, stricter dieting, and a greater role of exercise. The majority of the members (89%) reported that they modified their dietary intake and physical activity to achieve success. The dietary changes that were reported most often included restricting intake of certain types of foods, decreasing portion sizes, and counting calories. Average physical activity reported included 1 hour of moderate intensity exercise per day, and walking was the most frequently reported activity (Klem, Wing, McGuire, Seagle, & Hill, 1997; McGuire, Wing, Klem, Seagle, & Hill, 1998; Wing & Hill, 2001).

## Purpose and Rationale

The purpose of this study has been to determine how some obese adults were able to lose a significant amount of weight and maintain that weight loss over time. Increasing the knowledge of the approaches and strategies that can lead to promoting significant weight loss and successful weight loss maintenance is important. This knowledge can help to increase our understanding of the types of lifestyle changes that work to keep people fit. One way to approach this topic is by qualitatively exploring obese people's lives and experiences in greater detail during their attempts to succeed in and maintain weight loss. The identification of those influences associated with successful weight loss and weight loss maintenance can improve our understanding of the behaviors useful in lowering body weight. This information can lead to better strategies, treatments, and advice for the obese population.

The main assumption was that, although most successful weight loss is an individual process, there are overlapping strategies (e.g., diet and exercise) used by most successful adults. This type of information was important to gather from these participants and was addressed in the study. However, a greater emphasis was placed on learning how the participants were able to accomplish their weight loss and weight maintenance success. This project revealed the beneficial weight loss and weight maintenance approaches, as well as the lifestyle changes used by obese and formerly obese adults. Participants were able to provide a more comprehensive understanding of life issues throughout their weight loss and weight maintenance. To date, little research has been done to provide successful obese adults the opportunity to speak in-depth about their weight loss and weight maintenance journey. This study allowed these adults to provide their success stories, which in turn can strengthen the understanding of their success.

## Research Plan

For this project, the target population included obese or previously obese adults, 18 years of age and older. Participants at the time had or previously had a BMI of greater than or equal to 30 kg/m<sup>2</sup>. Participants also intentionally lost a significant amount of body weight (10% or more) and maintained that weight loss for at least 1 year. Exclusion criteria included people who unintentionally lost weight, or people who had lost weight because of pregnancy, disease or illness, gastric surgery, weight loss medications, liquid diets, or eating disorders. To gather rich qualitative data, in-depth, individual interviews were conducted with all the participants. Coding, constant comparison of the data, and memo writing were used to analyze the data.

Participants were asked to take part in two additional components of the study. The first was a photo elicitation component. Participants were given a disposable camera and were asked to take pictures of people, objects, or places in their environment that either aided or hindered their weight loss and weight loss maintenance. Participants were asked to describe what the picture meant and how it affected their weight. For the second component, participants were asked to complete three 24-hour dietary and physical activity recalls. Participants were asked to indicate all foods and beverages consumed, the approximate portion size of the foods and beverages consumed, and any physical activity engaged in on two weekdays and one weekend day. These 24-hour recalls were used to determine the caloric intake and physical activity completed by the participants and to add to the validity of the participant's self-reported diet and physical activity levels.

To frame my study, I posed the following questions:

1. What common strategies and approaches are used by adults who are successful at weight loss? To what extent are these strategies and approaches used?

2. How do adults learn what type of approach to take to lose weight and keep it off? Once adults learn about the beneficial strategies, how does this affect their weight loss process?
3. How do adults who have lost and maintained a significant amount of weight conceptualize their daily eating?
4. How are these adults able to be successful at maintaining their weight loss? What are the most important approaches and strategies used to achieve this and to what extent are these strategies and approaches used?
5. Are weight maintenance strategies different from weight loss strategies?
6. What motivates adults to start the weight loss process and then what motivates them to keep the weight off? What other motivators do these individuals report?
7. When and how do adults transition from actively losing weight to attempting to maintain their weight?

## CHAPTER 2

### REVIEW OF LITERATURE

This chapter describes a review of the literature related to obesity. In particular, treatment and benefits of successful weight loss among obese adults is discussed. Literature associated with the percentage of adults who are able to maintain their weight loss long-term, the health benefits of significant weight loss, the percentage of adults who are currently attempting to lose weight, and the strategies and treatments available for obese adults are provided.

#### Prevalence of Weight Loss and Maintenance

Studies that have followed obese or overweight participants long-term have shown only modest benefits in weight loss and weight loss maintenance. Sarlio-Lähteenkrova, Rissanen, and Kaprio (2000) followed initially overweight adults ( $N = 911$ ) to examine weight loss maintenance at 6- and 15-year follow-ups. To describe factors associated with long-term maintenance of weight loss, the researcher compared weight loss maintainers to both overweight individuals and weight loss regainers. The authors found that only 5.1% of women and 6.6% of men had maintained a 5% weight loss during a 9-year follow-up period. For men, health-related issues and better physical condition motivated them to maintain weight loss. For women, low initial well-being and health-compromising behaviors that improved after weight loss motivated them to maintain weight loss.

Crawford, Jeffery, and French (2000) examined the prevalence, distribution, and correlates of successful weight loss and weight loss maintenance over a 3-year period in a community-based sample. Participants ( $N = 854$ ) were randomly assigned to one of three

treatment conditions. Half of the participants were assigned to a control group, one-quarter received education through monthly newsletters, and one-quarter received education plus participation incentives. The two intervention groups received the same educational and behavioral information that focused on monitoring weight, increasing fruit and vegetable intake, reducing intake of high-fat foods, and walking three times per week for at least 20 minutes. Variables that were measured included these components: demographic information, body weight, weight change, successful weight control (5% or more of baseline body weight between baseline and 1 year follow-up), weight control behavior, dietary intake, fast food consumption, and physical activity. In addition, television viewing was measured at baseline and 1-year follow-up. To my knowledge, no other obesity study examining significant weight loss has reported on television viewing as a potential barrier to weight loss.

Within the first year, slightly more than half (53.7%) of the participants regained their body weight lost after treatment. Changes in weight at year one were not associated with treatment condition, age, education, marital status, participant type, ethnicity, baseline BMI, whether subjects had intentionally tried to lose or maintain weight in the previous year, total caloric intake, and the numbers of hours per week of television watched. However, weight change at year one was inversely related to change in year one physical activity and positively related to year one number of fast food meals consumed. Ninety-six participants (11.2%) had lost 5% or more of their baseline body weight at 1-year follow-up. Of the 96 participants who had lost weight, 39 (4.5%) were able to successfully maintain their weight loss for a further 2 years. Two hundred and nine participants (24.5%) successfully avoided any weight gain over 3 years (Crawford et al., 2000).

Byrne, Cooper, and Fairburn (2003) examined weight maintenance and relapse in obese adults. The authors investigated, among women with obesity who maintained weight loss ( $n = 28$ ), the psychological factors associated with successfully maintaining the lower weight and compared them with weight re-gainers ( $n = 28$ ) and stable healthy weight adults ( $n = 20$ ). This study used a qualitative design of in-depth, individual interviews and group interviews to assess the characteristics of successful weight maintenance.

The percentage of weight lost that was regained was significantly different for maintainers (5.6% of weight regained) than for re-gainers (110.6% of weight regained). Many behavioral, cognitive, and affective factors differed between the three groups. Adherence to a low-fat diet was used more by maintainers (87%) than by healthy weight (67%) and re-gainers (0%). Engaging in regular physical activity was used more by healthy weight (80%) and maintainers (73%) than by re-gainers (7%). Monitoring weight frequently was used more by healthy weight (80%) and maintainers (73%) than by re-gainers (40%). Responding to adverse life events by eating was used more for re-gainers (91%) than by maintainers (20%) or healthy weight (11%). Eating used to regulate mood or act as a distraction was used more by re-gainers (90%) than by maintainers (20%) or healthy weight (0%) (Byrne et al., 2003).

Ogden (2000) examined the correlates of long-term weight loss in a group comparison study of obesity. The study aimed to examine the differences between individuals who have been obese and who have successfully lost weight and maintained this loss for at least 3 years, obese individuals who have lost weight and regained it, and individuals who have remained obese for at least 3 years. Measures of the study included demographic characteristics, historical factors, help-seeking behaviors, and psychological factors. On average, weight loss maintainers reported a lower highest BMI ( $36.9 \text{ kg/m}^2$ ), compared to weight loss re-gainers ( $38.6 \text{ kg/m}^2$ ) and



stable obese ( $41.8 \text{ kg/m}^2$ ). Weight loss maintainers were less likely to be currently dieting, reported a greater belief in confidence as a motivation, and reported greater use of healthy eating.

Roberts and Ashley (1999) examined some of the characteristics of successful weight losers (SWLs) identified during an intensive coronary heart disease (CHD) risk factor modification program over an 8-year period. Demographic and clinical characteristics of SWLs for at least 3 months were compared with unsuccessful controls (UWLs). Both quantitative and qualitative measures were used to explain the participants' views on the factors that lead to successful weight loss and weight loss maintenance. Successful weight loss was defined as achieving and maintaining a 10% weight loss for at least 3 months. This study included two parts. The first part was a retrospective case control analysis comparing the clinical and demographic characteristics of the SWL group with those of the UWL group ( $N = 198$ ). The second part was a qualitative exploration of the SWL group using semi structured interviews.

Eighteen (9%) of the participants were successful in weight loss. Successful participants were more likely to be women (13% compared to 6% of males), slightly older (58.4 years compared to 56.7 years), slightly heavier (BMI of  $31 \text{ kg/m}^2$  compared to  $29.3 \text{ kg/m}^2$ ), and more likely to smoke (12% compared to 8%). However, none of these factors were statistically significant. The factors that did reach high statistical significance were initial and follow-up cholesterol levels. Successful participants had higher mean initial cholesterol levels compared to unsuccessful participants (7.8 mmol/L compared to 5.6 mmol/L). Successful participants also had, on average, higher follow-up cholesterol levels than unsuccessful participants (6.9 mmol/L compared to 4.6 mmol/L). The authors suggest that high CHD risk factor status is associated with success by raising health-related anxiety to a critical level to motivate change (Roberts & Ashley, 1999).

Qualitative factors associated with an initiation of successful weight loss included health-related anxiety, perception of personal interest by the primary health care team, perception of physical appearance, and raising the issue of weight. Qualitative factors associated with maintenance of weight loss included self-generated positive feedback, positive feedback from others, support from spouse or friend, perception of a controlling doctor or nurse, support from a slimming group, and a radical change in thinking about healthy living (Roberts & Ashley, 1999). One limitation to the study was the short follow-up period (3 months), which may not have allowed for enough time to determine successful weight loss based on previous recommendations (Crawford, Jeffery, & French, 2000; Institute of Medicine, 1995; Katz et al., 2005; NHLBI, 1998; Wing & Hill, 2001).

Westenhoefer, von Flack, Stellfeldt, and Fintelmann (2004) examined behavioral characteristics of participants with successful long-term weight loss. Participants were recruited from 400 German centers of the BCM Diet program (a commercial weight-loss program). Generally, participants attended group meetings every 2 weeks. The program was open ended with an average length of participation of 4 to 5 months. The program aims at inducing a lasting change of diet and eating behavior. Eight behavioral characteristics were measured: rigid and flexible control of eating behavior; meal rhythm; meal situation; food choice; restriction of quantity of food; physical activity; and coping with stress. Successful weight loss reduction was considered a loss of 5% or more from baseline to the 3-year follow-up. The mean loss of weight was  $19.8 \pm 18.9$  pounds after 1 year and  $10.7 \pm 18.4$  pounds after 3 years. Ten percent of all participants maintained a weight loss of 5% or more from baseline. Increased success was highest for subjects who maintained five to eight behavioral characteristics, indicating that the likelihood of success increases with the number of behavioral characteristics.

Overall, studies that have reported long-term results of significant weight loss and weight loss maintenance have shown disappointing results (Table 1). The range of participants who were successful in maintaining weight loss varied from 5.1% to 10% of participants from 3 months to 9 years (Crawford et al., 2000; Roberts and Ashley, 1999; Sarlio-Lahteenkrova et al., 2000; Westenhoefer et al., 2004). Factors reported by participants that have aided in their weight loss and weight loss maintenance include health-related anxiety, following a low-fat diet, increasing physical activity, and self-monitoring weight (Byrne et al., 2003; Roberts & Ashley, 1999).

Table 1

*Prevalence of Weight Loss Maintenance*

<b>Study</b>	<b>Sample Size (N)</b>	<b>% Weight Loss</b>	<b>% Participants who Maintained Weight Loss</b>	<b>Follow-Up Period</b>
Sarlio-Lähteenkrova et al., 2000	911	5% body weight	5.1% of women; 6.6% of men	9 years
Crawford et al., 2000	854	5% body weight	4.5%	3 years
Roberts & Ashley, 1999	198	10% body weight	9%	3 months
Westenhoefer et al., 2004	1,247	5% body weight	10%	3 years

**Benefits of Intentional Weight Loss**

Weight loss is known to improve many risk factors for disease, such as impaired glucose tolerance (IGT), hyperlipidemia, and high blood pressure (HTN) (Maggio & Pi-Sunyer, 1997).

Modest loss of weight (2% to 6%) can prevent HTN and diabetes among those who are at high risk (Gregg & Williamson, 2002). Several studies have been conducted to examine the effects of intentional weight loss on mortality.

Willamson et al. (2000) examined the effects of intentional weight loss on mortality in overweight adults with diabetes. The participants ( $N = 4,970$ ) were enrolled in the American Cancer Society's Cancer Prevention Study I. A prospective analysis of mortality was completed and participants were followed for 12 years (1959 to 1972). Participants were asked at baseline if they had any change in weight and if so, if it was a loss or gain. Thirty-four percent of the participants reported they had lost some weight. The authors concluded that overweight diabetics who reported intentional weight loss had a 25% reduction in mortality compared with those who had not intentionally lost weight. The largest reduction in mortality (33%) was found in those who reported a 10% to 15% loss of body weight.

In an additional study on the effects of weight loss, Whelton et al. (1998) conducted the Trial of Nonpharmacologic Interventions in the Elderly (TONE) to determine the effects of sodium restriction and weight loss in older adults with HTN. Men and women aged 60 to 80 years who had an average systolic blood pressure of less than 145 mm Hg and diastolic blood pressure less than 85 mm Hg, while taking a single antihypertensive medication were eligible to participate. Obese participants ( $n = 585$ ) (BMI greater than or equal to  $27.8 \text{ kg/m}^2$  for men and greater than or equal to  $27.3 \text{ kg/m}^2$  for women) and nonobese participants ( $n = 390$ ) were randomly assigned to one of the following groups: (1) sodium restriction; (2) weight loss; (3) sodium restriction and weight loss; or (4) usual care. The sodium restriction goal was to consume no more than 80 mmol/d (1,800 mg) per day and the weight loss goal was to achieve and maintain a loss of 4.5 kg (10 pounds) or greater. The authors observed that there was

approximately a 30% decrease in the use of antihypertensive medication. This was achieved with an average reduction of sodium of 40 mmol/d or by reducing body weight 3.5 kg. In addition, those participants in the combined treatment group were the most successful in maintaining appropriate blood pressure control after withdrawal of their antihypertensive medication.

Gregg and Williamson (2002) conducted a review of the health consequences associated with weight loss. The authors reported five conclusions as a result of the review. First, weight loss is related to many short-term benefits, primarily in terms of reduced risk factors for CHD and diabetes. Second, intentional weight loss does not increase mortality, but may decrease mortality, especially among people with obesity-related health conditions. Third, modest weight loss and lifestyle interventions can prevent HTN and diabetes among those at high risk for the diseases. Fourth, it is unclear whether intentional weight loss reduces CHD incidence. Fifth, there is a lack of studies on the effects of intentional weight loss on important health outcomes (p. 138).

### Weight Loss Attempts and Strategies

One factor related to obesity prevention is the prevalence of weight-loss attempts and strategies reported by Americans. According to the 2000 Behavioral Risk Factor Surveillance System (BRFSS), 28.8% of men and 43.6% of women indicated that they were currently trying to lose weight. Linde, Erickson, Jeffery, Pronk, and Boyle (2006) examined the relationship between prevalence and duration of weight loss strategies and actual weight lost by members enrolled in a weight loss trial. Participants were part of the Weigh-to-Be project, a collaborative project between the University of Minnesota and Health Partners, a large Minnesota managed care organization ( $N = 1801$ ). Measures collected at baseline included age, gender, educational

attainment, ethnicity, marital status, and smoking status. Baseline and 24-month weights were measured using a digital scale. Self-reported weights were collected at 6, 12, and 18 months, and were adjusted by +1.5 kg for men and +1.7 kg for women to account for self-report bias. At the four treatment times, participants were asked the following item to assess their engagement in weight loss strategies: “indicate whether you did this during the past six months: reduce the number of calories eaten, increase exercise levels, increase fruits and vegetables, decrease fat intake, cut out sweets and junk food, or reduce the amount of food eaten” (Linde et al., 2006, p. 3). According to the results, many participants reported using multiple weight loss strategies (Table 2, Linde et al., 2006, p. 3).

Table 2

*Prevalence and Duration of Weight Loss Strategies Over two years*

<b>Strategy</b>	<b>Prevalence (N)</b>	<b>Mean duration in weeks</b>
Reduce Calories	76.4% (1347)	27.2
Increase Exercise	70.4% (1243)	24.7
Increase Fruits/Vegetables	74.3% (1296)	31.4
Decrease Fat Intake	74.9% (1309)	31.2
Cut Sweets/Junk Food	67.9% (1193)	26.0
Reduce Amount of Food	77.4% (1360)	27.6

Mean weight losses at 6, 12, and 18 months were 0.92 kg, 1.27 kg, and 1.58 kg, respectively, and by the 24-month follow-up, participants had lost 1.35 kg on average. Dietary strategies used between baseline and 24 months were associated with weight loss at 24 months, and those who did not engage in each strategy gained weight during this period (Linde et al.,

2006). Although the participants who used the weight loss strategies did not lose a significant amount of weight, they were able to prevent weight gain, unlike the participants who did not use the weight loss strategies. Whether additional weight loss strategies (e.g., self-monitoring of weight) were used by the participants was not reported.

Westenhoefer (2001) cautioned that inducing behavioral changes during weight loss treatment remains a challenge. These behavioral changes are also difficult to maintain over time, precluding long-term weight maintenance. Obesity treatment requires long-term behavioral change training to promote lasting success. The author reported on a 1-year follow-up of the Lean Habits Study. This is an ongoing prospective longitudinal study aimed at identifying differences between successful weight maintainers and weight re-gainers ( $N = 1359$ ). Behavioral dimensions that subjects with more successful weight loss used included flexible control of eating behavior, regular meal rhythm and frequency, quality of food (e.g., low-fat foods, and fresh fruits and vegetables), meal situations (e.g., taking time to sit down to eat), restriction of quantity of food, and coping with stress. The author stated that simultaneous availability of many different strategies increased the probability of success, and changes in lifestyle as a whole are necessary for long-term weight maintenance.

Bidgood and Buckroyd (2005) qualitatively explored obese adult's experiences and feelings during their attempts to lose weight and maintain weight loss. Semi structured interviews and focus groups were conducted with obese men and women ( $N = 18$ ). Following the interviews and focus groups, five themes emerged that represented factors preventing success. The five themes were: (1) excessive eating can lead to food addiction; (2) prejudice and stigmatization restrict the lifestyle of obese people and hinder treatment; (3) dieting, with or without exercise, has limited success as a treatment for obesity; (4) the concerns of obese people

are not being heard by society in general; and (5) the lifestyle change needed to overcome obesity can seldom be maintained without on-going help.

Several interesting statements were made by the obese participants in this study. One participant indicated, “I am addicted to food. It’s like I think an alcoholic will always have a drink [ing] problem. I don’t think I can envisage a time when I’m not addicted to food” (p. 224). When speaking about diet and exercise one participant said,

The exercise does do what it says, it gives you a buzz. You’ve just got to get round to it. And if I have enough exercise, particularly in the evening, I have the most wonderful night’s sleep and I wake up and I feel great. I think you need to start the diet and actually stick to it; then I think the exercise will follow because you’ll feel like doing it more (p. 225).

Finally, in discussing the concerns that obese people are not being heard by society, one participant said, “I don’t think that a lot of people actually have an understanding of what it is like to be overweight. They have no understanding if you have a weight problem” (p. 226). In addition, another participant reported, “There needs to be a move towards acceptability [of obese people] and a move for supportive classes of truly large people in the community” (p. 226). The use of a qualitative design for this study provided a deeper understanding of the issues obese adults face.

#### National Weight Control Registry

Much of the information about successful weight loss maintenance comes from individuals who are part of the National Weight Control Registry (NWCR) (2006) (pg. 14). Wing and Hill (2001) examined the most frequently used behaviors to maintain weight loss by members of NWCR. First, these individuals engaged in high levels of physical activity. Second,



these individuals reported eating a diet low in fat and high in carbohydrate. Third, these individuals reported regular self-monitoring of weight. The authors suggest that the difficulty in maintaining weight loss could be due to the difficulty in making permanent changes in diet and exercise behavior. Sustaining weight loss over time contributes to maintaining the lower weight. NWCR participants who maintained weight loss for 2 to 5 years decreased their risk of regain by 50%.

An additional study that examined participants from the NWCR was by Klem, Wing, McGuire, Seagle, and Hill (1997). The authors investigated the demographic and behavioral characteristics of a large sample ( $N = 784$ ) of individuals who were successful at weight loss maintenance. Because entry into the NWCR is based on self-reported height and weight, participants were asked to provide documentation of weight loss (e.g., a “before and after” photograph or names of individuals able to verify the weight loss). Including this type of verification adds to the reliability of the self-reported information. Only 19% of the sample was unable to provide some type of weight loss documentation. Measures used included demographic and weight characteristics, weight loss methods, weight maintenance methods, previous weight loss attempts, difficulty of weight loss and weight maintenance, and effect of weight loss on other areas of life.

On average, participants lost 30 kg ( $28.7 \pm 13.6$  kg for women and  $35 \pm 13.64$  kg for men). Also, 14% of participants ( $n = 11$ ) lost greater than 45.4 kg (100 pounds). Participants had, on average, maintained the weight loss for 5.5 years, and 16% had maintained a loss of greater than 13.6 kg for more than 10 years. Participants reported on the dietary changes that they made to achieve weight loss. These data indicate that successful weight loss and maintenance are achievable through a wide variety of dietary methods (Table 3, Klem et al.,

1997, p. 242). Fifty-five percent of the participants reported that they used a formal program or professional assistance to lose weight, and the other 45% reported that they had lost weight on their own. In addition, approximately 77% of the participants reported a triggering event or incident that preceded their weight loss (e.g., medical event or diagnosis or emotional event). Finally, 75% of the participants reported that they weighed themselves at least once per week (Klem et al., 1997).

NWCR members were also investigated in a study by McGuire, Wing, Klem, Seagle, and Hill (1998). The purpose of this study was to compare the weight loss maintenance strategies of individuals who either lost weight on their own ( $n = 447$ ), used organized programs (e.g., Weight Watchers, Jenny Craig, Overeaters Anonymous) ( $n = 313$ ), or used formal programs with liquid formula diets (e.g., Optifast, HMR, or New Directions) ( $n = 133$ ). Measures of the study included demographic and weight history, difficulty of losing and maintaining weight, and method of weight maintenance. This study was unique in that it used liquid diet users as a comparison group. The liquid formula group differed from the other two groups in that they were older, heavier, and more likely to have had a medical disorder or trigger for their weight loss. The liquid formula group also had lost more weight, maintained it for a shorter period of time, and reported more difficulty maintaining their weight loss than losing weight compared with the other two groups.

Table 3

*Dietary Strategies Used to Achieve Weight Loss*

<b>Strategy</b>	<b>Women (n = 623)</b>	<b>Men (n = 150)</b>	<b>Total Sample (N = 773)</b>
Restricted intake of certain types of foods	87.8%	86.7%	87.6%
Ate all foods, but limited quantity	47.2%	32.0%	44.2%
Counted calories	44.8%	39.3%	43.7%
Limited % of daily energy from fat	31.1%	36.7%	33.1%
Counted fat grams	25.7%	21.3%	25.2%
Used diet exchanges	25.2%	11.3%	22.5%
Used liquid formula	19.1%	26.0%	20.4%
Ate only 1 or 2 types of food	5.1%	6.7%	5.5%

Participants who lost weight on their own were more likely to weigh themselves at least once a week, were more likely to regulate their body weight through exercise rather than dietary strategies, and reported greater difficulty losing than maintaining weight. This group also

reported a longer duration of weight loss maintenance years (6.6 years) compared to the organized program group (5.2 years) and the liquid formula diet group (3.6 years). Despite some of these differences, the authors concluded that all three groups maintained their weight loss by continuing to consume a low-calorie, low-fat diet and performing high levels of physical activity (McGuire et al., 1998).

The NWCR is an example of how large numbers of people can be successful at weight loss and weight loss maintenance, regardless of some of the different strategies used. Based on the studies of NWCR members, it seems beneficial to encourage people to try different methods to see what works best for them. Not surprising is that a combination of change in diet and exercise are essential components to successful weight loss.

#### Successful Motivational Strategies

Fletcher (2003) interviewed “masters at weight control – people who had lost at least 20 pounds and kept the weight off for a minimum of 3 years” ( $N = 208$ ) (p. xiii). The focus of the interviews was to gain a deeper understanding of the motivational strategies used by these individuals to control their weight. The author developed a list of the “10 Keys to Success” that the masters have taken to reach their weight loss and weight maintenance goals (p. xiv). These are the “10 Keys to Success”:

1. Believe that you can become thin for life. There are people out there who have achieved successful weight loss and weight loss maintenance. People need to believe that they can accomplish this as well (p. 1).
2. Take the reins. Stop looking to others for all the answers and believe that you need to lose weight for no one but yourself (p. 29).

3. Do it your way. In order to be a successful weight loser, you need to find out what types of strategies and approaches will work best for you (p. 57).
4. Accept the food facts. Individuals need to accept a new way of eating and need to realize that they cannot eat whatever they want. Learn how to make low-fat eating enjoyable (p. 97).
5. Nip it in the bud and break the relapse cycle. Monitor your weight regularly in order to prevent the weight from creeping back up. If you notice that you have gained a few pounds then you need to develop a game plan for getting your weight back down (p. 150).
6. Learn the art of positive self-talk. More positive self-talk can lead to more positive behavior (p. 173).
7. Move it to lose it. Exercise increases the likelihood of both weight loss and weight loss maintenance (p. 193).
8. Face life head-on. Learn how to cope with life without turning to food (p. 232).
9. Get more out of life. Find a way to make your life more fulfilling, balanced, and happy (p. 259).
10. Don't go it alone. Getting support from family and friends is associated with long-term weight control success (p. 283).

### Treatment of Obesity

The National Heart, Lung, and Blood Institute's (NHLBI, 1998) *Clinical Guidelines for the Identification, Evaluation, and Treatment of Overweight* recommends that weight loss interventions should include a low-calorie diet, physical activity, and behavior therapy. The essential behavioral strategies recommended include these: (1) self-monitoring; (2) stimulus

control strategies; (3) stress management; (4) problem solving; (5) use of rewards; (6) cognitive restructuring; and (7) social support. According to the NHLBI clinical guidelines (1998) “the goal of behavior therapy is to alter the eating and activity habits of an obese patient. Techniques for behavior therapy have been developed to assist patients in modifying their life habits” (p. 81). Changes made to behavioral programs from the 1970s to the 1990s have resulted in improved weight losses, with participants losing, on average, approximately 9 kg (10%) of their initial body weight (Wing, 2002).

### *Dietary Changes*

Individuals must change their dietary intake to decrease their body weight. Many weight loss programs recommend that participants consume 1,000 to 1,500 kilocalories per day (Wing, 2002). The NHLBI clinical guidelines (1998) recommend a diet with an energy deficit of 500 to 1,000 kilocalories per day. Or, an individual may choose a 1,000 to 1,200 kilocalorie diet per day for women or a 1,200 to 1,500 kilocalorie diet per day for men. These diets will most likely yield a 1 to 2 pound weight loss per week. In addition, dietary fat is restricted to 20% to 30% of total calories. However, reducing intake of dietary fat alone will most likely not result in weight loss. A reduction of both dietary fat and carbohydrate intake is generally needed to produce weight loss (NHLBI Clinical Guidelines, 1998; Wing, 2002).

Very-low-calorie-diets (VLCDs) are often used in weight loss interventions. VLCDs provide 400 to 800 kilocalories per day and can be consumed as a liquid formula, or as lean types of protein (Wing, 2002). Torgerson, Lissner, Lindroos, Kruijer, and Sjöström (1997) conducted a study to determine if 12 weeks of a VLCD, included in a 2-year dietary and behavioral support program resulted in better maintenance of weight loss after 2 years of active treatment, than the same supportive treatment alone. Participants ( $N = 113$ ) were randomized

either to 12 initial VLCD-weeks included in a dietary and behavioral support program (VLCD-group) or to the same support program alone (non VLCD-group). Participants were 39 men and 74 women with a mean BMI of 40.4 kg/m<sup>2</sup>. Participants in the VLCD-group were provided with a liquid formula diet (456 to 608 kilocalories per day) for the initial 12 weeks. After the initial 12-week period the VLCD-group and non VLCD-group were advised to consume a hypocaloric diet aiming at 1,200 to 1,400 kilocalories per day for women and 1,400 to 1,800 kilocalories per day for men. The composition of the diet included 15% to 20% of energy intake from protein, 25% to 30% energy intake from fat, and 50% to 55% energy intake from carbohydrate.

After 2 years, weight losses were 9.2 kg in the VLCD-group and 6.3 kg in the non VLCD-group. Men lost significantly more weight than women. On average, men in the VLCD-group lost 15.5 kg, while men in the non VLCD-group lost 5.3 kg ( $p = .05$ ). Thirty-three percent of the men in the VLCD-group maintained greater than 10% weight loss compared to 19% of the men in the non VLCD-group ( $p < .05$ ). Among female participants the corresponding differences were not significant. Overall, the authors found no significant benefit of the 12 initial weeks of a VLCD included in a dietary and behavioral support program after 2 years (Torgerson et al., 1997).

In a continuation of the previous study, Lantz, Peltonen, Ågren, and Torgerson (2003) examined weight loss maintenance after 4 years of treatment including VLCD and diet and behavioral support. The authors reported on the initial, randomized 2-year clinical trial (Torgerson et al., 1997) and a nonrandomized 2-year treatment prolongation. Eighty-seven participants completed the initial 2-year study and were offered the chance to continue the program for an additional 2 years. A total of 55 participants completed the entire 4-year

program. During the prolongation, participants received additional dietary and behavioral counseling.

Weight losses were 7.6 kg in the VLCD-group and 6.3 kg in the non VLCD-group. There were no significant differences between the male and female participants. Participants who completed a higher number of attended visits maintained a greater weight reduction. After 98 months, the completers ( $n = 54$ ) maintained a weight loss of 3.3 kg ( $p < .05$ ), corresponding to 2.8% of initial body weight lost. Forty-one percent ( $n = 22$ ) of the completers maintained a 5% weight loss and 24% ( $n = 13$ ) maintained a 10% weight loss. The noncompleters ( $n = 42$ ), had gained 3.2 kg after 74 months ( $p = .05$ ), 14% ( $n = 6$ ) maintained a 5% weight loss, and 7% ( $n = 3$ ) maintained a 10% weight loss (Lantz et al., 2003). This study showed that significant weight losses can be maintained for a long period of time by use of VLCD and diet and behavioral support; however this is a small sample of participants. In addition, Wing (2002) suggests that these diets are generally only useful if they are sustained long-term and the participants remain in weight loss treatments, which may not always be feasible.

Shick et al. (1998) examined specific dietary intakes and diet composition of successful weight loss maintainers ( $N = 438$ ). The authors conducted a detailed dietary analysis of participants in the NWCR and compared their data with information from the third National Health and Nutrition Examination Survey (NHANES III) to determine if successful weight loss maintainers eat differently than others of similar age and gender. Additionally, information on those who had lost weight on their own and those who had used some type of structured program or assistance were compared. Participants were asked to report their current dietary intakes, demographic information, history of weight loss, and the approaches used to achieve weight loss. Demographic data were reported for the participants from the NWCR, but were not reported for



participants from the NHANES III. The authors did not mention if they attempted to match participants based on similar demographic data.

Results showed that both men and women in the NWCR had significantly lower total energy intake and percent of energy from fat, and higher percent energy from protein and carbohydrate than participants in NHANES III (Table 4, Shick et al., 1998, p. 410).

Significantly more men from the NWCR (55%) reported losing weight on their own. The only significant dietary characteristic observed was that men and women who lost weight on their own ate a significantly smaller percentage of their energy from protein (Shick et al., 1998). This study shows that not only is reduction in total caloric intake important for significant weight loss, but also the composition of dietary intakes are essential. These data suggest that a diet lower in fat and carbohydrate and higher in protein may lead to greater weight loss.

Table 4

*Comparison of NWCR Dietary Intakes to NHANES III Data*

Nutrient	NWCR Women	NHANES III	NWCR Men	NHANES III
		Women		Men
Energy (kcal)	1,306	1,754*	1,685	2,545*
Fat (g)	35	70*	45	98*
% Energy from Fat	24.3	34.9*	23.5	33.9*
Carbohydrate (g)	181	213*	238	298*
% Energy from Carbohydrate	55.5	49*	56.2	46.9*
Protein (g)	62	67	75	96*
% Energy from Protein	19.2	15.8*	18.2	15.6*

*Note.* \*Statistically different from NWCR ( $p < .05$ )

Food evaluation is an important component to consider when trying to lose or maintain weight. Food evaluation is how an individual categorizes food as either good or bad. Carels, Harper, and Konrad (2006) conducted a study on the qualitative perspectives of food evaluation. Individuals in a weight loss program rated common food items previously rated as “healthy” or “unhealthy”. Participants were asked to provide ratings for how a particular food would contribute to weight gain or loss, state if the food is healthy or unhealthy, estimate the caloric values of foods, and state why they perceived the foods these ways. Participants ( $N = 55$ ) were obese adults and were asked to complete the Food Healthfulness Questionnaire (FHQ).

Overall, participants tended to underestimate the calories of healthy foods by 16% and overestimate the calories of unhealthy foods by 17%. Higher baseline BMI was associated with a lower accuracy in estimating calories. The most frequently reported categories for unhealthy foods were high-fat, high-sugar, and high-calorie. Similarly, healthy foods were most often described as low-fat, being a healthy food, high in nutrients, and high in protein. Participants were significantly more likely to describe weight gain foods as high calorie and palatable and weight loss foods as low calorie and filling. Characteristics of foods that were reported to be related to weight gain or health included calories, nutrients, sugar, and protein content (Carels et al., 2006). These data indicate a need for more nutrition education during weight loss treatment on the nutrient composition and caloric value of foods. This may help individuals, who are trying to lose weight, to have a better understanding of their diet and the total calories they are consuming.

### *Physical Activity*

Physical activity has received much attention as a behavioral treatment since 1995 because it is the most consistent predictor of long-term maintenance of weight loss (Foreyt &

Goodrick, 1994; Pronk & Wing, 1994; Wing, 2002). Two reviews were conducted on the effect of exercise on weight loss and weight loss maintenance (NHLBI Clinical Guidelines, 1998; Wing, 1999). Conclusions from both of these reviews suggested that exercise alone compared to a no-exercise control produced significantly more weight loss. Physical activity interventions usually focused on having participants set goals, which were gradually increased until the participant was burning 1,000 kilocalories per week through activity. The NHLBI clinical guidelines (1998) recommend moderate intensity exercises for 30 to 45 minutes in duration, 3 to 5 days per week. The Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM) recommend that adults engage in 30 minutes of moderate intensity physical activity on most days, preferably all days, of the week (Pate et al., 1995).

Studies that have examined the effects of a combination of dietary changes and physical activity have shown varying results. Skender et al. (1996) examined the effects of three cognitive-behavioral weight control interventions. The participants were randomized into one of four groups: diet only ( $n = 42$ ); exercise only ( $n = 43$ ); diet and exercise ( $n = 42$ ); and control ( $n = 38$ ). Participants needed to be at least 14 kg over their ideal body weight to be eligible for the study. The dietary intervention was the Help Your Heart Eating Plan (HYHEP), a low-cholesterol eating plan aimed to produce no more than 1 kg per week of weight loss. The exercise intervention included walking training and a goal of three to five periods per week of 45 minutes or more of physical activity sessions. Participants in the combination intervention received the same dietary and exercise interventions as the diet only and exercise only groups. The interventions took place for 1 year.

Weight changes after 1 year included a 6.8 kg loss in the diet only group, 2.9 kg loss in the exercise only group, and 8.9 kg loss in the combination group. These results were not

statistically different. Weight changes after 2 years included a 0.9 kg gain in the diet only group, 0.2 kg gain in the exercise only group, and 4.2 kg gain in the combination group. These results suggest that the exercise only group was the most successful in preventing weight regain. The authors propose that these data may result from the difficulty of long-term dieting and the self-reinforcing behaviors that result from moderate exercise (Skender et al., 1996).

Wadden et al. (1997) investigated changes in body composition in obese women ( $N = 128$ ) using four different treatment groups: (1) diet plus aerobic training; (2) diet plus strength training; (3) diet plus combined aerobic and strength training; and (4) diet alone. The diet intervention included a prescribed diet of approximately 900 to 925 kilocalories per day for weeks 2 through 17 and by week 20 the diet increased to 1,250 kilocalories per day, and finally from weeks 22 through 48 the diet increased to 1,500 kilocalories per day. The aerobics intervention included either step aerobics or treadmill walking. The strength training intervention included circuit training targeting large muscle groups. The combination intervention consisted of approximately 60% of time devoted to strength training and 40% of time devoted to aerobics training. The diet alone intervention required participants to agree to not take part in any program of regular physical activity. The interventions took place for 48 weeks.

Participants in the four treatment conditions lost an average of 10 kg during the first 8 weeks, 14.3 kg at week 17, and 16.5 kg at week 24. At week 48, participants had gained back an average of 1.4 kg. There were no significant differences in weight loss among the different treatment conditions. Weight gain at week 48 was small, but significant ( $p < .001$ ). The diet plus strength training group lost the most weight (17.2 kg) and was the only group to avoid regaining weight at week 48. This group lost an additional 0.4 kg on average. Participants in the

four treatment conditions also reported significant decreases in hunger ( $p < .001$ ) and preoccupation with food ( $p < .003$ ) from baseline to week 48 (Wadden et al., 1997).

A 1-year follow-up of the previous study was conducted (Wadden, Vogt, Foster, & Anderson, 1998). Seventy-seven of the original sample ( $N = 128$ ) completed the 48-week program and agreed to participate in the follow-up. Participants in all four treatment conditions lost an average of 13.5 kg during the 48 weeks of treatment, but these participants gained back 35% to 55% of their weight loss during the 1-year follow-up. There were no significant differences among the treatment conditions in weight loss after the 1-year follow-up. The diet plus strength training group lost the most weight (10.1 kg) and had the greatest percentage of weight loss (10%) by week 100. There was a strong positive correlation between week 48 and week 100 indicating that participants who lost more weight at the end of the treatment had regained less weight at the follow-up.

### *Self-Monitoring*

Self-monitoring is the systematic observation and recording of target behavior. The NHLBI clinical guidelines (1998) recommend that adults self-monitor their dietary intake and physical activity. “Patients should be taught to record the amount and types of food they eat, the caloric values, and nutrient composition. Keeping a record of the frequency, intensity, and type of physical activity likewise will add insight into personal behavior” (p. 81). In addition, adults should be encouraged to indicate the time, location, and feelings related to eating and physical activity which can help to show previously unrecognized behavior.

Successful self-monitoring strategies for weight control were examined in a study by Baker and Kirschenbaum (1993). The purpose of the study was to determine the role of self-monitoring in effective weight control. Participants were 48 women and eight men who had

been participating in a long-term cognitive behavioral treatment program (the People at Risk Weight Control Program) and had lost an average of 20.1 pounds prior to the beginning of the study. Each week participants were given a new self-monitoring booklet and were strongly encouraged to record all foods and count the calories for all foods consumed during the week. By week 12, participants had lost an average of 4.03 pounds, in addition to what they lost prior to the study, and by week 18 participants had lost an additional 2.81 pounds. According to these results, participants had stopped losing or gained back weight between weeks 12 and 18. The authors did not discuss this result or lend any suggestions as to why this might have happened.

Diversity of self-monitoring behavior was clearly demonstrated in the percentage of participants who actually monitored and in the type and frequency of the variables monitored. The percentage of days on which all foods were monitored by participants is shown in Figure 1. Six self-monitoring variables were significantly correlated with weight change after both 12 and 18 weeks: monitoring of any food consumed; monitoring all foods eaten for the entire day; monitoring time food was eaten for the entire day; monitoring grams of fat consumed; and not monitoring. Greater percentages of subjects lost weight when greater levels of consistency and completeness of monitoring was used, which makes self-monitoring a crucial component in the treatment of obesity (Baker & Kirschenbaum, 1993).

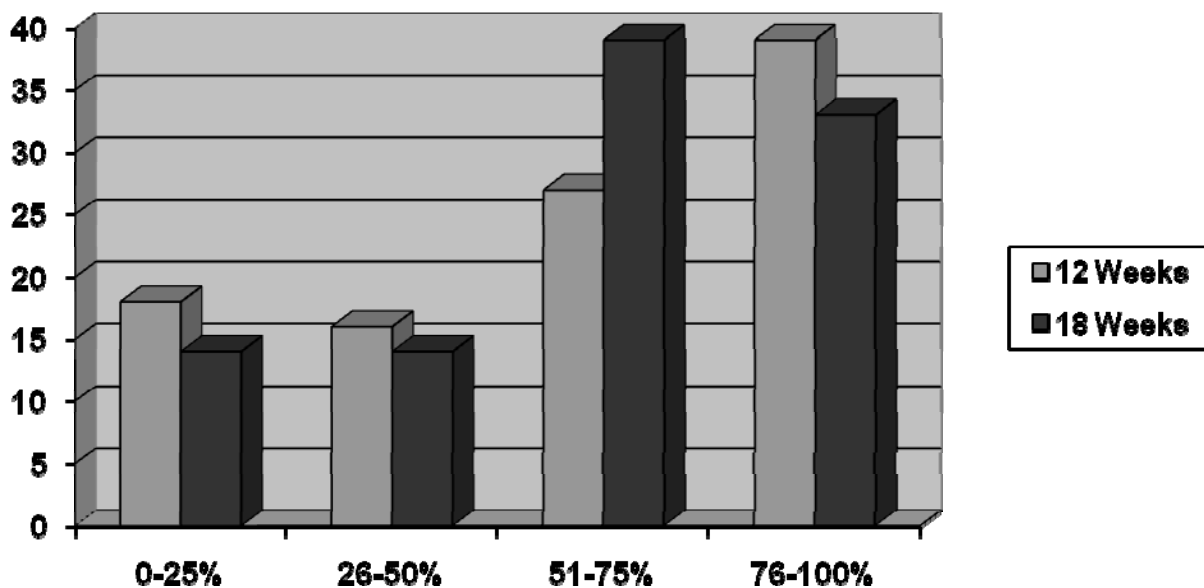


Figure 1. Percentage of days on which all foods were monitored.

In an attempt to repeat the study by Baker and Kirschenbaum, (1993), a similar study was conducted by Boutelle and Kirschenbaum (1998). The purpose of this study was to provide a descriptive analysis of the relationship between self-monitoring and weight control. Participants ( $N = 59$ ) were taking part in a long-term cognitive-behavioral treatment program for obesity. Measures examined included percentages of participants who self-monitored consistently and the relationship between the variability in self-monitoring and weight change. Approximately 26% of the participants self-monitored all foods eaten on less than half of the days evaluated. Regardless of overall self-monitoring consistency, participants lost much more weight during their two most consistent weeks of monitoring compared with their two least consistent weeks of monitoring. Only the more consistent group of self-monitors lost a substantial amount during the course of this study. The results of this study suggest that a reasonable target for consistency for self-monitoring within the context of a professional cognitive-behavioral treatment program may be self-monitoring all foods eaten on at least 75% of days. If participants self-monitor on less

than half of the days during participation in such programs, they may be unlikely to succeed at weight loss both during the program and afterward.

Dionne and Yeudall (2005) examined the benefits and risks of self-monitoring weight. There are many reasons why keeping track of one's weight might be helpful to the ultimate goal of weight loss. Self-monitoring of body weight can lead to the recognition and awareness of gained weight and potentially motivate change. Self-monitoring can lead to reactive effects or a change in a target behavior due to simple observation, which can cause the reactivity to be in the desired direction. That is, the frequent weighing would lead to awareness in maintaining healthy lifestyle behaviors. In addition, the client is indirectly reinforced for achieving a short-term weight loss goal with the satisfaction of having been successful.

However, in the initial stages of a decision to lose weight, or indeed during the weight loss program itself, the motivation for behavior change may be based more on negative reinforcement. People might be trying to escape from the distress associated with the belief that their body size is different from the one they desire. Even though some degree of dissatisfaction can be a positive force for change, there is potential exacerbation of body image concerns through weight monitoring. Although increased concern about body weight may motivate a decision to change behavior, only behavior change over a longer period of time will lead to long-term benefits (Dionne & Yeudall, 2005).

### *Stimulus Control*

Adults who are trying to lose weight or maintain weight should consider stimuli that may provoke incidental eating and should limit their exposure to high-risk situations. Strategies that have been shown to be beneficial to control stimuli include these: (1) learning to shop for healthy foods; (2) keeping high-calorie foods out of the home; (3) leaving food on your plate; (4)



limiting the times and places of eating; and (5) consciously avoiding situations that can promote overeating (NHLBI Clinical Guidelines, 1998; Wadden, 1993).

Carroll and Yates (1981) examined the use of stimulus control training over other commonly used obesity treatments. Obese participants ( $N = 24$ ) were randomly assigned to either behavioral therapy without or with stimulus control. Participants in both groups received the same obesity treatment, which included social pressure and instruction in self-monitoring, self-reinforcement, self-punishment, response changing, substitution, nutrition, and exercise. Participants who received the stimulus control training were provided with information for stimulus control of food consumption and were asked to change their environments to improve stimulus control of eating. In addition, they were advised to do nothing else while eating (e.g., no TV watching or reading), store food out of sight (e.g., no candy or fruit bowls), and keep foods stored in the refrigerator in opaque containers or brown paper bags. Treatment took place over 10 weeks, and participants were followed up 8 months after treatment.

Both groups lost an equal amount of weight after treatment (2.0 kg). However, the behavioral therapy group with stimulus control lost significantly ( $p < .05$ ) more weight (1.4 kg) at the 8-month follow-up than the behavioral therapy group without stimulus control (0.5 kg). The authors suggest that stimulus control training can improve the success of weight loss treatment produced by other behavioral therapy strategies, particularly with promoting additional weight loss after treatment. In addition, Carroll & Yates (1981) suggested that the “habits” of stimulus control may be easier to retain after treatment than other strategies.

Fremouw, Callahan, Zitter, and Katell (1981) examined the effects of instructions in stimulus control procedures and changes in eating behavior. Participants ( $N = 4$ ) were obese women who received intensive weight loss treatment for a minimum of 25 weeks. Participants

had weekly meetings, which lasted 30 to 60 minutes, with one of the authors. Stimulus control strategies included these: (1) designate one place to eat all foods; (2) avoid all other activities (e.g., reading) while eating; (3) buy low-fat foods; (4) rearrange cupboards and refrigerator to make snack foods less accessible and visible; (5) store foods in opaque containers; (6) shop from prepared lists when not hungry; (7) serve food on your plate in the kitchen, do not leave serving bowls on the table; (8) use smaller plates, bowls, and glasses; and (9) buy and prepare a variety of low-calorie snacks. Participants were instructed to add two or more stimulus control strategies each week. Measures included self-monitored meal location and time, type, and quantity of foods consumed, utensil down time, body weight, and bite rate.

The stimulus control strategies produced changes in monitored eating behavior. Participants reported less inappropriate snacking, decreased bite rate, and increased utensil down time. Overall mean weight loss was 18.1 pounds; however this loss was not statistically significant. These modest weight losses were associated with a reduction in snacking time and eating rates (Fremouw et al., 1981). These results were not significant, and the study did not include a comparison group. Additionally, the use of a very small sample is a limitation to the study. However, these results support the idea that stimulus control can contribute to behavioral treatment of obesity.

### *Stress Management*

Stress can promote unhealthy eating, and overeating can be a coping strategy in obesity. Finding ways to manage stress can help obese adults reduce situations that can lead to overeating. The NHLBI clinical guidelines (1998) recommend “coping strategies, meditation, and relaxation techniques” for helping to reduce stress (p. 82).

Byrne et al. (2003) examined weight maintenance and relapse in obese adults. The authors qualitatively investigated coping with perceived negative life events, among women with obesity who had maintained weight loss ( $n = 28$ ), and compared them with weight re-gainers ( $n = 28$ ) and stable healthy weight adults ( $n = 20$ ). Maintainers and re-gainers both had the occurrence of adverse life events, but they differed in how they coped with the events. Re-gainers reported overeating as a coping mechanism. One participant said,

It's not being able to control the situation ... not being able to sort my problems out, so I need to eat to make me feel good. It's just immature, I think. It's like a little child who hasn't quite worked out how to handle things and be calm about it (p. 960).

Maintainers and healthy weight participants appeared to be able to handle eating and exercising during difficult situations. One maintainer reported, "I have some pretty hard times since losing weight, real struggles with money and quite traumatic experiences, but nothing ever made me put on weight. So I don't think experiences like that affect me in that way" (p. 960).

In addition, re-gainers were more likely to report using eating to regulate their mood or to distract themselves from unpleasant thoughts and moods.

In a similar study, Kayman, Bruvold, and Stern (1990) examined differences in long-term weight loss maintainers ( $n = 30$ ) compared to weight loss re-gainers ( $n = 44$ ) and always average weight women ( $n = 34$ ). Participants were interviewed on how they cope with problems in their lives. Weight loss re-gainers reported more problems related to their weight and health (56%) than maintainers (10%) or average weight participants (2%). There were also differences in how participants coped with life problems. Re-gainers were more likely to use emotion-focused or escape-avoidance ways of coping (e.g., eating or sleeping more) (70%) than maintainers (33%) and average weight participants (35%). Average weight participants were more likely (42%) to

use relaxation techniques, exercising, or working more when coping with life problems than maintainers (17%) and re-gainers (2%).

### *Problem Solving*

Problem solving relates to the self-correction of problem areas related to diet and physical activity. According to the NHLBI clinical guidelines (1998), ways to correct problems include “identifying weight-related problems, generating or brainstorming possible solutions and choosing one, planning and implementing the healthier alternative, and evaluating the outcome of possible changes in behavior” (p. 82). Individuals need to reevaluate set-backs in unhealthy behavior rather than punishing themselves.

Perri et al. (2001) examined the difference in weight loss with a problem-solving treatment group (PST) compared to a standard behavioral therapy treatment group (BT) in obese women ( $N = 80$ ). A five-stage problem-solving model was used and included these phases: (1) orientation (e.g., developing an appropriate coping perspective); (2) definition (e.g., specifying the problem and goal behavior); (3) generation of alternatives (e.g., brainstorming potential solutions); (4) decision making (e.g., anticipating the probable outcomes of different outcomes); and (5) implementation and evaluation (e.g., trying out a plan and evaluating its effectiveness). Results indicated that the PST group experienced significantly ( $p = .004$ ) better maintenance of weight loss from months 5 to 11 compared to the BT group. In addition, the PST group had significantly ( $p = .019$ ) greater total weight loss from baseline to month 17 compared to the BT group. Weight losses were 4.14 kg in the BT group and 10.82 kg in the PST group after 17 months.

In a descriptive study mentioned previously, Kayman et al. (1990) found that weight loss re-gainers were less likely to use problem-solving or confrontive ways of coping (10%) than weight loss maintainers (95%) and average weight participants (60%).

### *Use of Rewards*

Behavior can be changed by using rewards, and the NHLBI clinical guidelines (1998) recommend rewards for specific actions, such as increasing time spent walking or reducing consumption of specific foods (p. 82). Verbal, as well as tangible, rewards are recommended and can come from either the weight loss team or from individuals themselves.

Hayward et al. (2000) explored cognitive restructuring and the treatment of obesity in women. Two obese women were qualitatively interviewed on their experiences while attempting to change their lifestyle during a weight loss program. Rewards versus punishment to meet one's own needs were explored. One woman who has been successful with her weight loss efforts said,

Usually, if I accomplished a great task I would have a great dinner or wine. And this time it's more rewarding myself by going to get a facial or getting my nails done or more pampering as opposed to food-driven ... something more passive (p. 627).

Another woman, who did not consider herself to be as successful with her weight loss efforts, did indicate that she too would reward herself. She said, "So, I'm trying to take good care of my health and watch a good television show or read a good magazine that I want to do instead of using food or spending money on rewards" (p. 628).

### *Cognitive Restructuring*

Unrealistic goals and inaccurate beliefs about weight loss and weight loss maintenance need to be addressed in treatment. Modifying these ideas can help change self-defeating feelings

that can prevent weight loss efforts. The NHLBI clinical guidelines (1998) recommend replacing negative thoughts with rational thoughts. For example the thought, “I blew my diet this morning by eating that doughnut; I may as well eat what I like for the rest of the day,” could be replaced with, “Well, I ate the doughnut this morning, but I can still eat in a healthy manner at lunch and dinner” (p. 82).

Byrne et al. (2003) found that more weight loss maintainers than re-gainers reported that they reached their goal weight and feel satisfied with their new lower weight, even if they had not reached their goal. One maintainer said, “The amazing thing is, in the past if I’d been 133 pounds I’d be disgusted with myself, I’d be really heavy and now I was jubilant because I felt I was really light. It’s all relative” (p. 958).

In a study discussed previously, Hayward et al. (2000) explored cognitive restructuring and the treatment of obesity in women. Two obese women participated in qualitative interviews, and both of the participants acknowledged that their battle with obesity would be a lifelong struggle and would require a change in thinking. One woman said,

Food I still have to be very conscious of. I think I’ll always have to be very conscious of the food I eat. Just cause it’s very easy to eat unconsciously. Just because our, I think, our society has the ready-to-eat meals ... so every effort has to be made for nutritional food (p. 625).

Individuals who want to change their weight need to make a realistic assessment of how difficult it is going to be and what benefits can result when the goal is reached. Increased self-efficacy can help these individuals. Self-efficacy is defined as an individual’s belief in his or her ability to perform and succeed in challenging situations (Bandura, 1977).

Self-efficacy and self-motivation as predictors of weight loss were examined by Edell, Edington, Herd, O'Brien, and Witkin (1987). Participants ( $N = 147$ ) had to be at least 50 pounds overweight and were randomly selected from a pool of past participants in a weight control program. Archival personal data consisting of a Self-Motivation Inventory were analyzed, and self-efficacy and self-motivation were also measured. The authors hypothesized that both self-efficacy and self-motivation would correlate positively with successful weight loss. Results indicated that self-motivation did not significantly correlate with either actual or adjusted weight loss. Significant correlations were seen between self-efficacy measures and weight loss.

Linde, Rothman, Baldwin, and Jeffery (2006) conducted a study to provide additional prospective data on associations between self-efficacy and weight change by examining the associations between self-efficacy and a set of diet and physical activity behaviors. The authors hypothesized that higher levels of self-efficacy would be associated with greater use of weight control behavior and that these behaviors would result in weight loss. Participants ( $N = 349$ ) were randomly assigned to one of two groups in which they were encouraged to use either an optimistic or balanced approach to weight loss. Measures included demographics, self-efficacy, weight loss monitoring behavior, effort, physical activity, dietary variables, and height and weight.

During treatment (baseline to 8 weeks), all weight control behavior changed in expected directions and weight also decreased significantly ( $p < .01$ ). Significant differences in weight loss and dietary fat intake were maintained between 8 weeks and 6 months ( $p < .01$ ). As predicted, higher eating and exercise self-efficacy scores were associated with greater engagement in weight loss promoting behavior and with less engagement in behavior that

impede weight loss. By the end of the treatment, greater involvements in all weight control behaviors were associated with greater weight loss (Linde et al., 2006).

### *Social Support*

One variable frequently associated with long-term adherence to diet and exercise is social support. A study by Wing and Jeffery (1999) evaluated the effectiveness of a more comprehensive social support condition, which included both intragroup cohesiveness activities during the initial phase of treatment and intergroup competitions with group contingencies focused on prevention of weight regain during a 6-month maintenance period. Social support was evaluated among participants recruited with a group of three friends and among participants recruited alone, who were teamed with three other people whom they had not previously met. Participants ( $N = 166$ ) were randomly assigned to either a standard behavioral condition (SBT) or an intervention that focused on social support and included a financial contingency for weight maintenance. This financial contingency was not described. Four assessments took place, at baseline, at post treatment (month 4), and at months 7 and 10.

Ninety percent of the participants ( $n = 149$ ) completed the initial 4-month treatment program. The participants who enrolled alone and received SBT had the poorest completion rate (79%), whereas those who were recruited with friends and received the additional social support intervention had the highest completion rate (98%). Participants who enrolled with friends had an overall weight loss of 8.7 kg, compared to 5.8 kg loss for those participants who enrolled alone. None of the other variables considered (e.g., gender, baseline weight, employment, prior experience in weight-loss programs, or the social support intervention) affected overall weight loss (Wing & Jeffery, 1999).



The main finding in this study was that recruiting participants with friends and treating them with a social support intervention decreased the number of dropouts and increased the percentage of participants who maintained their weight loss in full over a 6-month follow-up period. Ninety-five percent of participants recruited with friends and given the social support intervention completed the 10-month study, and 66% of these participants maintained their weight loss in full. Both being recruited as part of a group and given the social support intervention contributed significantly to the high success of weight-loss maintenance (Wing & Jeffery, 1999). These results indicate that involving support partners in the treatment of obesity can be beneficial to outcomes and study retention. However, to be successful the type of intervention strategies needs to be considered and geared toward improving and including social support.

According to Gorin et al. (2005), involving support partners in behavioral weight control treatment is one of the few strategies shown to improve weight loss, but it remains unclear how many support partners it takes to optimize weight loss outcomes. This study used participants ( $N = 109$ ) who were part of a larger randomized control trial. These participants were part of a high physical activity treatment group and were encouraged, but not required, to invite up to three support partners to join the study. Support partners were treated equally in screening, assessment, and intervention. Measures included demographics, weight and height, and diet and physical activity, and assessments were conducted at 6, 12, and 18 months.

Approximately half (49%) of the participants brought support partners. Most support partners were described as friends, neighbors, or coworkers (65.5%); 17% were the participant's spouse; and 13% were other family members. There were no significant weight loss differences at 6, 12, and 18 months between participants who brought partners and participants who did not

bring partners. The number of support partners was also not significantly related to weight loss. However, the success of the support partner(s) was associated with the participants' treatment outcomes. Participants who had at least one successful partner ( $n = 30$ ) lost significantly more weight than participants with no successful partners. This research adds to the literature by suggesting that involving support partners in obesity treatment is likely to result in greater weight losses only when support partners are successful (Gorin et al., 2005).

Dierk et al. (2006) examined the associations between subjective well-being as a criterion variable with BMI, social skills, and social support in obese adults. Participants ( $N = 226$ ) were given self-report questionnaires to determine subjective well-being, social support, and social skills. One main issue examined by the authors was the degree to which social support and social skills are independently linked to subjective well-being. The Positive and Negative Affect Scales were used to measure subjective well-being. This scale separates positive affect from negative affect. Results indicated no significant associations between BMI and any of the social skills or social support scales. The only significant correlation between BMI and subjective well-being was negative affect. BMI was not found to be related to positive affect or satisfaction with life. No correlations were found between BMI and social support, social strain, and social skills. These results were contrary to what the authors predicted.

This was a different assessment than used in other social support research, in that the authors used questionnaires to determine outcomes as opposed to actually including social support and support partners in treatment. Participants' attitudes toward social support may have been different if they had been able to experience it in a weight loss intervention.

## Conclusions

Long-term (greater than 1 year) weight loss is difficult. Studies reviewed in this chapter have found significant weight losses of 5% to 10% of body weight in approximately 5.1% to 10% of participants with follow-up periods of 3 months to 9 years (Crawford et al., 2000; Roberts & Ashley, 1999; Sarlio-Lahteenkrova et al., 2000; Westenhoefer et al., 2004) (Table 1, p. 15). The literature does not distinguish between the strategies used for weight loss and weight loss maintenance. Some of the most common strategies include changing diet (e.g., low-fat diet), increasing physical activity, self-monitoring food intake, regular self-weighing, and social support (Bryne et al., 2003; Roberts & Ashley, 1999; Linde et al., 2006; Wing & Hill, 2001; Klem et al., 1997). According to Wing (2002) the most effective weight loss treatment programs appeared to be ones that incorporated changes to both diet and physical activity, and promoted behavior modification. This recommendation was made based on a review of literature that suggested that weight loss may be improved in the following ways:

1. Use of structured meal plans or diets that emphasize portion control during the beginning of the program.
2. Use of home-based or supervised exercise during the first 6 months of the program. Continued exercise with biweekly therapy contact during the second 6 months of the program with supplied exercise equipment for maintenance.
3. Use of motivational strategies, such as social support and group competitions.
4. Use of media-based (e.g., Internet, telephone) programs to increase access.

Most of the information on successful weight loss maintenance comes from individuals who are part of the NWCR (2006). Results from studies examining participants of the NWCR have provided additional support for behavior change strategies because their members are

required to have lost a significant amount of weight (greater than 10%) and kept it off for at least 1 year. The most commonly reported strategies used to maintain weight loss included engaging in high levels of physical activity, eating a diet low in fat and high in carbohydrate, and regular self-monitoring of weight (Klem et al., 1997; McGuire et al., 1998; Wing & Hill, 2001).

In addition, the use of other behavioral strategies, (e.g., stimulus control, problem solving, and stress management) as recommended by the NHLBI clinical guidelines (1998), may help to improve the overall success of obese adults who are trying to lose weight and maintain weight loss. Simultaneous availability of many different strategies may increase the probability of success, and changes in lifestyle as a whole are necessary for long-term weight maintenance. (Westenhoefer, 2001).

Based on the literature on successful weight loss and weight loss maintenance reviewed in this chapter, we have a reasonably clear idea of the types of behavior change strategies and approaches that are most useful for weight loss and weight loss maintenance over the long term. This study used qualitative research methods to provide an in-depth look into how some obese adults were able to lose significant amounts of weight and maintain these losses over time. The specific combination of strategies used by successful adults, how these strategies were learned, the importance ascribed to each strategy, and the extent to which these strategies were used during both weight loss and weight loss maintenance were also explored. Participant's use of and experiences with various strategies was explored for both the weight loss and weight maintenance time periods. Participants were asked to differentiate their weight loss and weight loss maintenance strategies and to identify the point at which they transitioned from weight loss to weight maintenance. Additionally, participants were asked to describe the most important factors and the motivators behind both their weight loss and weight maintenance. Participants

needed to reflect back on the changes and events that occurred in their weight loss and weight loss maintenance journey. Gathering this information allowed these adults to provide their success stories, which in turn can strengthen the understanding of their success and can lead to better strategies, treatments, and advice for the obese population.

## CHAPTER 3

### METHODOLOGY

The purpose of this study has been to determine how some obese adults have been able to lose a significant amount of weight and maintain that weight loss over time. Increasing the knowledge of the approaches and strategies that can lead to promoting significant weight loss and successful weight loss maintenance can help to expand our understanding of the types of lifestyle changes that work. One way to approach this topic is by qualitatively exploring obese people's lives and experiences in greater detail during their attempts to succeed in and maintain weight loss. Qualitative research methods were used to collect and analyze the data and are appropriate for researching accounts and experiences, beliefs, and priorities (Ziebland, Robertson, Jay, & Neil, 2002). "Qualitative methods facilitate study of issues in depth and detail. Approaching fieldwork without being constrained by predetermined categories of analysis contributes to the depth, openness, and detail of qualitative inquiry" (Patton, 2002, p. 14). Qualitative research methods allowed for themes to emerge during data collection and analysis and interpretation of the data to be developed during the course of the study (Patton, 2002). This study was an example of applied research because obesity is a problem that affects millions of Americans. "The purpose of applied research is to contribute knowledge that will help people understand the nature of a problem in order to intervene, thereby allowing human beings to more effectively control their environment" (Patton, 2002, p. 217). Throughout this chapter the selection of participants, instrumentation that were used, data collection procedures, and analysis of the qualitative data are described.

## Sample

The unit of analysis for this study was individuals, and purposeful sampling was used to select the participants. This permits purposefully selected and information-rich cases that can shed light on the questions under study. Using information-rich cases allows a researcher to learn a great deal about the topic of interest and not just obtain a brief overview (Patton, 2002, p. 230).

Participants for this study were selected based on a unique-case selection, meaning to work with participants who are unique in some way (deMarrais, 2004, p. 60). For example, obese individuals who have lost a significant amount of weight and have maintained that weight loss over a long period of time make up a unique-case group. For the purpose of this study, the target population included obese or previously obese adults, 18 years of age and older.

Participants had or previously had a BMI of greater than or equal to 30 kg/m<sup>2</sup>. BMI was calculated using the participants' height and body weight prior to weight loss. Participants also intentionally lost a significant amount of body weight (10% or more) and had maintained that weight loss for at least 1 year. Significant weight loss was determined by dividing current body weight by body weight prior to weight loss.

Examples of weight loss maintenance definitions include “achieving an intentional weight loss of at least 10% of initial body weight and maintaining this body weight for at least one year” (Wing & Hill, 2001, p. 325), or “losing at least 5% of baseline body weight between baseline and follow-up and maintaining that weight or less for a further 2 years” (Crawford, Jeffery, & French, 2000, p. 1108). Katz et al. (2005) suggest that a mean weight loss of greater than or equal to 4 pounds measured at greater than or equal to 6 months from the intervention initiation is considered successful. The NHLBI clinical guidelines (1998) recommend a 10% weight loss with successful maintenance defined as a weight regain of less than 3 kg in 2 years

and a sustained reduction in waist circumference of 4 cm. The Institute of Medicine (1995) criteria for evaluating weight management programs defined weight loss maintenance as a 5% reduction of body weight, or decreasing BMI by at least one unit, and maintaining the loss for at least 1 year.

A standard of 10% weight loss was used for this study because this amount of modest weight loss has been shown to significantly decrease the severity of obesity-related risk factors (Williamson et al., 2000). This amount of weight loss is reasonable to attain, can lead to further weight loss, and can be maintained over time (National Institutes of Health, NIH, 1998).

However, this amount of weight loss may not result in a change to a nonobese state.

Maintenance of weight loss of at least 1 year was used for this study because maximal weight loss occurs at or around 6 months (NIH, 1998; Wing et al., 2006), giving participants an additional 6 months to maintain the weight loss. A 1-year time frame has also been used as a standard measure in several studies that have reported on the rates of long-term weight loss success (McGuire et al., 1999; McGuire, Wing, & Hill, 1999; Wing et al., 2006; Wing & Hill, 2001).

Exclusion criteria for the study were individuals less than 18 years of age or who had unintentionally lost weight, or people who had lost weight because of pregnancy, disease or illness, gastric surgery, weight loss medications, liquid diets, or eating disorders.

### *Recruiting Participants*

Recruitment of participants was obtained mainly through word of mouth. In addition, advertisements and flyers were distributed and posted on campus at the University of Georgia and churches, supermarkets, gyms, and fitness centers in the area. Advertisements were also placed on the North East Georgia Dietetic Association list serve and Craigslist.org. Participants



could not be recruited from programs such as Weight Watchers because such programs do not allow solicitation of members at their meetings. Potential participants were provided with a phone number and email address to use if they were interested in participating. Participants had to be screened prior to inclusion in the study by providing age, height, and weight history information to determine if they met the eligibility criteria.

### *Number of Participants*

According to deMarrais (2004), the number of participants needed for a qualitative study will depend on the flow of the interview and the amount of information the participant is willing to discuss. A thorough interview will generate approximately 25 to 30 pages of transcribed content. It is important for the researcher to interview enough participants to gain a comprehensive understanding of the topic being studied (pp. 60-61). Some researchers consider theoretical sampling to be when the interviews result in similar information about the topic being studied or when no new information is generated. The researcher can then stop interviewing.

Patton (2002) suggests that rules do not exist for determining the sample size in qualitative inquiry. Sample size will depend on what the researcher wants to know and the purpose of the investigation, and the data generated have more to do with how rich the data are rather than with sample size (pp. 244-245).

Guest, Bunce, and Johnson (2006) presented guidelines for determining sample size in qualitative research. These authors wanted to determine if there was any consistency in the number of participants that produces saturation of data. An analysis of a study including 60 in-depth interviews was used to document the degree of data saturation. The authors developed a thematic codebook, which they indicated was reasonably complete after only 12 participants were interviewed indicating that large sample sizes may not be needed in qualitative research.

For this study, a range of 10 to 15 participants was recruited to be interviewed, and efforts were made to recruit enough participants to reach theoretical saturation. Theoretical saturation “refers to the point at which gathering more data about a theoretical category reveals no new properties nor yields any further theoretical insights about the emerging theory” (Charmaz, 2006, p. 189). Although this may seem like a small number of participants, qualitative methods are used for issues to be studied in great depth, and “qualitative methods typically produce a wealth of detailed data about a much smaller number of people and cases” (Patton, 2002, p. 227).

#### Instrumentation

For this study, the one instrument used was a general interview guide (Appendix A). “An interview guide lists the questions or issues that are to be explored in the course of an interview” (Patton, 2002, p. 343). The general interview guide was used as a topical list and to ensure that similar questions on successful weight loss and weight loss maintenance were asked of all of the participants. Using an interview guide helped to keep the conversation focused on the topic of interest and allowed for good use of the time allotted for the interview (Patton, 2002). The interview guide was used to prompt discussion about obese adult’s lives during their attempts to successfully lose and maintain weight. The interview guide included questions about how the participants lost weight, what motivated them to lose weight, what motivates them to maintain weight loss, what strategies or approaches helped them to lose weight and maintain weight loss, and how they remained successful in keeping from regaining weight.

Additional instruments for the study included disposable cameras, a consent form (Appendix B), instructions on how to complete the photo elicitation (Appendix C), a participant

recruitment flyer (Appendix D), a participant phone and Email screen (Appendix E), and a participant incentive payment form (Appendix F).

### Subjectivity Statement

As a registered dietitian (RD), I have approximately 6 years of professional experience working with and educating people with a variety of health challenges. I have also received a master's degree in human nutrition from the University of Delaware, which adds to my educational experience on nutrition. I became interested in nutrition and health early in life. When I finished my undergraduate work, I was hoping to change the world by spreading good news about nutrition and healthy living. Having worked predominantly in a hospital setting, I became interested in obesity by personally viewing the detrimental effects that excess body weight can have on quality of life. I wanted to work with obese people because of the severity of the obesity problem and because it continues to be a growing problem for people of every age. In addition, obesity is a preventable disease (Field, Barnoya, & Colditz, 2002), which has increased my interest.

As a researcher, I believe that I am a strong candidate and I am qualified to conduct this study because of my background in the nutrition and dietetics field. I have had the opportunity to counsel numerous patients about diet and nutrition, which adds to my credibility in obesity research. In addition, through this counseling I have become familiar with many of the dietary changes that individuals may use to lose weight. One weakness is my lack of experience in conducting in-depth interviews. I have spent a considerable amount of time counseling adults through basic interviews, but this does not require an in-depth interview. For these counseling sessions I take the role of the expert, which was not the case for the in-depth interviews. For these interviews, the participants will be expected to speak in much greater depth and act as the

expert in successful weight loss and weight loss maintenance. Continuing to conduct in-depth interviews will help me to improve my interviewing skills.

For this study, I acted as both an insider and an outsider. Because I have spent a great amount of time in the dietetics field, I have had the opportunity to talk to many obese adults, which has given me a much greater understanding of the experiences of being overweight. However, I might be considered an outsider to obesity because I have never been an obese adult. I do not know how it feels to be obese or to struggle with losing a large amount of weight and maintaining that weight loss. While some of my past experiences may increase the bias that I bring to this type of study, there are other factors that helped me to be open to all that can be explored through this research experience.

#### Procedures

Participants who expressed interest in taking part in the study were screened to determine if they met the inclusion criteria. Participants were asked their age, height, their highest lifetime weight as an adult, their current weight, and the amount of time that they have been at their current weight. Participants were also asked a few questions to determine if they had lost weight through ways that would exclude them (e.g., eating disorder, liquid diet, medications, or gastric surgery). Participants who met the study inclusion criteria were given an approximate time frame of when the interview would take place and were told to expect the interview to last approximately an hour and a half. The exact day, time, and location of the interview was decided based on the availability of the participant. Participants were advised to choose a location and time that was conducive for conducting an interview. A quiet location with minimal to no distractions was an ideal setting.

### *Data Collection*

Data were collected through in-depth individual interviews. Because the process of weight loss and weight loss maintenance cannot be directly observed without intrusive daily observation, the use of an interview allowed me to gain an understanding of how the process occurred. Use of a general interview guide helped to keep the conversation on track, but it was not necessarily a standard protocol for the interviews. “Because each participant is unique, each qualitative interview experience was also unique. Questions were tailored to fit comfortably into the experience of each interview” (deMarrais, 2004, p. 53). The length of each interview ranged from 45 minutes to an hour and a half. All interviews were audio-taped. An audio recorder was used to permit me “to be more attentive to the interviewees” (Patton, 2002, p. 381) and to ensure that all relevant data were collected.

In addition to the in-depth interview, participants were asked to take part in two additional components of the study. The first component was a photo elicitation piece. Photo elicitation is simply inserting a photograph into a research interview. Images can evoke a deeper element of the human consciousness because, when the brain is processing images and words simultaneously, it requires greater brain capacity (Harper, 2002). Participants were given a disposable camera and asked to take photographs of people, objects, or places that have either aided or hindered their weight loss and weight maintenance. An envelope was provided to mail back the camera, and the photographs were developed prior to participants’ interview. The photographs were used to sharpen the memory of the participants and helped them to describe how the person, object, or place had affected their weight loss and weight maintenance. The photo elicitation was also used to create longer, more comprehensive interviews, as well as help to overcome the repetition of a conventional interview (Harper, 2002). Participants were asked

to look at the photographs and describe how the photograph played a role in their weight loss and weight maintenance and what emotions were triggered by looking at the photograph.

The second additional component was three 24-hour dietary and physical activity recalls. Participants were called on three random days; two weekdays and one weekend day. Participants were asked to describe all of the foods and beverages they had consumed the day before and the approximate portion size of the food or beverage item. They were also asked if they engaged in any physical activity on this particular day, what their physical activity was, and how long they were active. The 24-hour recalls were used to determine the caloric intake and physical activity performed by each participant.

The use of interviews, photo elicitation, and dietary and physical activity analysis provided this study with triangulation. Triangulation strengthens research studies and “refers to soliciting data from multiple and different sources as a means of corroborating evidence and illuminating a theme or a theory” (Rudestam & Newton, 2001). Triangulation involves the idea that coming to the same or similar conclusion using different methods lends credibility to the theory being developed and used to investigate the problem (Schutz, Chambless, & DeCuri, 2004, pp. 276-277).

### *Incentives*

Participants who completed all components of the study and signed the participant incentive payment form were provided with a \$40.00 Target gift card.

### *Informed Consent and Human Subjects*

To ensure the participants were informed of the purpose of the study, they were provided with a consent form. Participants were asked to read and sign the consent form prior to the interview. No participants refused to sign the consent form. To my knowledge there were no

risks to participants for taking part in this study. To protect the rights of human subjects, this project was reviewed and approved by the Institutional Review Board at the University of Georgia prior to any data collection.

Audio-recordings were destroyed after the transcriptions of the data were completed. No traceable identifiers were used on the transcripts. Photographs were kept in my home for future reference. Participants were told that any photographs used in the study that contained a person would have the face blurred out. All transcripts and photographs were stored in a secure location in my home for future reference.

### Data Analysis

The in-depth interviews were transcribed word-for-word, and audio recordings were destroyed after transcription to protect confidentiality. If the participant took part in the photo elicitation component of the study, then this interview data were also transcribed. No names were used at the time of the interview, and traceable identifiers were not used on the transcription of the taped interview. Transcripts of the interviews occurred shortly after the interview took place. This allowed the analysis of the data to begin as early as possible.

All interview transcripts were read numerous times to determine the relevant and consistent findings related to successful weight loss and weight loss maintenance. The data were analyzed for content-related strategies and approaches used for weight loss and weight loss maintenance. Thematic analysis was used to reduce and make sense of the data and identify potential similar consistencies and meanings on significant weight loss and weight loss maintenance (Patton, 2002, p. 453). In addition, all interview transcripts were read to search for unexpected factors. This type of data analysis was both inductive and deductive. I used the data to discover patterns, themes, and categories on significant weight loss and weight loss

maintenance to determine if they were related to existing frameworks and theories within the weight loss literature (Patton, 2002, p. 453).

Grounded theory methods were the research strategy used for this study, and several grounded theory approaches were used to analyze the data. Coding, constant comparison, and memo-writing were used for the data analysis. In their publication *The Discovery of Grounded Theory*, Glaser and Strauss (1967) claim the strategies they used developed theories from research grounded in data rather than deducing testable hypotheses existing in the data. Glaser and Strauss proposed that qualitative analysis could generate theory, and they wanted to develop theoretical explanations of social processes (Charmaz, 2006). The methods of grounded theory allow concepts and themes to be identified and developed throughout the research process. The theory related to successful weight loss and weight loss maintenance was created through careful observation of the phenomenon (Ezzy, 2002).

Using grounded theory methods allowed me to get close to the data and allowed the theory to evolve naturally. I wanted the participants of this study to tell me their stories of initial weight loss and its maintenance over time. Using a grounded theory approach allowed me to delve deeper into the initial responses of the participants. Furthermore, it helped to generate new questions and ideas.

Exploring obesity through the eyes of the obese individual was essential to obtaining a deeper and more thorough understanding of this complex problem. The obesity epidemic continues to be a major public health concern. It will take more than a standard questionnaire to get to the real roots of the problem. One place to begin was to explore the lives of those who have been successful at weight loss and weight loss maintenance. Grounded theory methods were an ideal approach in shedding new light on obesity-related factors.



Coding of the data was the first step of the analysis. The qualitative research software ATLAS.ti 5.0 (2004) was used to code all of the transcripts. “A grounded theorist creates qualitative codes by defining what he or she sees in the data” (Charmaz, 2006, pp. 186-187). Line-by-line coding, which is “naming each line of written data” (Charmaz, 2006, p. 50), was the first coding method used. This type of coding allowed me to be open to the data and to see the subtleties that emerged. I used line-by-line coding to develop initial codes by thoroughly analyzing the transcripts of data. I located many initial codes and potential categories of data. To complete the line-by-line coding, I used the ATLAS.ti 5.0 (2004) software to highlight the terms or phrases and then typed the code next to the line. After completing the line-by-line coding, I developed a code definition bank (Appendix G) to keep track of all of the codes and to define the codes in simple terms. Performing line-by-line coding early in the data collection process helped to inform and refocus future interviews (Charmaz, 2006). New ideas generated by line-by-line coding also helped to “reduce the likelihood that preconceived notions would be superimposed on the data” (Charmaz, 2006, p. 51).

After completing the line-by-line coding and the code definitions, I then created focused codes. “Focused coding means using the most significant and frequent earlier codes to sift through large amounts of data. Focused coding requires decisions about which initial codes make the most analytic sense to categorize your data incisively and completely” (Charmaz, 2006, p. 57). Creating the focused codes allowed me to determine what weight loss and weight maintenance concepts were the most important for me to explore in more detail. A sample of the focused coding can be found in Appendix H.

The use of a constant comparative method is common when using a grounded theory approach. The constant comparative method is “a method of analysis that generates successively

more abstract concepts and theories through inductive processes of comparison”. I completed constant comparison of data with data, data with category, category with category, and category with concept. Comparisons then constitute each stage of analytic development (Charmaz, 2006, p. 187). Constant comparison allows the researcher to make analytic sense of the data and gain a broader awareness of ideas that might be imposed on the data. To be successful using constant comparison, researchers must avoid assuming that respondents are denying facts about themselves, but rather try to understand where they are coming from before making judgments on their actions and feelings. “Seeing the world through their eyes and understanding the logic of their experience brings you fresh insights” (Charmaz, 2006, p. 54). Constant comparison of the data was performed throughout the entire data analysis process.

The next data analysis step was memo-writing. “Memo-writing is the pivotal intermediate step between data collection and writing drafts of papers. Memo-writing constitutes a crucial method in grounded theory because it prompts you to analyze your data and codes early in the research process” (Charmaz, 2006, p. 72). Using memo-writing allowed me to think about specific weight loss and weight maintenance issues in much greater detail. Memo-writing also aided in the constant comparison of the data by comparing concepts with categories. To create good memos, I had to title the memo specifically and focus on what was going on within the interview, what the participant was saying, and what connections I could make with other participants (Charmaz, 2006).

The final data analysis step was to analyze the dietary and physical activity 24-hour recalls. The dietary intake of participants was analyzed by looking up the nutrient value of foods using [calorieking.com](http://calorieking.com), a large food database and Food Processor 8.7.0 nutrient analysis software by Esha (2006). The physical activity was analyzed to determine the type and frequency of

performed activities. The 24-hour recall analyses were used to aid in the verification of reported dietary intake and physical activity.

## CHAPTER 4

### RESULTS

This chapter describes the study participants, the strategies and approaches used for successful weight loss and weight loss maintenance, the most important factors for weight loss and weight maintenance, and motivations for weight loss and weight maintenance. How participants conceptualize their daily eating and the point that participants transitioned from active weight loss to weight maintenance were also explored. In addition, the 24-hour diet and physical activity recalls were analyzed. Finally, the research questions (pp. 8-9) posed for this study were all addressed in this chapter.

#### Description of Participants

Eleven participants completed the study. Eight participants were female and 3 participants were male. The age range of the participants was 28 to 61 years. Ten of the participants were White and 1 participant was African American. The range of participant weight loss was 11.9% to 28.6% maintained from 1 to 7.5 years. Six of the participants were normal weight as children while 5 participants were overweight as children. Nine participants completed the photo-elicitation component of the study and all 11 participants completed the three 24-hour diet and physical activity recalls. Full demographic and weight loss results are presented in Table 5.

#### Common Strategies and Approaches for Weight Loss

Research questions number 1 and 2 sought the common strategies and approaches used by adults who are successful at weight loss and to what extent these strategies are used (Question

1)? And, how do adults learn what type of approach to take to lose weight and keep it off and once adults learn about the beneficial strategies, how does this affect their weight loss process (Question 2)? Several common strategies and approaches were used by the successful weight loss maintainers. These are their strategies and approaches: (1) dietary changes; (2) self-regulating; (3) self-monitoring; (4) physical activity; (5) regular self-weighing; and (6) social support. These strategies and approaches were valuable to the participants throughout the weight loss phase.

### *Dietary Changes*

All of the participants reported changing dietary intake as an essential strategy for weight loss. Seven of the participants followed the Weight Watchers program. However, the degree to which the Weight Watchers program was used varied.

Three participants joined the Weight Watchers program, quit going to the weekly meeting after several months, but continued to use the dietary resources provided by Weight Watchers at home. Two participants went once to Weight Watchers and bought the dietary resources to follow the plan at home. They did not attend any other meetings. One participant went to the weekly meetings consistently while she actively lost weight, and 1 participant used the on-line version of the Weight Watchers program. Of the remaining participants, three did not use a structured dietary program or plan, and 1 participant used the Sugar Busters diet plan.

Table 5

*Participant Demographics and Weight Loss*

<b>Participant</b>	<b>Gender</b>	<b>Age</b>	<b>Ethnicity</b>	<b>Highest Weight (pounds)</b>	<b>Current Weight (pounds)</b>	<b>% Body Weight Lost</b>	<b>BMI Change (kg/m<sup>2</sup>)</b>	<b>Time at Current Weight</b>
KX	Female	28	White	161.5	133	17.6%	30.8 to 25.3	3 years
NF	Female	50	African American	174	131	24.7%	31.8 to 24	1 year
TN	Female	30	White	185	141	23.8%	33.8 to 25.8	1 year
QX	Male	31	White	235	182	22.6%	36.3 to 28.1	6.5 years
HD	Female	33	White	185	145	21.6%	32.8 to 25.7	7.5 years
KZ	Male	32	White	235	179	23.8%	33.7 to 25.7	2.5 years
KC	Female	61	White	270	238	11.9%	49.4 to 43.5	1.5 years
NH	Female	37	White	204	162	20.6%	35 to 27.8	2.5 years
IV	Female	35	White	238	170	28.6%	39.6 to 28.2	1 year
UF	Female	34	White	255	182	28.6%	40 to 28.5	2.5 years
LE	Male	32	White	210	170	19.1%	30.1 to 24.3	5 years

All of the participants who followed the Weight Watchers program found the program to be easy. Participant HD reflected on how difficult following a diet can be, but said the Weight Watchers program was easy to follow. She said,

No, I didn't think it was that bad [Weight Watchers], I mean to me any diet was hard because I went from putting a limitless amount of food into my mouth to counting, measuring everything that I put into my mouth, but it worked for me, I didn't think it was that difficult to follow (February 24, 2008, p. 4).

Participants KX and UF concurred that the program was easy to follow. Participant KX said,

No, I found it really really really easy and I thought, God why didn't I do this earlier. I found it really simple, I did the points ... and I found that I stopped looking at food as food and I looked at it as points, I was like that's not worth those points, so that's how that happened (February 22, 2008, p. 4).

I was surprised at how easy participant KX found the Weight Watchers program to be. I wrote a memo about this. I said,

I am almost finished transcribing my first interview, and I am surprised [I think] about how often this participant spoke about the ease of the weight loss process. It seems that this participant needed things to be as simple as possible for her to be successful. This participant mentioned a few times how she needed her diet to be easy. This makes me wonder if people need to have a diet plan that is as simple as possible, for them to be able to stick to it and be successful, especially people with busy lives.

Participant UF also reported that the Weight Watchers program was easy. She said,

Once I got started, it was actually, once I moved back home and I started, it was actually really easy which was weird, like going on the Weight Watchers, it was difficult at first

... I liked going to the gym, I liked doing everything so I didn't mind Weight Watchers  
 ... I was like, I was happy where I was at and everything was good (May 12, 2008, p. 3).

Participant IV was asked if she thought the Weight Watchers program was easier than counting calories. This participant responded with this:

To me, some people say no, but to me honestly it [Weight Watchers] is because it's kind of looking at it overall instead of me just going ok I had 100 calories here 100 calories here, it's just easier for me to just kind of look at it and know for this amount, I don't know why but you know for lunch I shouldn't have no more than seven points and no more than like five points for breakfast and then like seven points and that would give me enough to have my snacks and things too ... and a lot of like if you get like a TV [dinner], I try not to eat too many of those, but now like they all have the points on there so sometimes it's easier just to look at that (March 27, 2008, p. 10).

Participant UF also found that using the Weight Watchers program to count points was easier than counting calories. She said,

You know actually now that you just reminded me, when I first started with the personal trainer ... he had me doing a journal with calories and that was just too complex because I mean trying to figure out how many calories were in each thing, I had a little calorie book and figuring that out and I just, I was like I think that's what made me go to Weight Watchers because it's on-line, all you do is punch it in and they do it all for you, I was like ok I'll do that (May 12, 2008, p. 6).

Three participants did not use a structured dietary program or plan to change their diets. Two of these participants said that they continued to eat a lot of the same things that they normally would have eaten, but just smaller portions. Participant NH said,



So would just do little small portions, if I really wanted something I would do it, I would just have a smaller portion of it, and I kind of psyched myself into it ... so I had more success if I wanted something just have a smaller portion of it (April 14, 2008, p. 3).

Participant LE did not use a structured dietary program or plan to change his diet; he just tried to make healthier food choices. He said,

I think I did become more conscious of what I was eating, you know, like say especially if I went out to eat with friends, I didn't always go for like, you know, the burger, the fries, I would maybe opt for the salad instead and grilled chicken, so I just, I became more conscious of like what food could do to you (May 28, 2008, p. 2).

Participant QX used the Sugar Busters diet plan to assist with weight loss. He described the diet plan this way:

It's pretty much no sugar, no white bread, and then substituting everything for whole grains; you can use sugar substitutes; they didn't emphasize fat that much, they basically said like a lot of lower fat foods end up having more sugar to replace the fat and if you kind of followed it you'd probably be cutting back on your fat so it wasn't as big a deal cause like you wouldn't be having ice cream at night so, you wouldn't be having candy bars like all that kind of stuff, so they said like not to focus, like not to go crazy, don't have all the butter you want, but don't worry about counting the fat as much as doing the whole grain, it was glycemic index, which I really hadn't heard about until that, I know it's like big now, and there was like a list of foods in the back that were better substitutions you could make, and then the only other like key part of it that I always remembered but never really understood was they said if you were going to have fruit, have it a half hour before or 2 hours after a meal (February 22, 2008, p. 3).

This participant continued to eat a lot of whole wheat and whole grain foods. In his 24-hour recalls he reported that he consumed whole wheat bread, whole wheat pretzels, brown rice, and bran muffins.

Participant NF said,

At first I was just eating constantly and then, you know, I go, I'm just going to think about what I'm eating, and while I'm sitting there I'm thinking about while I'm eating, like before I would just eat, eat, eat and I didn't even think about the portions, not think about, going back for seconds, then I started to train myself to pay attention because I would eat without paying attention, like I would just black out and I would just eat but I started actually just pay attention to what I was eating and that wasn't difficult at all cause I knew what I wanted to do (February 22, 2008, pp. 5-6).

She also discussed some of the dietary changes that she made:

Dinner I would have, like, if I had, if I had baked chicken, I would go back for another, like I would have baked chicken breast before where as now I'll have a wing or a leg or you know wing and a leg and vegetables with that so it was going from eating, you know, huge chicken breast and then going back for like a leg or a thigh; this time I just would have a leg and a wing and a vegetable salad or something like that (February 22, 2008, p. 6).

After hearing this, I had to stop myself from educating this participant on healthier eating. I wrote a memo expressing my feelings about separating my dietitian self from my researcher self. In the memo I commented that,

I am finding it difficult to separate my dietitian self from my researcher self. Several times I wanted to provide people with better nutrition information because they were

misinformed or unaware (e.g., chicken leg vs. breast) or doing something that may not be healthy (e.g., weighing themselves all the time). Although these things are not harmful, I still had to hold myself back from counseling. I think this is because I have spent so much time in that counseling role and feeling that it is my duty to make sure that people are educated on nutrition. I think I have done a good job up to this point holding myself back; I just have to keep reminding myself to be quiet. These people are successes and obviously are doing something right. Maybe what I can do is make a note if it is something I feel really strongly about and tell them about it later. I do not know if people would be offended by this. I will just have to take it one situation at a time.

Participants provided some reasons for why their dietary changes had worked for them. The participants who chose to follow the Weight Watchers program did it because they were doing it with other people or they had tried the program in the past and it had worked for them. Participant HD reported that she decided to join the Weight Watchers program because her mother was joining. She said,

I went to the, my mom and I went to the meetings together in the very beginning, and I think we went to a total of maybe 3 or 4 weeks, and then she stopped going to the meetings, and I continued to go to the meetings a couple of weeks after that, and then I stopped going to the meetings altogether, but I still followed the diet (February 24, 2008, p. 4). It was her idea, but I don't remember why she chose Weight Watchers, I think it was because she had tried it before and was somewhat comfortable with how it worked (May 29, 2008, p. 4).

Participant KC reported that she had been on diets in the past. I asked her why she chose to follow the Weight Watchers program and if there was anything different about the Weight

Watchers program than what she had previously tried. She responded with, “No, I’ve been on it before” (February 23, 2008, p. 8). “I just think Weight Watchers is really good, and see I have all the information by going there I just, I would highly recommend Weight Watchers to anybody” (February 23, 2008, p. 9). Participant KX also reported having much better success with the Weight Watchers program. She said, “Yeah, as far as I can remember because I don’t really recall significantly losing any weight with any other thing, besides what I’ve done recently, which is Weight Watchers” (February 22, 2008, p. 3).

Participant TN had tried the on-line version of the Weight Watchers program, but believed that going to the meetings would be better because the weekly weigh-in and meetings with others would keep her accountable. She said,

I did that on-line Weight Watchers thing and at that point I was 164 [pounds], did it, lost nothing, like was actually like kind of following it, but didn’t have the pressure from like the meetings and everything so didn’t do it that long, stayed like at 164 [pounds] like until the following, no stayed at 164 [pounds] and then started to a gain a little bit more in the summer, went up to 167 [pounds] by the beginning of the summer (February 22, 2008, p. 3). I think when I did Weight Watchers on-line it didn’t like, it didn’t work at all, like I needed to go to the meetings and pay and give in my little ticket and have them be like, well, what did you do this week, you didn’t lose anything? Like I had it, not like they were mean or embarrassing, but it was like I didn’t, I felt like I was wasting my time, like while I didn’t mind the meetings, it was a hassle so I’m like, “I’m not going to get up early go to these stupid meetings and not lose weight” (February 22, 2008, pp. 9-10).

Participant UF used the on-line version of the Weight Watchers program and found it to be easy and useful. She said,

It was just the on-line, I never, I was never one for meetings or going with all that stuff, and I can never see myself doing that, and when I found out that they did it on-line, and I was like oh this is neat, so I tried that and I mean I guess in a way it's good (May 12, 2008, p. 3). I just, I was like I think that's what made me go to Weight Watchers because it's on-line; all you do is punch it in and they do it all for you, I was like, "Ok I'll do that" (May 12, 2008, p. 6).

However, when she was asked why she chose the Weight Watchers program as opposed to something else, she responded, "You know, I honestly don't remember" (May 12, 2008, p. 4).

Two participants who did not follow the Weight Watchers program discussed how they thought about trying it, but did not think the plan would work for them. Participant NH reported that she thought about trying the Weight Watchers program because a friend had done it, but felt that it would not work. She said "No, a friend had done Weight Watchers, so I kind of tried to pay attention to that, but I never, it was never, it wasn't me, so no it was just watch what you eat, eat less, so no" (April 14, 2008, p. 9). Participant QX reported that his wife was doing the Weight Watchers program, but thought it would not work for him. He said,

Sue [participant's wife] started Weight Watchers the first time or first time recently, I guess, and was doing the points, and she was trying to like explain that to me and I wasn't going to the meeting or anything so I didn't have the full benefit of all of it, but I just couldn't really get that, that wasn't really working for me (February 22, 2008, p. 12).

All of the participants reported that they changed their dietary intake to lose weight. This was done by following a structured dietary program or plan, or by decreasing portion size of

foods. Seven of the participants followed the Weight Watchers program, and found it easy to follow the program. However, one difference was that the degree to which the Weight Watchers program was used varied. Changing dietary intake was a key component to weight loss, but the majority of the participants needed to receive the information from an outside source (e.g., Weight Watchers).

### *Self-Regulating*

Self-regulating of dietary intake includes using instruments (e.g., measuring cups) to control the portion size of foods. Many of the participants explained that they had to decrease the amount of food they were eating in their dietary changes. Decreasing their portion sizes helped them with their weight loss. All but 1 participant used the strategy of self-regulating dietary intake to promote weight loss. According to the participants, one of the recommendations that the Weight Watchers program makes is that members need to portion out their food with measuring cups, food scales, and measuring spoons to determine the “point” value of the food. Given those instructions, it is not surprising that many of the participants self-regulated how much food they were consuming. All 7 participants who followed the Weight Watchers program talked about self-regulating their food intake. Participant HD followed the Weight Watchers program and said, “I guess I was eating the same foods, but what struck me about the diet was how much less you could take in” (February 24, 2008, p. 5). This participant then went on to say,

Portion size, I was like wow, like I remember pasta was one of the things we [her family] used to, you know, could have as much pasta as you wanted as long as you had the points for it, but a cup of pasta looked liked nothing on the plate compared to what we used to

eat, so wow that's five points; it's like three quarters of your day (February 24, 2008, p. 5).

Participant KX described measuring out the foods she ate. She said,

I do cups of, you know, a cup of grapes or a cup of rice or a cup of, you know, this or that; I do portion out the food, like I do use and until I can eye it up, I definitely use the measuring spoons and the cups because sometimes I'll think I have a cup, and I'll pour it in, and I'll be like well I got like two cups here [laugh] so you know I have to, I have no sense of a helping things are, I have no sense of measurement actually so I have to, I use those and that really helps me (February 22, 2008, p. 5).

This same participant also reflected on how much less she was able to eat when she started on the Weight Watchers program. She said,

In the beginning, yes, in the beginning I was, like, "I can't do this, this is, I can't believe how little this is," but then after I got used to it, then there were times where I was like, "I can't believe I used to eat more than this," so I think my stomach had to adapt but yeah, what a real serving is as to what we're served in real life are two totally different things. And, you know, growing up with the finish your whole plate and, you know, fast food and everything else, it's and super sizing ... it's really fascinating to see what a real serving size is, and you're like that's not enough, what are you talking about, you know. Once I started losing the weight and really eating like that then that, it definitely was enough, just wasn't what I was used to because it's not what the restaurants serve me, and it's not what happens when you go to McDonald's and you say, "I want a large fry," cause that's like a humongous fry and not it's not, the right size (February 22, 2008, p. 12).

Participant NF who did not follow the Weight Watchers program commented,

I basically, again, I ate less, and I still basically ate almost the same things, but I just ate less, and I went from white bread to wheat, and white pasta to wheat pasta, white rice to brown rice, whole milk to 2% milk and I, for lunch mainly, I had Lean Cuisine lunches, yeah, but everything else I ate the same, but just smaller portions (February 22, 2008, p. 3).

Conversely, 2 of the participants who followed the Weight Watchers program did not use measuring cups, food scales, or measuring spoons in order to determine the “point” value of the foods they were eating, although they did talk about self-regulating their food intake. These participants estimated the “point” value based on the portion size of the food. When asked if she ever weighed or portioned out food, participant KC said, “No, I was always bad about that” (February 23, 2008, p. 3). I asked participant KZ how he determined portion size if he was not measuring or weighing his food. He said,

Boy, that is a good question; for lunch I used to eat like a ham and cheese sandwich, actually I didn’t eat it with cheese anymore, I took the cheese off and like I just knew, I just had a roundabout idea of how many points it was going to be, so I guess so it wasn’t an exact science for me with portion control, I just knew that I couldn’t eat a lot of meat, and I had a general feeling of how many points it would be (February 24, 2008, p. 4).

After this conversation with participant KZ, I wrote the following memo:

I cannot believe that participant KZ did Weight Watchers but never weighed or measured food, except for ice cream. I have no idea how he managed to stick to his points. I guess because he mentioned that he generally did not get up to the number of points that he was allowed, maybe he was having more points than he thought. I find it hard to believe that



he really knew how many points he was eating in a day. I think maybe he just cut back on portion size and that helped him to lose weight. He said he stuck to his wife's points at dinner and did not want to go over that. Again, it seems that in this case it was more about cutting down portion sizes and cutting foods out than strictly counting points. I do not think that this participant truly knew how many points he was eating. He may have had a general idea, but not an exact amount.

Self-regulating dietary intake appeared to be an important weight loss strategy and was used by all but one of the participants. It seemed to be essential for obese adults to control their dietary intake by regulating the portions of foods that they were consuming. This can help to reduce caloric intake and promote weight loss. The Weight Watchers program recommends for its members to regulate their food intake by using measuring cups and food scales to adequately assess the "point" value of their meals. Because 7 participants followed the Weight Watchers program it may be that participants were just following the Weight Watchers recommendations. However, because three other participants used the self-regulating strategy it speaks to the value of its use.

### *Self-Monitoring*

Self-monitoring is the act of observing and recording one's own behavior for evaluation (NHLBI, 1998). Many of the participants reported that using a food journal to write down all of the foods and beverages they consumed was beneficial for losing weight. According to the participants, another recommendation that the Weight Watchers program makes is that members keep a journal of their dietary intake to keep track of how many "points" they consume and to hold themselves accountable for the foods they choose to eat. Therefore, it is not surprising that many of the participants used the self-monitoring strategy, but only the participants who had

used the Weight Watchers program self-monitored their dietary intake by keeping a food journal. Participant IV said that keeping a food journal was one of the most beneficial strategies in helping her to lose weight. She commented, “Ok, well in resulting, how I lost weight, in knowing that it worked and everything was starting to document everything, and holding myself accountable” (March 27, 2008, p. 18). Similarly, participant HD said, “I would write down what I ate and how much the points were so that as the day went on I knew how many I had left” (February 24, 2008, p. 5). Participant KX explained how she self-monitored her food intake:

I did, I wrote down how many points I had for the day, and then I’d write down for breakfast I’d write down I had 1 cup of oatmeal or you know  $\frac{3}{4}$  cup of cereal which was two points and a half cup of skim milk which was one point and then I’d say, “Well now I’ve got 17 points left,” and then I’d write down what I had for lunch a Lean Cuisine for four points, you know, now I’ve got 13 points left, and then I’d have 13 points for dinner and figure out what I wanted, you know, what I wanted to have for dinner with that, those points left (February 22, 2008, p. 6).

This same participant also reported that self-monitoring food intake by keeping a food journal would be something that she would recommend to others wanting to lose weight. When asked if she could provide a recommendation to individuals looking for weight loss advice, she said,

Probably keeping the food journal cause that definitely, that helped me see what I was putting in my mouth every day ... you just don’t realize all the things that you eat, sometimes if you, you know, if you don’t think of them (February 22, 2008, p. 12).

This participant also provided a photograph (Figure 2) of her food journal and commented,

That’s my food journal, it’s small I keep it in my pocket ... and that’s where I just wrote everything and kept track, and I’d write at the top how much I weighed that day and then

I'd, you know, how many points and then I'd go through and then, you know, I'd go to the next day and that's what I would do every day until I went down to pretty much the weight I was happy at (February 22, 2008, p. 18).



*Figure 2.* Photograph of KX's food journal.

Self-monitoring dietary intake was regarded as an important weight loss strategy. The act of writing down and keeping track of foods consumed helped people to stay on track, but also helped people to better see what foods they were consuming on a daily basis. In addition, participants indicated that their food journals served as resource that they could refer back to for recipe and meal ideas. However, not all of the participants used the self-monitoring strategy. Six participants used the self-monitoring strategy and all 6 participants were individuals who followed the Weight Watchers program. This suggests that self-monitoring may be an important strategy for weight loss, but, depending on the individual, may not always be needed.

### *Food Substitutions*

Another helpful dietary change for the successful weight loss maintainers was finding substitutions for some of their favorite foods. This included finding foods that were low-fat, low-calorie, or low-sugar versions of foods they enjoyed. Examples of food substitutions

included changing from regular ice cream to sugar-free ice cream or switching from regular soda to diet soda. Finding food substitutions was useful for the participants in their weight loss because they were still able to consume some of the things that they liked, but decreased the amount of calories at the same time. Eight of the participants discussed the benefits of finding food substitutions. Participant KX provided a photograph (Figure 3) and spoke about drinking Diet Pepsi to satisfy her sweet tooth instead of eating candy:

Number five is my Diet Pepsi which I, it was, if I was craving something sweet, I would go and get a Diet Pepsi because it was zero points and it was sweet ... instead of choosing to go for M and M's ... that really craves my sweet tooth and when I am tired of water, there is some days where I don't want any water, you know, I will have the Crystal Light, and then I'll have a Diet Pepsi later because it is zero points, and again that is something that I wouldn't do is drink my points, that's silly (February 22, 2008, p. 19).

This participant continues to regularly drink Diet Pepsi. She reported on all three days of her 24-hour recall that she had consumed Diet Pepsi.



*Figure 3.* Photograph of KX's Diet Pepsi.

Participant QX, who followed the Sugar Busters diet plan, talked about the benefits of food substitutions and said,

There were things you could substitute ... I found like the sugar-free fudgesicles and popsicles and sugar-free candies and things like that, so there were things you could substitute ... I eat a lot of bread and pasta, but I was able to do the whole wheat stuff so the fact that I could substitute things, I felt made it not that hard to do (February 22, 2008, p. 4).

Participant TN discussed some of the food substitutions that she had relied on to help her stay full.

The good stuff, it's whole wheat pasta, it's a picture of whole wheat pasta, 100 calorie wheat bread, All Bran cereal, and then I eat those [Kashi] Go Lean oatmeal packets, the whole wheat pasta is just because it's better than regular pasta, the All Bran is like something ridiculous, like 12 grams of fiber, so if I'm home, I eat that a lot for breakfast, and then the [Kashi] Go Lean the fiber is ok ... I do feel like it fills me up, but then the other thing too is it's portioned out, like you're not eating a huge bowl of anything like it's not that much (February 22, 2008, p. 18).

### *Ice Cream*

Ice cream was one food mentioned a great deal in conversations about food substitutions with the successful weight loss maintainers. Ice cream was discussed in several ways.

Participants reported that ice cream was a favorite food, a difficult food to avoid, a food that was a treat, and a food that many people found a substitution for. Participant HD provided a photograph (Figure 4) of an ice cream stand and discussed how ice cream has always been a problem food. However, she has learned to control the temptation and have it only occasionally. She said,

Number 5 is a picture of an ice cream stand, and this is just one example of the multitude of foods that I love to eat and overindulged in as a child, ice cream is by far my favorite food and I sacrificed, you know, I don't eat it like I want to, but I still have it occasionally, and that's ok, it was out of control eating on my part from ice cream probably at the top of the list. It hindered it [weight loss] for a long time because you go, "Do I want to be thin and lose weight on one hand or do I want to eat the delicious ice cream on the other hand?" And, for a long time the delicious ice cream always won, you know it just did and I'll diet tomorrow; now the ice cream doesn't win as much as it used to and, and I choose, which I didn't do before low-fat varieties of such food as ice cream, which I never did; there wasn't low-fat, you know, as a kid and a young adult, who bought low-fat anything (February 24, 2008, pp. 15-16)?

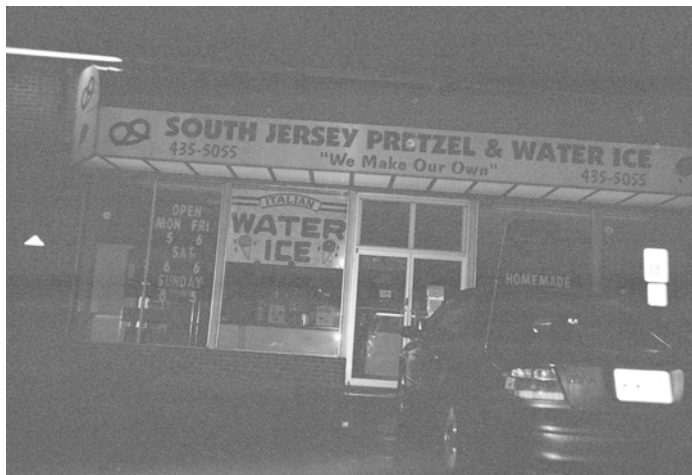


*Figure 4.* HD's photograph of an ice cream stand.

Participant NF provided a photograph (Figure 5) of an ice cream store near her house and not only discussed how ice cream hindered her weight loss, but also admitted that she actually gained weight as a result of buying it for herself as a treat. She said,

During the diet there was, for a while like ice cream, I love butter pecan ice cream, and I believe I took a picture of the ice cream parlor that's down the street, and I was losing my

weight and I thought wow this is good I'm going to treat myself, I bought one of those barrels and that was a down fall; I gained 4 pounds back and I didn't eat the whole thing, I got down to you know, I ate about three quarters of it and then I thought, you know, I weighed myself and got scared and I thought ok that's it, so I told my husband, "This has to be thrown away, that's it" (February 22, 2008, p. 4).



*Figure 5.* NF's photograph of an ice cream store.

Participant NH talked about going to get ice cream when she was at the beach with her family. Having ice cream was not only a treat, but also an on-going social situation with her family that she does not want to give up. She said,

When we're at the beach ... and there's the best ice cream store down there, so when we're down there, it's very hard to stay away from it because that's what we always did, so I tried sugar, no sugar added ice cream in chocolate, that was my favorite flavor and it's disgusting [laugh], and I was like, "Oh no how am I going to do this?" Like my that's what we do, we go up to the ice cream shop so I tried vanilla and that wasn't quite as disgusting but it just wasn't what I wanted so then somebody said, "How about no sugar moose tracks," so I tried that; so I never had that kind of ice cream before so it was a good substitute, so but that was a huge struggle (April 14, 2008, p. 12).

Edy's slow churned ice cream was a brand of ice cream mentioned by a few participants. Edy's slow churned is a low-fat ice cream that many participants raved about and used as a substitution for regular ice cream. Participant KX provided a photograph (Figure 6) of Edy's slow churned ice cream and said,

That's the Edy's slow churned ice cream, that was definitely a big help because you feel like you're being bad and you're not because you're counting for it and you're eating ice cream and you're like, "It's really good ice cream, it doesn't feel like diet, doesn't taste like diet ice cream" (February 22, 2008, p. 21).



*Figure 6.* KX's photograph of Edy's slow churned ice cream.

Participant KZ also took a photograph (Figure 7) of Edy's slow churned ice cream. He said,

We are big ice cream eaters and that was kind of like something that I used to look forward to, to kind of like, it was kind of like a sweet thing and it was based on the scale, I think that was like for a cup it was two points, two or three points, I think so and Michelle [participant's wife] used to pre-measure that out (February 24, 2008, p. 9).





*Figure 7. KZ's photograph of Edy's slow churned ice cream.*

Participant TN also discussed treating herself with ice cream, but she would have Edy's slow churned as a substitution. She said,

I mean I would treat myself with like ice cream, but even with that it was like the [Edy's] slow churn light and I would still keep within my points, so I didn't really see that as a, kind of like a splurge, like I would eat a cup of it and just, have whatever points (February 22, 2008, p. 6).

Participant TN also indicated on 2 days of her 24-hour recalls that she consumed Edy's slow churned for dessert.

After hearing many of the participants discuss ice cream, I wrote the following memo:

I cannot believe how many times people talk about ice cream. Many of the participants have indicated that ice cream is a food that they love and cannot control themselves with. I am not sure why I am surprised by this. I can see that many people have a sweet tooth and turn to things like ice cream. However, I would have expected there to be more of a variety in the foods that people went out of their way to mention (e.g., pizza or french fries). I guess I am just surprised to keep hearing about ice cream all the time and seeing several participants take pictures of ice cream as opposed to some other foods.

Finding food substitutions was important in aiding the weight loss process and ice cream was the most commonly reported food that participants found a substitution for. This is an example of how participants were able to find a lower-calorie, lower-fat version of a food that they enjoyed eating to fit it into their dietary intake without the fear of regaining weight. It appears that participants have become savvy with their food purchases by educating themselves on healthier versions of foods they commonly consume.

Changing dietary intake was a key component for participant weight loss. Seven participants used the Weight Watchers program, 1 participant used the Sugar Busters diet plan, and 3 participants did not follow a structured diet program or plan. The participants changed their dietary intake by self-regulating their food intake by using measuring cups to portion out food, or by eyeballing smaller portion sizes. In addition, many participants self-monitored their dietary intake by writing down what they consumed in a food journal, or by keeping track of the “points” they consumed throughout the day. One major dietary change was finding food substitutions to decrease caloric intake, with ice cream being the most frequently reported substituted food.

### *Physical Activity*

Physical activity was another strategy used by the successful weight loss maintainers. Some of the participants were engaging in physical activity prior to weight loss initiation, but not all of them. In addition, all but one of the participants used physical activity to help promote weight loss, with the average frequency being four times per week. Eight of the participants reported that they did both aerobic and strength-training activities and three of the participants reported that they used only aerobic activities. Seven of the participants had gym memberships, and 1 participant attended a monthly boot camp. Participant HD was the only participant who

did not use physical activity to lose weight; she said that she had a very busy schedule and lifestyle at the time and did not have any additional time for physical activity. She responded “No, I didn’t have any time for that [physical activity] in my life at that point, I was too busy with school” (February 24, 2008, p. 6).

Participant KZ talked about how he had always engaged in physical activity and has continued to use physical activity as a strategy for weight loss. He said, “I’ve always like worked out and went to the gym, and I did a lot of walking, I probably, and then I don’t know if it was related to the diet, but Michelle [participant’s wife] and I always walk” (February 24, 2008, p. 5). Participant NH said that adding physical activity to her life was a part of being successful, which she had been unable to do in the past. She said, “And walking, I don’t really think I ever put the exercise part to it before, I think the balance of the exercise and changing the food habits, was it for me this time” (April 14, 2008, p. 9). Participant NF was also not physically active prior to losing weight. The physical activity was something she started doing to support her weight loss. She provided a photograph (Figure 8) of the track where she walked and said,

Oh no, didn’t even try to work out, didn’t even want to, and again Amy [participant’s coworker] said, you know, she got a treadmill and she started walking on the treadmill and she started on, oh I did about a half an hour on the treadmill and I said, “You know what, I got to start working out too, I know I don’t have a treadmill, but there’s a track that’s near me and I will walk the track,” it was about a quarter of a mile. And, I would go around and it’s pretty wide ... but it goes all the way around and then I came back here, and that was about a quarter of a mile and I walked that about seven times (February 22, 2008, pp. 7-8).



*Figure 8.* NF's photograph of a walking path.

When asked what physical activity she would recommend to others who want to lose weight, participant IV said, "Don't use the excuse you can't afford to go to the gym or things like that, that you can do pushups and crunches and jumping jacks, or if you don't like running, you know, walk" (March 27, 2008, p. 20).

Self-monitoring was also used by 1 participant for documenting the frequency of physical activity done. Participant QX provided a photograph (Figure 9) and discussed how he monitored his physical activity on a calendar. He said,

I would just try to use a highlighter and just put a little X on every day that I've gone ... it's all psychological, but when you see that you've gone a lot in a week, it almost makes you want to go more the rest of that week, although sometimes too it's like, "Alright I've gone, you know, a fair amount this week I can skip a day." I would like to average 5 days a week ... so at the end of the month if I'm looking at it, if I'm like, "Oh that stinks, I only got like 4 days every week," I kind of feel like I slacked off (February 22, 2008, p. 6).



*Figure 9. QX's photograph of a calendar.*

Participants generally started their physical activity slowly and gradually increased its frequency and intensity. Many of the participants discussed how their rate of weight loss was more rapid once they started exercising or when they increased the frequency and intensity of the activities. Participant IV talked about finding time in her busy schedule for physical activity, but gradually increasing the frequency to feel better. She said,

I had to go to Curves, and it was only 30 minutes, and a lot of people go, "Oh well, why don't you join the Gold's Gym?" And I go, "You know all I can do is dedicate 30 minutes of my time, that's it, I'm too busy, can't do no more." So, it was taking just little steps and that's, I started feeling better, like I said, I used to only go three times, and then I stepped it up to four, five times a week (March 27, 2008, p. 18).

Participant QX discussed increasing the intensity of his physical activity and changing the type of activity he was doing, which facilitated his weight loss. He said,

I would try to go longer and increase the resistance and all that kind of stuff and finally worked in running ... but I felt like that helped and, then, by the time we got married, I was down to 205 [pounds]. Then after we got married, we joined another gym, I started doing more weights, and I feel like that helped a lot, and then since then I've been doing weights and cardio, so that kind of, I think, made a big difference (February 22, 2008, p.

5). I guess just because I feel like I did lose weight when I was dieting and doing like moderate exercise, but I lost more weight when I really upped the exercise, and I guess ... I just feel like exercise makes a huge difference (February 22, 2008, p. 9).

Participant TN reported that she really started losing weight when she started running as opposed to other aerobic activities. She said,

Bill [participant's husband] was all like, "You need to start running, you need to start running," well I was up to by the end of the summer I was up to 3 miles, and totally like once I started running, like it was the weight was falling off (February 22, 2008, pp. 7-8).

Participant LE reported that he unintentionally lost weight by changing his lifestyle. He was doing more physical activity, which he learned could help him promote weight loss. He said,

I think I just became more physically active ... and I noticed I started losing weight so then I was like, "Oh well, look what I'm doing." I just started exercising more, and that's how I've been able to keep it off (May 28, 2008, p. 1).

Two participants discussed how a physician provided them with information about physical activity to lose more weight. Participant NF works at a cardiology office and said, "I work here, working with the cardiologist; they just said you, mainly Dr. Smith told me to eat less and exercise and you'll be ok" (February 22, 2008, p. 4). Participant NH went to her family physician because she was not feeling well. She was diagnosed with pre-diabetes. She said, "He [family physician] recommended that I watch my sugar, so by immediately starting to watch that, I lost weight and then I tried to walk because he said the exercise would help the high blood pressure" (April 14, 2008, p. 3).

Participants discussed how it was easier to be physically active once they got themselves started. TN said,

Just I think for me personally it's because, once I'm there [at the gym] and changed, I'm not going to leave, and I was, it was I got into a routine (February 22, 2008, p. 7). I wasn't going to drive there [the gym], get changed, and spend 20 minutes; like once I was there, I was there, and then I lost more, like had no trouble (February 22, 2008, p. 9).

Participant NH agreed that it was easier once she got started. She said,

Once I'm out there [walking] I love it, but there are days when I really have to talk myself into it, and I like it too when the time changes, it's easier to go out after dinner, you know not, later in the evening, sometimes it's just not convenient to do it when you get home from work (April 14, 2008, p. 5).

### *Effects of Weather*

The weather seemed to play a role in how often participants engaged in physical activity. The weather was seen as a double-edged sword for physical activity. Good weather was a stimulus for physical activity, while inclement weather was a hindrance to it. A few participants talked about the effects of weather on their physical activity. Participant KX said,

I try to walk probably three times a week inside since the weather is awful; when it is nicer, I try to run, run-walk every other day if I can, I got on that habit right after Christmas and it was beautiful out, and then when it started getting really cold, I tried to do it and I couldn't breathe and I was like, "Oh this isn't fun" (February 22, 2008, p. 19).

Additionally, participant IV said, "I would gain like 2 or 3 pounds and lose it, gain 2 or 3 pounds and lose it, and then during the heat of the summer I, it was so hot, I didn't work out quite as much" (March 27, 2008, p. 4).

Participant NF said that she does not walk around the track as much when the weather is cold; she used exercise videos at home as a substitute. She said, "Not since it's been cold, and I

can't wait till the spring so I can do it again; when it got cold I just stayed home and just did the, you know, the tapes" (February 22, 2008, p. 8). Participant NH also talked about finding a substitute for physical activity when the weather is cold:

I do the neighborhood and so that was part of it; this winter it was kind of crappy out, and I didn't want to go out in the, I've thought about going to the mall, but I've never actually done it (April 14, 2008, p. 5).

Participant UF remarked that she had a busy lifestyle, which prevents her from doing as much physical activity as she would like. However, when the weather was nice, there was more opportunity to be outside. She said,

Time too, time is a big thing; I feel like I never have any time, that's the biggest thing, and then like it's so hard too now, I would be well, not now, but when it was nice out going to the gym [laugh] because I would be like, I would do yard work or I would take the dog for a, you know, nice little walk, stuff like that, so I mean I've still be trying to keep myself somewhat active (May 12, 2008, p. 8).

Participant HD also discussed how the cold weather affected her physical activity. She said,

I sometimes I walk around, I walk, but for me the weather, I can't do it right now I can't go outside, but sometimes I do walk around you know Copper River is like 3 miles like I think, so I'll walk that (February 24, 2008, p. 7).

After hearing several participants discuss how the weather affects their physical activity, I wrote the following memo:

I am surprised by how often participants talk about the weather affecting their physical activity level. On several occasions it was mentioned that the cold weather prevents people from doing physical activity. I kind of expected, since these people are



successful, that they would be more intense about being physically active. And, since many of them mentioned that they do not want to gain the weight back, I am surprised that they do not make more of an effort to exercise when it is cold out.

I wrote this memo because I had a preconceived idea that the successful weight losers would be stricter with their diet by eating healthier foods more often and more willing to make the effort to exercise when obstacles arose. I thought they would be more likely to follow typical health recommendations to eat healthier and exercise more often. However, this does not appear to be the case since many of the participants allowed the weather to play a role in their quantity of physical activity.

Physical activity was also a key component for participant weight loss. However, the type, frequency, and intensity of activities were different for each participant. In addition, the weather appeared to play a role in both hindering and promoting physical activity. Because many of the participants were only engaging in physical activity a few times per week, it appears that health promotion professionals do not need to recommend extreme amounts of physical activity, which may not be feasible for busy American adults.

### *Regular Self-Weighing*

Regular self-weighing was another common strategy used by the successful weight loss maintainers. Participants discussed how they used regular self-weighing to hold themselves accountable and as a tool to prevent regaining weight. All of the participants reported that they weighed themselves regularly. Five participants reported that they weighed themselves every day or almost every day. Two participants reported that they weighed themselves once per week, but while they were actively losing weight, they weighed themselves every day. Two participants reported that they weighed themselves a couple times per week. One participant

reported that she weighed herself once per week and another participant reported that she currently weighed herself once per week but while she was actively losing weight she weighed herself once per month. According to the participants, the Weight Watchers program recommends that members weigh themselves regularly; however the program suggests no more than once per week. Participant IV said,

I do every single morning as much as I hate it; I weigh myself every single morning; some people say that's like a horrible thing, but to me it holds me accountable and especially when you do right and you weigh and you gain 4 or 5 pounds and you feel horrible, but I still [weigh] every single day because then it keeps me more motivated to do the right thing that day (March 27, 2008, p. 9).

Participant KC said that she weighed herself several times per day, even though she believed that this is something she should not do. She cannot control it. She said,

Every time I go to the bathroom, I'm on the scale [laugh] yes, all the time ... I think I get on there so I don't gain weight, I think if I see that scale going the other way, I'm going to watch what I eat (February 23, 2008, p. 7).

Participant KX followed the Weight Watchers program, but still weighed herself daily. She said,

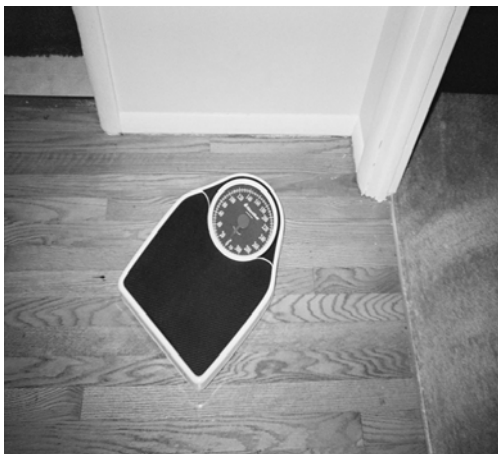
I would say most every morning ... I just step on it just to look and get an idea, make sure I'm not, you know, make sure I'm not too far or, you know, sometimes I won't step on the scale for a week and then I'll look and I'll be like, "Hmm, ok, that's not good or oh that's fine." You know, but it's just because it's there I will step on it every morning, I don't obsess about it and worry about it every day but I, it is I would probably say every day. I know that one of the Weight Watchers things is to only weigh yourself once a week or you'll get discouraged, but I felt like I wanted to get an idea of how things were

going; I like to know what was happening every day, just because then I, again it was a gauge for me, but I didn't obsess about it; so I didn't feel like, I know some people it could discourage them, it didn't discourage me; I just used it more as a gauge (February 22, 2008, p. 10).

Participant NH reported that she would stop by her family physician's office to weigh herself. She did not own a weight scale when she first started to lose weight, so being able to stop in the office and check her weight allowed her to see the progress she was making. She said,

My doctor was very helpful; he's right up the street [at] the next intersection, and so I would pop in a lot and use his scale, I never wanted to have a scale in the house, but as I started to lose [weight], I would think, "Let me just pop in there and I would see him" (April 14, 2008, p. 5). I would probably stop by once a month, and since I do have a scale in the house so, you know, I do it more frequently, but no it was more exciting to go in every month and to see a bigger number (April 14, 2008, p. 7).

She provided a photograph (Figure 10) of the weight scale she had at home and said, "Oh that's the scale that, once I started to feel good, I went out and bought my own, so I didn't pester the doctor's office anymore" (April 14, 2008, p. 11).



*Figure 10.* Photograph of NH's weight scale.

Regular self-weighing helped participants monitor their progress and success and also helped to prevent weight from creeping back up without participant's knowledge. Adults who are attempting to lose weight should be encouraged to weigh themselves on a regular basis. Regular self-weighing can serve as a motivator for staying on track by allowing individuals to see even small successes.

### *Social Support*

Social support was another common strategy used by the successful weight loss maintainers. All of the participants reported that they had some social support during their period of weight loss, and the support came from family members, friends, coworkers, physicians, and personal trainers. Participant KX received social support from her family. She did the Weight Watchers program with three family members and talked about how that helped her be successful:

They were my huge help, you know, I think without them I don't think I would've been able to do this on my own. It was easy to call and just have that support, and every week just check in and have to be, you know, you have to be accountable for yourself to somebody you know, and they didn't care if I gained a pound or lost a pound, but they were very supportive either way (February 22, 2008, p. 21).

Participant KZ also had family support. He did the Weight Watchers program with his wife and talked about the support she provided:

I did it with my wife, she had some advice from her mom and she had the point counter, so we just did it on our own, we didn't do any kind of, we didn't physically do Weight Watchers, but we followed the information that we got from her mom and some of the different stuff that she saw on-line (February 24, 2008, p. 3). She [participant's wife]

was doing the diet too, so it was kind of like us continuing to check our weights and, it just kind of kept me motivated, plus she always did the cooking too at night when I got home, so the meals that she cooked were good for both of us so that's kind of how, how it worked (February 24, 2008, p. 6).

Participant NF indicated that she had two types of social support that were both emotional and instrumental. First, her husband was supportive and went walking with her; she said, "I would tell my husband, 'Ok you're going for a walk with me today,' and he'd say 'yeah,' and that helped me too cause he walked with me" (February 22, 2008, p. 8). Second, she received social support from a coworker who provided her with ideas of what types of foods to eat. She said,

By working with her [coworker] every day she brought in certain things that were 100 calories and like small desserts and, you know, things like that so she could snack on throughout the day, and she gave me some ideas of what I should eat, you know, throughout the day (February 22, 2008, p. 10).

Participant KC discussed how she was involved in a biggest-loser competition at work. She explained how the competition worked and how she thought it contributed to her success:

Well, we had one back in the summertime and like, and then we were off it for like 3 months, and then we went, January we started another one, so I think it's more like I try to control more, like I don't want to be a failure in this biggest loser; I'm not going to be a winner, but I don't want to be a failure so it helps you control your weight or lose some, like I lost 4 pounds since January (February 23, 2008, p. 5).

Participant QX talked about how he found support from people when they noticed that he was losing weight, which kept him motivated. He said, "The big thing was just having people

notice, like that was sort of the unofficial motivation ... if someone was like, ‘Oh you look like you’ve lost weight,’ I’d get really excited” (February 22, 2008, p. 8).

Participant UF talked about how her personal trainer provided her with social support:

Steve [personal trainer] was definitely a big, big thing keeping me going, ... I was seeing him 3 days a week and everything like that so like he knew exactly what to say ... to get me to work harder, you know, that kind of thing; you know, he was a big influence (May 12, 2008, p. 10).

Participant IV reported that she had a coworker and a friend who suggested going to the gym, which made it easier to motivate herself to go. She said,

I can say if you have Betty ... her and I went worked out a couple of days at Gold’s Gym a week or two ago in between my off days, and I can say when she said, “Hey are you going to go work out,” I’ll make sure I’m there so some of it, it was a little bit of Roberta my other friend was saying, “Hey, you want to do this,” and I said, “Well I’ll start right now.” I had already started working out (March 27, 2008, p. 6). I will kind of almost make myself go [to the gym], and when my friend, like I said it was almost like a challenge too when I started, she goes, “Ok well you’re going then I’m definitely going” (March 27, 2008, p. 18).

Participant NH reported that she would regularly stop into her family physician’s office to weigh herself and see the doctor. She indicated that the women who worked in the office helped her and kept her motivated by complimenting her success. She said,

Compliments, yes, asking what I was doing, “Oh, what did you have to eat, like just give me an idea of what you had to eat; I want to do it too,” so it’s more just an interest I think, and then I was happy to tell them because I was feeling better and better about it.

Yes, I think it was, like with the doctor, I think it was nice to hear compliments, I like to go shopping more, I enjoy going out and finding new things and yeah once, once I felt the success, I did feel like it was easier (April 14, 2008, p. 6).

I asked participants if they thought they would have been as successful if they did not have the social support. Most participants indicated that they would not have been as successful if they did not have some type of social support. Participant NF believed that she would not have been as successful without the support of her coworker. She said,

I probably would have started, but I wouldn't have continued I don't think, when I saw the results with Mary [coworker] and saw how much she was losing, that encouraged me so, I think if Mary wasn't like encouraging me, no, I wouldn't have gone on this, this far, I would have lost but not as much as I did (February 22, 2008, p. 13).

Participant KX followed the Weight Watchers program with her mom and two aunts. She said that it would have been more difficult if she did not have their support. She said,

Absolutely, yeah absolutely 100 percent more difficult, it's difficult now if I feel like if I have to go back on to lose a couple of pounds, and I've got no one else, it's very difficult. It was, it's definitely a lot easier when everybody else is doing it; the willpower is not nearly as strong when someone else has fries and you think you should be getting the salad, but you know you'll just get the fries, you know, so it's definitely helped (February 22, 2008, p. 8).

Participant KC who had been involved in the biggest-loser competition at work, discussed previously in this section, believed that support contributed to her success. She said, "I really do think it has a lot to do with the biggest-loser thing at work because I think it helps control it [her

weight]” (February 23, 2008, p. 9). Participant KZ followed the Weight Watchers program with his wife. He did not think he could have stuck to the program if it were not for her. He said,

No, definitely not, definitely not, I see it now if I see my weight start to creeping up I’ll tell myself I want to cut back for a week, but it’s extremely difficult, I’ll do it for a couple days, and then I’ll go back off (February 24, 2008, p. 7).

Social support was used as a facilitator for weight loss. Social support was needed by all of the participants for weight loss and came from relationships with others. This suggests that individuals who are attempting to lose weight should try to find a support person who can assist them and provide support as needed. Having outside support may help people to stay on track with their weight loss by providing continuous motivation.

The use of weight loss strategies and approaches are presented in Table 6.

#### Weight Loss versus Weight Maintenance

Participants were asked if they thought it was harder to lose weight or maintain weight. These responses varied according to the participant. Participant UF believed that the entire process was difficult, but thought that weight maintenance was harder than weight loss. She said,

I don’t think it’s ever easy, I mean like I say that it was easy in the beginning with the first 100 [pounds], but it wasn’t really that that it was easier than this is right now, but I mean losing weight, still I think it’s, I don’t think it’s ever easy (May 12, 2008, p. 11).

Participant HD thought that it was more difficult to change her thinking to lose weight. She said,

It was getting it straight up in my brain for the first time ever, that’s when I was able to do it, actually stick with it and now it’s like ... I know what I have to do, I know what I need to do, I don’t have to watch every little thing that I put in my mouth like when I was



on the diet. It was harder to change my thinking to actually get to the point to understand what I needed to do at why and how (February 24, 2008, p. 13).

Participant LE reported that it was harder to lose weight now that he is older. He said,

You know, it's hard because now that I'm in my 30's [laugh] your body changes and, that's a hard one, I'm not sure, because there are times where you don't feel like exercising ... I know that you know, I find that now that I am in my 30's, it is harder to lose than once, you know, when I was in my 20's. When I gained a little bit of it back a couple of years ago, I thought, "Oh boy what's going on here," and I don't know if it was my body was changing again and all of that sort of stuff and I plateaued a little bit, but then I became more conscious of it, you know (May 28, 2008, pp. 5-6).

Participant KX indicated that she did not think it was difficult to maintain her weight. She said,

No, no, not really, not as long as I pay attention; if I stop paying attention and I go up a lot, then I think it would probably be hard, but because, I just keep an eye, you know, and I'm like, "Oh, alright, then you got to pay attention again." Then it's, then it's I think a lot easier because then I know like, "Ok I know I ate this the other day," that makes sense, you know, and you know I can attribute it to something, and then it definitely makes sense and it's definitely easy. If it's, I feel I guess, if it's going up and I don't know why, then it would I guess it would be harder to maintain, but I can keep an idea of what's going on since I watch my weight every day (February 22, 2008, p. 18).

Table 6

*Weight Loss Strategies and Approaches*

<b>Participant</b>	<b>Structured Diet Program</b>	<b>Physical Activity Type &amp; Frequency</b>	<b>Self- Regulating</b>	<b>Self- Monitoring</b>	<b>Food Substitutions</b>	<b>Regular Self- Weighing</b>	<b>Social Support</b>
KX	Yes	Walking; 3-4 times/week	Yes	Yes	Yes	Yes; almost daily	Yes
NF	No	Walking; 2-3 times/week	Yes	No	Yes	Yes; daily	Yes
TN	Yes	Gym; aerobic only; 5 times/week	Yes	Yes	Yes	Yes; almost daily	Yes
QX	Yes	Gym; aerobic plus weights; 5 times/week	Yes	Yes	Yes	Yes; 3 days/week	Yes
HD	Yes	None	Yes	Yes	Yes	Yes; almost daily	Yes
KZ	Yes	Gym; walking; 2-3 times/week	Yes	No	Yes	Yes; daily	Yes
KC	Yes	Gym; aerobic plus weights; 2-3 times/week	Yes	Yes	No	Yes; several times/day	Yes
NH	No	Walking; 6 times/week	Yes	No	Yes	Yes; once/month	Yes
IV	Yes	Boot Camp; Gym; 5 times/week	Yes	Yes	Yes	Yes; daily	Yes
UF	Yes	Gym; aerobic plus weights; 3-5 times/week	Yes	Yes	No	Yes; once/week	Yes
LE	No	Running; 2-4 times/week	Yes	No	No	Yes; couple times/week	Yes

Several valuable strategies and approaches were used to promote significant weight loss. Changes in dietary intake were essential and included self-regulating and self-monitoring food intake and finding food substitutions. Ice cream was the most common food substituted by the participants. Regular physical activity was an essential strategy for weight loss with all but 1 participant using physical activity to lose weight. The majority of participants indicated that they engaged in both aerobic and strength training type exercises. In addition, the weather played a role in both promoting and hindering physical activity. The participants reported that regular self-weighing was an important strategy for weight loss. The most frequently reported response was regular self-weighing everyday or almost every day. The participants reported that social support was a helpful factor for promoting weight loss. Social support varied and came from family members, friends, coworkers, physicians, and personal trainers. Finally, some participants found it harder to lose weight, and some found it harder to maintain their weight.

#### Conceptualization of Eating

The goal of research question 3 was to determine how adults who have lost a significant amount of weight and maintained that loss conceptualize their daily eating. Some of the factors related to eating included allowing oneself to have treats from time to time, dining out occasionally, avoiding temptations, and drinking water. Participants said that they allowed themselves to have treats once in a while. This permitted participants to continue to consume some of their favorite foods, but they tried to limit their consumption of treats, to promote weight maintenance. Participant IV discussed the foods she treated herself with and how she tried to only treat herself occasionally. She said,

I did eat like some pecans today, and I ate like a I don't know a third cup of pecans and stuff, and to me that's like almost better than chocolate or anything so but then they could

be extremely fattening too, so those are the things that I usually treat myself with, or I like to make sure I count them out, and I have gone I found that Starbucks has like those like 110 calorie frappachino and stuff, and I'll go and get that sometimes because those are things I like that, but I don't do it so often because when I do, if I'm truly staying focused, to me treating myself with food just kind of sets me up where I'm going to crave it tomorrow and the next day and the next day (March 27, 2008, p. 17).

She also provided a photograph (Figure 11) and talked about baked goods. She described them as being a treat, but she allowed herself to only have a few and gave the rest away; she said,

When you're baking that's when it's worse, I think, I try not to bake that often, and if I do, I try to put it on platters and take it to somebody when I do, and even so if I eat one or two, I can't eat the whole plate, I've already taken them out of our house (March 27, 2008, p. 16).



*Figure 11.* IV's photograph of cake and cupcakes.

Participant QX said that he allowed himself a treat from time to time, but tried to keep it to a minimum.

I do treat myself, and I'll eat, I'm not as strict with the diet as when I first started and what not and like I will, especially on the weekends like, go out to dinner or have a dessert, things like that, just realizing though that it's not like, "Oh you lost the weight

and now you're," you don't create like a cushion where you can now do anything you want, you still kind of have to watch everything really (February 22, 2008, pp. 10-11).

Participant TN commented that there were no particular foods that she treated herself with, but she does eat out fairly regularly, which she considered a treat. She said,

Not like particular foods, but I guess I saw myself as like, cause we'd still go out on the weekends so like Friday night and Saturday night, like I wouldn't go crazy but, I would order what I wanted on the menu (February 22, 2008, p. 6).

Participant HD said that she enjoyed sweets and, while she was actively following the Weight Watchers program, she would save up "points" and treat herself with something sweet. She said, "Tastykake made low-fat varieties of their cakes, and I would save up points to have that" (February 24, 2008, p. 8). When asked how often she would save up "points" for the cake, she responded with "Couple times a week" (February 24, 2008, p. 8). This participant continues to consume this treat. In two of her 24-hour recalls she reported that she had consumed a low-fat Tastykake product.

### *Dining Out*

Several participants discussed how dining out at restaurants had an effect on their daily eating. Participants reported that dining out at restaurants can be a hindrance to weight maintenance and provided some examples of how they have altered their daily eating to still incorporate dining out. Participant IV reported that her husband had been a positive influence and had planned meals ahead so they did not need to dine out. She said,

The way he [participant's husband] eats sometimes I would never eat, but I find myself now but definitely eating cheese sticks and just tortilla wrap or something just to curb and not being so hungry because I would've been the first one to stop somewhere and wait 30

minutes for them to cook me something versus maybe just grabbing something real fast and going (March 27, 2008, p. 18).

She also commented that she had tried to make better food choices when she does dine out. She said,

Like Don Pablo's [Mexican restaurant] is like my favorite, and I always tell them, "I don't even want the chips, don't give them to me, I don't want them," and I try to get the small burrito if I have to, have it cut it down, and I love their salads, a lot of times I eat that (March 27, 2008, p. 15).

The participant's 24-hour recall supports this summary. One of the days that this participant recalled her dietary intake, she ate at Don Pablo's restaurant. She reported that she consumed only a small burrito and did not have the tortilla chips, even though the burrito comes with them.

Two participants reported that they continued to try to enjoy themselves when they do dine out by allowing themselves to eat more than they normally would. Participant KX said,

One of the things that I would do even on Weight Watchers was if we went out to dinner, I would enjoy myself, I wouldn't, you know, try to use my points, or I'd just, I had, we didn't go out to dinner that often, so I had would have whatever I wanted, and I would treat myself (February 22, 2008, p. 11).

Participant TN also reported that she treated herself when she dined out, but also tried to make better food choices. She said,

Friday night and Saturday night for dinner, like I wouldn't sit there while everyone else ate and had a salad, like I would get whatever I wanted, within reason, like I wouldn't get like the fettuccini alfredo, but I wouldn't sit there and be like, "Oh I'm just going to have a spinach salad" (February 22, 2008, p. 6). If the week was only Monday through Friday,

like I really think that I would be so much thinner, because it's like Friday, like Sunday I'm ok, but Friday night, especially going out to dinner, you know, we'd go out to dinner. I'd have three glasses of wine, it's like stuff like that like, and I would make because of Weight Watchers would make healthier choices, like I would have wine or light beer instead of having like a margarita or daiquiri, so while I would still make ok choices, I was still, like Italian restaurants, I was still eating like half a loaf of bread, like ridiculous amounts of food, but then, it was always dinner, do you know what I mean? Like we'd get up and we'd have whole wheat pancakes or egg white omelets, then we'd go to the gym, so it was like up until 5 [pm] we were great and it was like hell we're going out for dinner, and then, but then part of it was like ok again, I'm not going to sit there while everybody eats, and like I'm going to get a side salad, like I'd rather do that and go to the gym the next day, and you'd still have Monday through Thursday, and watch it then, so treats would be the weekends, especially like, not all day like we didn't junk it all day, it would just be dinners cause we were going out, like we usually go out like Friday night and Saturday night (February 22, 2008, p. 14).

Participant KZ reported that he used to eat several meals out with his family, but after starting the Weight Watchers program, they decreased the amount of meals eaten out. He said, Pre-diet we used to eat every Thursday, Friday, Saturday, Sunday out ... and then plus food order out lunch, breakfast, but, now I would say probably twice a week we eat out for dinner, and then you know depending on what we're doing running around during the day, we may grab lunch or something but not, not as often certainly (February 24, 2008, p. 10).

Participant KX provided a photograph (Figure 12) of a take-out menu and discussed how ordering meals out is a hindrance to her weight maintenance. She said,

That is the pizza place around the corner from the house that has really good fries and that is definitely a deterrent because if somebody orders from there, and it's very difficult to order the, even the salad had these garlic knots in it that are really good and they have to be really high in points, they have to be, and everything there is really good, and it's a huge deterrent if somebody orders from there, and I end up ordering with them, like my husband likes to order from there a lot so that's a huge deterrent, so I try to eat before he comes home [laugh] (February 22, 2008, p. 13).



*Figure 12.* KX's photograph of a take-out menu.

### *Food Temptations*

Many participants discussed food temptations and how they had learned to handle them. Participant NF reported that a lot of food temptations were at her place of work. She said,

We had a lot of lunches that came here from drug reps, and I knew if I was hungry when I went back here, I was going to eat, and I didn't want to eat a normal amount (February 22, 2008, p. 9). And, actually in my office today we have a nurse who works here whose husband works for Entenmanns and she's always got something back there from



Entenmanns, and I actually I look at that and I think, “Oh if I eat that, what I see now is fat coming on my body” (February 22, 2008, p. 13).

Two participants discussed having healthier snacks around to limit consumption of unhealthy snacks. Participant QX provided a photograph (Figure 13) and said that he tried to keep healthier snacks in his office to avoid getting something out of the vending machine. He said,

That is my drawer at work where I try to keep healthy snacks and things; one thing I do a lot and this I’ll, I guess a lot of this could be like the one downside I guess of the sugar busters thing is that I sort of found some things that fit and that I liked and I kind of stuck with them. And sometimes I should try to think of some other things I might enjoy more or whatever, but a lot of, I keep a lot of cereal at work, whole grain cereal and a lot of times for lunch ... I usually have nuts in my drawer and maybe some sort of like whole grain crackers or stuff. Because at work ... I just want to make sure that I have stuff that I can eat that’s healthier than going to the snack machine (February 22, 2008, pp. 13-14).



*Figure 13.* Photograph of QX’s desk drawer at work.

Participant NH provided a photograph (Figure 14) and said that she had a cabinet in her house where she kept snack-type foods. She tried to put healthier foods in the cabinet so she can continue to maintain her weight. She said,

This is a help and, a positive and a negative, this is a cabinet where I keep the snacks now, and if food is in the house, I have to eat, I eat it. If it's not there, I don't think about it [laugh] you'll notice it's a huge cabinet ... I try to keep healthier snacks in there now, but it talks to me when it's in the house [laugh]. I have people over though so you know I don't want to force it on them, so then there's leftover in the cabinet, and I think oh [laugh] whereas I wouldn't crave it if it wasn't in there (April 14, 2008, p. 9).



*Figure 14.* Photograph of NH's snack cabinet.

Two participants spoke about visiting family and how visiting others created food temptations. Participant QX said that his parents had a lot of junk food in their house, but he tried to avoid keeping those things in his own house. He said,

The other challenge for me is when I go back to my parent's house; they've got a lot better, but there's still some junk food there whereas here we just don't even get the stuff, so we don't buy cookies, we don't buy, we'll buy whole grain pretzels, whole grain chips and stuff like that to have if we really do want something, but we don't buy a lot of sugary snacks, so we don't buy candy (February 22, 2008, p. 13).

Participant TN also remarked that her parents had a lot of unhealthy foods available and that she tried to keep healthier options in her house. She said,

Even when I go home on the weekends, they tend to have more candy and stuff, like if I go to visit my parents, like I wouldn't be able to lose weight or stay thinner ... like where here, we'd have stuff and we'd have dessert, but it would always be like sugar-free (February 22, 2008, p. 11).

### *Drinking Water*

Three participants discussed how drinking water had helped their weight loss. Drinking water helped participants feel more full and hydrated. Participant KX provided a photograph (Figure 15) of her water bottle and said that drinking water was the most important factor that helped her to lose weight. She said,

Drinking water, keeping myself more hydrated, I find that if I, I can fluctuate like 2 or 3 pounds if I don't drink enough water in the day by how much I retain water, and I found that if I drink my 64 ounces of water or a little bit more a day that made it much easier for me to lose weight, much much easier because I felt like that water weight wasn't staying on me, and I didn't have to worry about that the rest of it was real weight (February 22, 2008, p. 10).



*Figure 15.* Photograph of KX's water bottle.

Participant NF provided a photograph (Figure 16) of a water bottle and said that drinking water helped her to eat less at lunch time when drug representatives would bring lunch into the office. She said,

I found that if I drink plenty of water, I stay full, that way, we had a lot of lunches that came here from drug reps ... they always had a salad, and I would drink all my water, you know, make sure, make sure I drank it, have a salad, and I'd have about two bottles like this in the morning, which filled me up (February 22, 2008, p. 9). And, I would make sure I would drink a lot of water too because that helps too, and you actually feel full when you drink the water so, by the time you get ready to eat, you're not that hungry anyway so it helps you eat less (February 22, 2008, p. 11).



*Figure 16.* Photograph of NF's water bottle.

Participant NH provided a similar photograph (Figure 17) and said that drinking more water and diet soda had helped her to reduce her caloric intake. She was not a water drinker prior to losing weight, but claims it has been an immense help. She said,

Oh this is now, my diet soda and my water. Every day [I drink water and diet soda], but I drink much more water than before, I never would drink water in the past so, still every day, so I feel like I get my caffeine, but water more often than not (April 14, 2008, p. 10).



*Figure 17.* Photograph of NF's water bottle and Diet Pepsi.

Conceptualization of daily eating for these participants involved allowing themselves to have treats from time to time, dining out only on occasion, avoiding food temptations, and drinking water. Participants indicated that when they allowed themselves to have a treat, it helped them to not feel deprived and stay on track for both weight loss and weight maintenance. In addition, once that they were maintaining their weight, they allowed themselves the opportunity to overindulge more often, particularly when dining out. However, they said that they had to reduce the frequency of dining out to maintain their weight loss. Participants reported that one way they avoided food temptations was to make sure they kept healthier snacks at home or at work to prevent consumption of unhealthier foods and snacks. Finally, several participants discussed how their consumption of more water helped them to feel more full and hydrated.

#### Common Strategies and Approaches for Weight Maintenance

Research questions number 4 and 5 sought the most important approaches and strategies used to maintain weight and to what extent these strategies and approaches are used (Question 4)? And, if these strategies and approaches are different from those used to lose weight (Question 5)? The strategies and approaches used by the successful weight loss maintainers to lose weight were very similar to the strategies and approaches used to maintain weight.

Participant QX described how he came to realize that he needed to continue to do the same types of things that helped him while he was losing weight. He said,

I guess just, keeping the balance like realizing that everything you did to lose weight is pretty much all the same thing you need to do to maintain the weight; it's not like, I think there was a time before I lost weight where I sort of thought if you lost a lot of weight, that you'd have more flexibility to eat whatever you want, and while now I do treat myself and I'll eat, I'm not as strict with the diet as when I first started and whatnot and ... just realizing though that it's not like oh you lost the weight and now you're, you don't create like a cushion where you can now do anything you want, you still kind of have to watch everything really, so that's just keeping that mindset I think is the most important thing (February 22, 2008, pp. 10-11).

Additionally, participant HD described how her weight maintenance struggle is a never-ending battle. She said,

Oh no, no and that's ok, like I wish, I wish I had the metabolism of somebody who could eat whatever they wanted and not have to worry about it, absolutely, but you know it's fine the way that it is, I'm very happy that I was able to get to where I am ... you suffer when you're on a diet, I mean for the most part, you know, and it's not painful, but it's hard, you got to do it, I know what it's like, and I know what it's like to have to keep it, to maintain the weight like what I have accomplished (February 24, 2008, p. 13).

Several participants who followed the Weight Watchers program said that when their weight begins to increase, they go back to self-regulating, counting points, and self-monitoring food intake. Participant KC reported that she still carried around her Weight Watchers "point" counter and still continued to monitor her points each day. She said, "I still, yeah, I even carry

my little card with me, I won't go to Weight Watchers anymore, but I know what I'm allowed, to eat and what I'm not allowed and I carry the little point card with me" (February 23, 2008, p. 3).

Participant KX said that she usually starts monitoring her food intake again after the holidays.

She remarked, "Every once in a while, yeah, absolutely when I, like right after a holiday or definitely like, ok I'm back on [Weight Watchers] you know and things like that" (February 22, 2008, p. 5). She went on to say,

I pay attention to the points, but I'm not nearly as strict as when I want to lose; because I just want to maintain, I pay attention to what I'm doing, I have my little treat here or there, or I'll allow myself a taste of things of [like] that 10 point doughnut; I'll cut a little sliver and taste it, then I'm fine but, if I'm being really strict I won't even cut a sliver so, if I'm maintaining, then I'm fine, but, but if I'm really strict then I'm on the points, and this is all I can have a day and that's it (February 22, 2008, p. 5).

Participant TE had recently gained some of her weight back and had started using the Weight Watchers program again. She said, "So that's when I actually gained back a little bit more and got to the 180 [pound] range, and then I just started going back on Weight Watchers again, I guess 3 weeks ago" (May 12, 2008, p. 3). Participant IV was asked if she continued to use any components of the Weight Watchers plan once she was maintaining her weight. She responded, "I count the points, I don't actually go to the meetings, I just count the points and the food journal" (March 27, 2008, p. 10).

Participant HD said that she still tried to follow some of the components of the Weight Watchers plan once she was maintaining her weight. She said,

I guess it taught me what bad, what bad foods were and what good foods were on the diet, you know, now I purchase low-fat stuff and low-calorie stuff and that kind of thing,

so yeah, I guess, but I don't weigh and measure anything anymore (February 24, 2008, p. 5).

### *Physical Activity*

To maintain their weight loss, participants claimed that they needed to continue being physically active. All of the participants who were physically active while they were losing weight have continued to be physically active on a regular basis. I asked participants how often they were physically active once they were in the maintenance phase. Participant HD was the only participant who did not use regular physical activity as a strategy for weight loss. However, she said that she now goes to the gym on occasion. She commented, "I go to a gym, but it's unfortunately not regular because I'm working so much right now" (February 24, 2008, p. 7). She reported she went to the gym, "Maybe 10 to 15 times in a month" (February 24, 2008, p. 7). Participant UF was the only participant who reported a decrease in the amount of regular physical activity she engaged in. She reported that money and time have prevented her from being more physically active. She said,

No, I can't afford it, there's no way, but it was the biggest thing, and that's actually why I stopped with the personal trainer. I couldn't afford it anymore and I knew I was going to buy a house and I was like so I just stopped because it was it was too expensive (May 12, 2008, p. 5). Time too, time is a big thing, I feel like I never have any time, that's the biggest thing (May 12, 2008, p. 8).

### *Regular Self-Weighing*

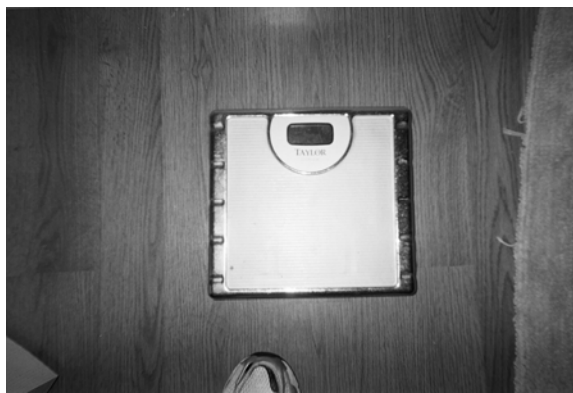
All participants continued to weigh themselves regularly in the weight maintenance phase. All participants reported that they weighed themselves from once per week to several times per day. Participant TN said that she used regular self-weighing as a tool to prevent weight



regain. This participant remarked that in the past she gradually regained weight, but now she weighed herself regularly to prevent that from happening again. She said,

Probably [weighs] every day ... and that's the other thing that helps too, I make myself weigh myself every day because every time that I have gained weight back it's like, "Oh I know I've gained a little bit and I think I've gained three and I've gained eight [pounds]" (February 22, 2008, p. 12). I think it's important for me to weigh myself every day, because I may not even realize I'm doing that poorly, but it's like I can easily, and I still do, ... I can easily gain 3 pounds on a weekend, like no problem at all, so I think for me making sure I'm weighing myself Monday morning like that changes like, "Ok now it's Monday, stop, you know pay attention to what you're eating." I guess to keep myself in check I do, like to weigh myself every day (February 22, 2008, pp. 15-16).

Participant KZ provided a photograph (Figure 18) of his weight scale and said that he weighed himself regularly as a way to decide what he can eat and if he needs to monitor his dietary intake. He said, "If I see that my weight is where I want it to be, I don't, I eat like normal, but if I see that if it's up over it, I'll start cutting back on certain things" (February 24, 2008, p. 7).



*Figure 18.* Photograph of KZ's weight scale.

After considering the extent with which regular-self weighing was used, I wrote the following memo:

Self-monitoring of weight is turning out to be a huge factor. Most, if not all, of the participants have talked about the scale being a big part of their weight loss and weight maintenance. Obviously it is a key tool to determine weight loss, but it is probably the most important indicator for weight maintenance. Participants mentioned how they will change their eating based on what the scale says. They also mentioned that, in some cases, the fact that they got to be obese was because it was gradual and they were not paying attention to their weight. Now they have to check it all the time to make sure it is not getting out of control. I think that self-monitoring of weight may end up being the biggest, or one of the biggest factors for weight maintenance; much more than I would have expected it to be.

### *Social Support*

Participants did not indicate that social support was helpful for promoting weight maintenance. It was important to the participants, but it appeared to be a factor only for helping obese adults to lose weight.

Continuing the same types of dietary changes, regular physical activity, and regular self-weighing were the important strategies and approaches used to maintain weight. Participants indicated that weight maintenance is a never ending struggle, and they needed periodically to revert back to the approaches and strategies that they had used to lose weight. Several participants who followed the Weight Watchers program said that when their weight begins to increase, they go back to self-regulating, counting points, and self-monitoring food intake. Regular physical activity and regular self-weighing were used by all of the participants to help

with weight maintenance. Social support was the only strategy found to not be a facilitator of weight maintenance.

### Weight Loss Initiation

Research question number 6 sought what motivates adults to start the weight loss process, what motivates them to keep the weight off, and what other motivators do these individuals report? The initiation of weight loss appeared to be a unique situation for each participant. They had their own individual stories about their decisions to lose weight. However, some overlapping factors occurred among the participants. Four participants reported that their weight loss initiation was triggered by their self-appearance. Two participants said that they had looked at a recent photograph of themselves, and as a result, decided to start losing weight. Participant HD said,

The one thing I can remember happening was I looked at a picture of, a recent photo had been taken of me, and I looked horrible, I was, I looked really fat and ... that was kind of the decision that I was going to do it. I didn't want my future to be, yeah, I remember I can still see the picture in my brain (February 24, 2008, p. 3). It was a picture of me and one of my cousin's for his high school graduation, and I looked fat, my clothes looked frumpy, I looked like, I don't want to say an old lady, but an older woman, and I was 24 years old [laugh] at the time, and I just couldn't even believe what I was looking at, and I had looked at pictures of myself my entire life; I don't, I don't know what was so special about this picture, my hair was very short, I just did not look like an attractive person and, and it was significant for me (February 24, 2008, p. 14).

Participant UF said,

I saw I picture of myself, somebody had taken a picture, and I was like just so disgusted, and I was like, “Oh my God I can’t believe I let myself get this way.” We were out, like I came home, and I was out one night, and then my friend, a couple weeks later had pictures and I was looking at them, and I was just like, “Oh my God, I can’t do this anymore” (May 12, 2008, pp. 2-3).

Two participants said that their upcoming wedding was the reason why they started to lose weight. These participants wanted to look better for their weddings and for their wedding photographs. Participant KX was getting married in Disney World and she said,

I was getting married, and in 2005 was my wedding, and in January 2004, I said to my aunt and my mom and my other aunt I said, “Let’s, I need to, this is it, these pictures are going to be forever, I need to lose weight” (February 22, 2008, p. 3). And that was my goal was so that I didn’t look like a fat bride in Disney World, like my goal was to get down to Disney in a, you know, and be not, I didn’t have a specific size in mind or even a specific weight in mind but I didn’t want to look like I did (February 22, 2008, pp. 13-14).

Participant QX also said that he decided to lose weight as a result of his engagement. He commented,

Yes, it was actually, right around the time we got engaged, so like I knew the wedding was coming up and wanted to lose weight for the wedding and just look better for that just I guess at that point. But it really was like we got engaged in December, and I remember like pretty much like that January, February really starting to try to lose weight (February 22, 2008, pp. 2-3).

Two participants said that they started losing weight because of a health-related reason. Participant KC provided a photograph (Figure 19) and reported that she initiated weight loss because she experienced difficulty walking up a hill and steps to her work entrance. She said,

Yeah, when I was going to work, I would walk up the hill, I'd be out of breath by the time I got up there, and I figured I got to keep the job, I have to be able to walk up that hill and still be able to breathe when I get up there (February 23, 2008, p. 2). I was getting out of breath by the time I got to the top of the hill, that's the hill for handicaps ... I'd be out of breath, I'm like, "I got to lose some weight cause otherwise I'm not going to make it up this hill forever" (February 23, 2008, p. 10).



*Figure 19.* KC's photograph of a walking path.

Participant NH said that she went to her family physician and was diagnosed pre-diabetic. Having that health scare was her motivation to start losing weight. She said,

I kept having this feeling in my throat, and he kept saying, "Oh it's acid reflux," and I tried different acid reflux things and nothing was touching it. And so then I got a urinary

tract infection, and when that came, he said, “Your sugar is really high,” and so he told me to start watching that and it was amazing within a week just watching my sugar, I felt that the pain went away (April 14, 2008, p. 1).

The remaining 5 participants all had unique stories about their weight loss initiation. Participant NF said that a coworker helped her to start losing weight. The coworker had started to lose weight, so NF decided to join her. She said,

There’s a coworker here that said that she was going to lose weight to be in her son’s wedding, I believe it was, and she said that she was going to start so I watched her, saw what she was doing, she was, you know, in a week’s time she lost about 3 pounds so I told her, I said, I’m going to join you with this, and so I joined with her and we both did it (February 22, 2008. p. 3).

Participant TN said that she had gained weight from being busy after getting married and the holidays and decided to join the Weight Watchers program. She said,

Well, because what had happened was I had lost probably like 2000, right after we got married in 2001, I gained pretty much weight, like that’s when I went up cause I was busy and all of that I went up to 188 [pounds], and it was like right after the holidays so I don’t know, like I wasn’t checking like I don’t think I was 188 [pounds] very long, but then went to Weight Watchers and lost probably like 15 pounds (February 22, 2008, p. 3).

Participant KZ said that he started losing weight because his wife was starting the Weight Watchers program, and he did not want her to have to do it by herself. He said,

After she [participant’s wife] had the second baby, she said that she wanted to lose the weight, get back to where she was prior to having my first. I just kind of did it on a

whim, I just said, “I’ll do it with you,” and I didn’t have any like, wasn’t like you mentioned an ahh moment, I didn’t have that, it was just like alright if you’re really going to do this, then I’ll do it because I couldn’t see myself eating like a pig (February 24, 2008, p. 12).

Participant IV said that she was supposed to start losing weight with a friend. Her friend wanted to wait until after the holidays, but IV wanted to start right away to prevent any additional holiday weight gain. She said,

I think it was the first week in November one of my friends was talking; she said, “Well as soon as the holidays are over I’ll start a diet,” and I was, like, well I started going real heavy to Curves really exercising this is November 2005 beginning and I didn’t start my diet for like a week or two later, and she goes, “Well I’ll start the beginning of the year,” and I said, “I’m going to go ahead and start now because I will only gain weight during the holidays,” and I was like, you know, I’m not really going to miss anything so I went ahead I just kind of had like to make up my mind one day and not put a date on it and just go the very next day and start (March 27, 2008, p. 5).

Participant LE said initially his weight loss was unintentional, but once he noticed that he was losing weight, he made a conscious effort to continue it. This participant had been overweight as a child and believed he would always be that way, so it was surprising that he was initially able to do it. He said,

Toward the end of college I think I just became more physically active, and I wasn’t taking the shuttle to main campus and all of that sort of stuff, and I noticed I started losing weight so then I was like, “Oh well, look what I’m doing, I’m losing weight,” and

I never even thought that was going to happen and so then I just started exercising more, and that's how I've been able to keep it off (May 28, 2008, p. 1).

#### Additional Weight Loss and Weight Maintenance Motivators

Additionally, other participants reported that their self-appearance was also a motivation for weight loss and weight maintenance. Participant HD reported that her self-appearance was a motivator for weight maintenance. She provided a photograph (Figure 20) of a bathing suit and discussed how going to the beach was a weight maintenance motivation. She said,

Number 7 is a picture of a bathing suit which I have, I love to go on the beach, I love to swim, probably my favorite activity, and for a long time I wouldn't put one of these on, for a long time I stayed off the beach because I was so, I guess embarrassed or felt awkward putting a bathing suit on, and I still do to this day, but not as bad as I used to and looking nice in a bathing and being able to go on the beach is motivation for me to watch what I eat and to maintain my weight (February 24, 2008, p. 16).



*Figure 20.* Photograph of HD's bathing suit.



Participant KX reported that her self-appearance was a motivator for weight maintenance. She said,

Buying new clothes, I really like the clothes I have, and I don't want to have to buy new ones, just the way I look in pictures, I hated how I looked when I was over that big, and I look back now, and I'm like, holy crap you know, and I don't want to look like that ever again, and it's silly to put that weight on (February 22, 2008, p. 11).

Participants NF and NH reported that they liked buying new clothes for themselves now that they have successfully lost weight. Participant NF said, "It's easier for me to find clothes with the size small, when I was larger I didn't even want to try on clothes" (February 22, 2008, p. 12).

Participant NH provided a photograph (Figure 21) of her clothes closet and said,

Size, I like the size, I have bigger clothes, I didn't want to get rid of all of them so, if something gets too tight I kind of judge it on that (April 14, 2008, p. 8). I like seeing the clothes in smaller size, and like I said before, I like to shop more now, and then I also said that I still have the other ones up in the attic, the bigger clothes (April 14, 2008, p. 12).



*Figure 21.* Photograph of NH's clothes closet.

Participant LE said that he put a limit on the size of clothes that he bought for himself as a motivator to maintain his weight. He said,

Well I know that, that if this makes any sense that I say to myself, “I’m never going to get into anything bigger than a size 34 [waist],” so that’s kind of like a way to keep me, you know, I’d say to myself, I’m never going to buy clothes, like, you know, I’ll buy clothes if I need new clothes or if I need a smaller size, but I’m never going to get something bigger than a size 34 [waist] (May 28, 2008, p. 7).

### *Health*

Other participants discussed how health and feeling better have played a role in their weight loss and weight maintenance. Participant IV reported that she had been feeling tired, and it motivated her to start losing weight. She said,

Yeah, that was the biggest thing too, like I said too, because I was feeling so tired and weak, then I decided to go and, like I said, I would only dedicate a whole hour and a half for a whole entire week [at Curves] where I just start off with, but it was ok, I kept thinking, “Well at least it’s a start” (March 27, 2008, p. 19).

Participant HD reported that she had a family history of health problems, which motivated her to maintain her weight. In addition, she provided a photograph (Figure 22) and mentioned that staying healthy in the future and the possibility of pregnancy were both important motivators. She said,

I’ve got health issues in my family that I have to take into consideration as well; you know, I have this huge line of diabetes and heart disease that I definitely don’t want those things if I can prevent them, that becomes somewhat of a motivator for me too (February 24, 2008, p. 10). [laugh] Number 4 is a picture of my cat, but this is to signify children

because she's the only quote unquote baby I have right now, and I want to be healthy for kids, I want to have kids, I want a motivation to stay thin, on the thinner side to be healthy (February 24, 2008, p. 15).



*Figure 22.* Photograph of HD's cat.

Participant KX also spoke about having a family history of health problems as a motivator for maintaining her weight. She said,

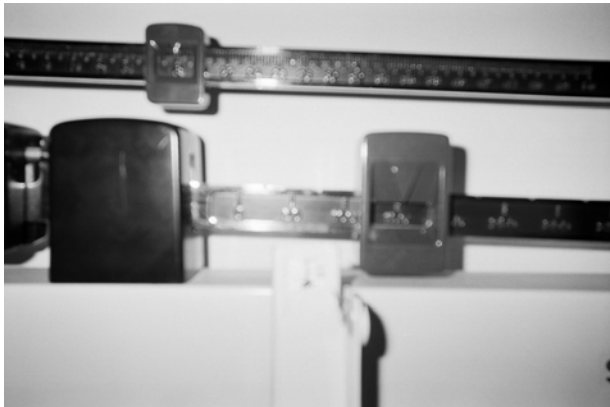
Also my health, my family, my grandmother ... she died in her 60's, which to me is young, she didn't take care of herself, she was diabetic, she was morbidly obese, she didn't take care of really any part of her, and I don't want to get that way, I don't want to become diabetic because that runs in the family, you know, I don't want to have to deal with those things that I can avoid (February 22, 2008, pp. 11-12).

Participant NF reported that she had hypertension prior to losing weight. After her successful weight loss, she no longer required medication to treat the hypertension. She reported that having normal blood pressure is a motivation for maintaining her body weight. She said, "But at the same time I try to eat what I'm supposed to now because I did have high blood pressure before I went on my diet, and now I don't" (February 22, 2008, p. 12).

### *Weight Loss Goals*

Some participants said that they set a weight loss goal for themselves. Having a weight loss goal was seen as a motivation to continue losing weight. Participant NF provided a photograph (Figure 23) and said that there was a weight scale at her place of employment and she set a goal to get the scale below the 150 pound mark. She said,

I remember when I wanted to start losing weight for some reason you know I was, I think like 168 [pounds], and I wanted to get that scale below 150 [pounds] because the way the scale is here at work, the 150 [pounds] is near the end I think I'm not sure of the scale, and I just wanted to get it down, I wanted to see 100 [pounds] and then go from there I didn't want to be near 150 [pounds] (February 22, 2008, p. 14).



*Figure 23.* NF's photograph of a weight scale.

Participant IV said that she initially set a weight loss goal for herself and did not reach it, but was still happy with the amount of weight that she was able to lose. She said,

I said 135 [pounds] and I kind of when I was, as I was losing because when I get down to around 145 [pounds], I'm at a size 5 so I kind of, I said it but when I kind of got down around 145, 150 [pounds] I realized that that was probably the best so (March 27, 2008, p. 14).

Participant KZ said he created initial weight loss goals, and as he was able to meet his weight loss goals he created new goals for himself. He said, “I had a goal weight of 200 pounds, and then I moved it to 190, then I moved it to 175” (February 24, 2008, p. 6). Participant NH said that she never changed her weight on her driver’s license, so she made her weight loss goal the weight that appeared on her driver’s license. She said, “I had a goal weight, yes, my weight on my license [laugh], which I never changed from when I got my license, so I looked at that ... it was 150 [pounds] and so then, I got real close” (April 14, 2008, p. 7). Participant TN said that she did not reach her goal weight, but she was close to meeting it. She commented, “Not that I got to what I wanted to weigh, like the lowest I got to over the summer was 138 [pounds], like I wanted to get down to 135 [pounds]” (February 22, 2008, p. 10).

Participant QX said that he did not have a weight loss goal; his goal was to reduce his clothing size. He said,

At first I looked at it more in terms of size, ... so I was a uncomfortable 40 waist when I started, like I was kind of jamming in there, so I got to 38 [waist] ... first, but what I really wanted to get to was 36 [waist] so I thought if I could get to a 36 waist I’d be happy, and I guess like at 205ish [pounds], I was kind of like just getting into a 36 [waist] and realized like there was still plenty to go, so I kind of then made 34 [waist] my goal (February 22, 2008, p. 7).

### *Additional Motivators*

One additional motivation for weight loss and weight maintenance was the idea of being an adult and taking responsibility for how they looked and felt. Participant HD reported that she was overweight as a child, and she did not want to also be overweight as an adult. She said,

Graduating from nursing school or getting ready to graduate was huge because it was almost a separate, a separation of childhood and adulthood for me. I didn't want to live as an adult, I just, that was huge, that actually put a lot of pressure on me to do it, external pressure or internal pressure rather from myself going, "You know, you're graduating, you're going to be a registered nurse, you're going to be around all of these doctors and people and, yeah, you're going to be a professional" (February 24, 2008, p. 12).

Participant QX reported that the idea of being an adult was a motivator to lose weight. He said, I guess just in terms of like being an adult now and being older and it's unhealthy to be this weight, like I think that was part of it too, like I had to do something cause otherwise I would always be that size or try to do something to be healthier (February 22, 2008, pp. 2-3).

The initiation of the weight loss process appeared to be a unique situation, with participants providing their own individual stories about their decisions to lose weight. The most common motivation was participant's self-appearance. Many participants discussed how self-appearance was either a trigger for the weight loss process, or a motivator once they started to lose weight. Self-appearance continued to remain a motivator for weight maintenance, as the participants did not want to return to how they used to look. Health-related reasons were also a significant motivator for both weight loss and weight maintenance. Participants either believed that their health was suffering, or wanted to prevent chronic diseases that run in their families. Some participants established a weight loss goal for themselves that served as an additional motivator and 2 participants said that becoming an adult was a motivator for weight loss. These participants did not want to live their adult lives overweight as they had done during their childhoods.

### Weight Maintenance Transition

Research question number 7 sought when and how adults transition from actively losing weight to attempting to maintain their weight. Many participants reported that they had made a transition from actively losing weight to weight maintenance. This transition generally occurred when the participants had met their weight loss goals, felt comfortable at the weight loss they had achieved, or were unable to lose additional weight. Only participant KC said that she had never really transitioned from actively losing weight to maintaining weight. This is most likely a result of the participant's current weight. KC is the only participant who would be considered obese based on her BMI, which had been 43.5 kg/m<sup>2</sup> at the time of data collection. The other 10 participants all transitioned from the obese BMI category, to the overweight or normal weight BMI category, and all reported some type of weight maintenance transition. Table 5 (p. 66) provides the participant BMI changes.

Participant HD said,

I remember the first time when I was doing Weight Watchers, and I had lost a whole bunch of weight, the first time I ever like so-called cheated on that diet was Thanksgiving of that year when I didn't count any points at all, and I have no memory of whether or not I went back on Weight Watchers or not after that day, I can't remember (February 24, 2008, p. 11). I think I had lost, I had lost a significant amount of weight by that point, and I think after that day I had just stopped it and just watched (February 24, 2008, p. 12).

Two participants reported that they based their weight maintenance transition on their clothing size. Participant IV reported that because she was able to buy clothes in a size small, it was an indication to her that she did not need to lose additional weight. She said,

Once I hit my point, and typically, like I said, when everything I was buying was size small shirts, and you know, size five and six, I was like there was no reason to be [laugh] any smaller. I didn't get compulsive about it, and the only thing I was more, I wanted a little bit harder workouts, I'm not right there now but ... yeah I would say last year I hit where I was totally comfortable with my weight and everything (March 27, 2008, p. 14).

Participant NH said, "I don't remember a date but I remember when I got to a size 10, I felt good about that, like I felt like I didn't need to lose anymore" (April 14, 2008, p. 8). Participant KX who initially started losing weight because of her wedding indicated that she transitioned to weight maintenance the week of her honeymoon. She commented,

Probably the week of my honeymoon [laugh] I was down probably the last month before my wedding, or no, I'd say 2 weeks before my wedding or so I was like alright, you know, I don't think, I think if I'm losing anymore weight not really, you're not going to see it in the next 2 weeks, and then the week of the wedding, you know, I was allowing myself to eat a little bit more enjoying more things, not that I didn't enjoy while I was on Weight Watchers, but like, you know, having a little bit more of this or that and saying, "I'm still going to fit into my dress, you know," it's if I'm not going to put on that much weight in this week and we enjoyed ourselves (February 22, 2008, p. 11).

Participant NF said that she had exceeded her weight loss goal; she believed it was an appropriate time to transition to weight maintenance:

I'm almost positive starting September last year I decided I'm just going to try to maintain, like I didn't want to lose anymore, I already lost about 3 pounds more than my goal, and I just said I'm going to maintain and I gained back two [pounds] of what my goal weight was and I have been staying there (February 22, 2008, p. 12).



Participant QX reported that he was not happy with the weight he was at, but believed it would be extremely difficult to lose any more weight. He said,

I don't remember exactly, it's, it would be that like 175 [pound] mark, and it's not that I quit trying to lose because I would still like to lose some more, but I guess I just sort of realized that that just seemed to almost, it almost like set itself, as like sort of like where I was going to be, like it just seemed like my body was, even like if I dieted some more or, you know, really focused on the diet or really focused on the exercise or really focused on both, I could get down to like 172 [pounds], but then that would be like by the end of the week, and the weekend would come, and I wouldn't watch it quite as much, and I'd be like right up around 174 [pounds] again 175 [pounds] so it was sort of like, no matter what I did, I was still kind of always right in that range, so I just kind of decided ok if I, I just decided at that point I was comfortable being there if I could stay there maybe not the rest of my life, but the majority of my life, I figured that's not a bad place to be (February 22, 2008, p. 10).

Participant TN reported that she actively stopped trying to lose weight even though she did not reach her goal weight:

I was still losing in like, I was still losing like up until May, April, probably April so probably from April like that's like when I got to my lowest like end of April, beginning of May and then just kind of stopped, liked plateaued and then just maintained (February 22, 2008, p. 13).

Participant UF reported that she was still using the Weight Watchers program and was still working out with a personal trainer, but she had lost a significant amount of weight, she decided to try to maintain. She said,

I was still on Weight Watchers at that point because I had like, I had I think, it took about 13 months to lose it, the 100 pounds, and then I was still doing Weight Watchers for the rest of the year, so that was probably about 4 months, 4 or 5 months where I was on Weight Watchers and the trainer, but I was maintaining (May 12, 2008, p. 12).

Two participants said that their families suggested that they had lost enough weight and that played a role in their weight maintenance transition. Participant LE said,

I think once I got to the 165, 170 [pound] range I was like, I really don't think I should lose anymore, you know, and even, you know, family would say, you know, that's good that's good for you, and you're not going to look well if you lose anymore so once I got to that because I really didn't have a goal in mind because I didn't quite know what my healthy weight was ... so once I reached that, I thought yeah and that seems to be where I naturally stop [laugh], you know what I mean, so, you know, once I got to that point I just tried to maintain that (May 28, 2008, p. 7).

Participant KZ said,

It was like in October, so if I started the diet in end of May, so June, July, August, September, like maybe 5 months into it. I just got to a point where I started hearing like my family saying that, "You've lost enough weight and you, you know, you're starting to look sickly," so that's when I kind of just figured, cause the more weight I lost, the more I wanted to take off, so then when I was in the 170's [pounds] I was thinking I'd like to be at 170 [pounds] (February 24, 2008, p. 8).

After completing several interviews and asking about a weight maintenance transition, I wrote the following memo:

I have been thinking about the question related to transitioning from weight loss to weight maintenance. Do people truly transition? It seems to be that people get to a point where they reach a weight that they are comfortable or happy with. They continue to struggle, and even though they are trying to maintain their weight, it is a constant battle with food. They may go overboard a couple days in terms of eating, but they have to resort back to the strategies and approaches that they used to lose weight. It is a never ending battle. I do not think that these people woke up one day and said okay today I am just going to try and maintain my weight for the rest of my life. I do not believe that it is a conscious decision; it is just something that happens along the way.

#### Most Important Factors

Each participant was asked to provide the most important factors for both their weight loss and their weight maintenance. These answers varied and included factors such as dietary changes, physical activity, health, and self-appearance (Table 7).

These results are interesting because not only do the most important factors vary overall for weight loss and weight maintenance, but the individual responses that the participants gave also varied. Most of the participants put greater emphasis on different factors to help them to maintain their weight than they did to lose weight, indicating that as participants become more successful with weight loss their strategies and motivations change.

Table 7

*Most Important Factors*

<b>Participant</b>	<b>Weight Loss Factor</b>	<b>Weight Maintenance Factor</b>
KX	Drinking Water	New Clothes and Health
NF	Decreased Caloric Intake	Conscious of Food Intake
TN	Finding Alternate Foods and Physical Activity	Being Able to Cheat
QX	Physical Activity	Continuing to Use Weight Loss Strategies
HD	Self-Appearance	Self-Appearance
KZ	Social Support	Self-Appearance
KC	Health	Regular Self-Weighing
NH	Health	Health
IV	Self-Monitoring Food	Physical Activity
UF	Physical Activity	Physical Activity
LE	Seeing Results	Health

## 24-hour Dietary and Physical Activity Recalls

All 11 participants completed the three 24-hour dietary and physical activity recalls. The total average caloric intake of the participants was 1,457 kilocalories per day. Most participants appeared to be consuming a diet balanced in nutrients with the total average nutrient intakes being 48% carbohydrate, 33% fat, and 19% protein. However, this is a slightly higher fat intake

than what is generally recommended. The NHLBI clinical guidelines (1998) recommend a diet with dietary fat restricted to 20% to 30% of total calories. This goes against conventional wisdom and suggests that individuals in weight loss treatment may be able to slightly increase their fat intake after they have successfully lost weight. However, the American Heart Association (2008) recommends no more than 7% of total calories per day should come from saturated fats and 10 participants consumed greater than or equal to 7% of total calories from saturated fat. The range of saturated fat intake was 6.5% to 14.5% for all 11 participants.

Estimated caloric needs were determined using the shortcut method of 24 kilocalories per kilogram of body weight for men and 23 kilocalories per kilogram of body weight for women (Whitney & Rolfes, 1999, p. 241). All but 2 participants consumed fewer calories than their estimated caloric needs. At a minimum, the participants consumed three meals per day. Five participants consumed an average of three meals plus a nighttime snack, and 2 participants consumed an average of three meals plus two snacks. Three participants consumed only three meals per day, and 1 participant consumed 6 small meals per day. Most often, the largest meal was dinner with 7 participants consuming some type of dessert or snack after dinner. Interestingly, the participants consumed slightly fewer calories on the weekend versus weekdays. The average caloric intake for weekend days was 1,394 kilocalories versus 1,445 kilocalories for weekdays. These data suggest that the successful weight loss maintainers consume similar types and quantities of food every day.

The total average daily physical activity performed was 1.4 times in 3 days, with the range of time being approximately 30 to 90 minutes of physical activity. Six participants went to a gym at least once, and 2 participants engaged in physical activity at home or in their

neighborhood. Participant KX did not provide her physical activity information. Table 8 lists the participant's self-reported caloric intake and physical activity.

After completing a total nutrient analysis using Food Processor 8.7.0 software by Esha (2006), I found a few abnormal vitamin and mineral intakes. The intakes of vitamins D, E, and K and the minerals calcium, magnesium, and potassium were depleted for many of the participants. In addition, sodium intake was elevated for many of the participants. Information related to vitamin and mineral intakes can be found in Table 9. These results were not surprising. Most of the participants were consuming a diet with moderate to low caloric intake. In addition, most of the participants were not consuming a well balanced diet that provides adequate dietary intake from all of the food groups. Most participants had very low intake in the vegetable, fruit, and dairy groups. This provides some explanation as to why those vitamins and minerals would be depleted. In addition, the average U.S. diet tends to be higher in sodium than what is generally recommended (Whitney & Rolfes, 1999, p. 377), which is consistent with the findings from the participants in this study. However, these results are based on an average of 3 days and may not reflect true dietary intake. A more thorough diet analysis over an extended period of time may be needed to better estimate caloric and nutrient intakes. Table 10 provides each participant's average dietary intake from each food group.

Table 8

*Self-Reported Caloric Intake and Physical Activity*

<b>Participant</b>	<b>Total Calories Consumed</b>	<b>Estimated Caloric Needs</b>	<b>% Calories from Carbohydrate</b>	<b>% Calories from Fat</b>	<b>% Calories from Protein</b>	<b>Physical Activity</b>
KX	835	1,390	63%	22%	15%	—
NF	1,488	1,370	37%	40%	24%	Once; 30 min. strength training
TN	1,327	1,474	54%	27%	20%	Twice; 30 min. walk, 1 hour at gym
QX	1,875	1,985	49%	30%	21%	Twice; 30 min. walk, 50 min. at gym
HD	1,708	1,515	53%	31%	16%	Once; 1 hour at gym
KZ	1,665	1,953	54%	30%	16%	None
KC	1,435	2,488	46%	39%	15%	Once; 1 hour at gym
NH	1,103	1,694	40%	40%	20%	Twice; 40 min. walk, 50 min. walk
IV	1,525	1,777	43%	34%	22%	Twice; 1 hour at boot camp, 30 min. at gym
UF	1,345	1,855	53%	30%	17%	Twice; 90 min. at gym, 30 min. walking
LE	1,723	1,932	40%	35%	25%	Once; 45 min. run

Table 9

*Vitamin and Mineral Intakes*

Participant	Vitamin D	Vitamin E	Vitamin K	Calcium	Magnesium	Potassium	Sodium
KX	85 IU, 58%	3 mg, 20%	158 mcg, 175%	527 mg, 53%	161 mg, 52%	1,753 mg, 37%	1,246 mg, 54%
NF	0.54 IU, <1%	6 mg, 41%	34 mcg, 38%	338 mg, 34%	194 mg, 61%	1,891 mg, 40%	3,160 mg, 210%
TN	100 IU, 50%	3 mg, 21%	100 mcg, 111%	728 mg, 73%	243 mg, 78%	1,584 mg, 34%	2,280 mg, 99%
QX	120 IU, 60%	7 mg, 44%	41 mcg, 35%	1,049 mg, 105%	230 mg, 55%	2,003 mg, 43%	3,855 mg 257%
HD	187 IU, 94%	4 mg, 25%	4.8 mcg, 5%	1,145 mg, 115%	179 mg, 56%	1,677 mg, 35%	3,239 mg, 216%
KZ	0.38 IU, <1%	3 mg, 19%	6 mcg, 5%	696 mg, 70%	110 mg, 26%	1,040 mg, 22%	4,310 mg, 287%
KC	16 IU, 4%	8 mg, 50%	119 mcg, 132%	410 mg, 34%	161 mg, 50%	1,823 mg, 39%	3,506 mg, 270%
NH	13 IU, 7%	5 mg, 30%	88 mcg, 98%	315 mg, 32%	156 mg, 49%	1,672 mg, 36%	1,828 mg, 122%
IV	245 IU, 123%	6 mg, 38%	11 mcg, 12%	1,175 mg, 117%	373 mg, 117%	1,108 mg, 22%	3,313 mg, 221%
UF	90 IU, 45%	2 mg, 16%	23 mcg, 25%	763 mg, 76%	225 mg, 70%	1,879 mg, 40%	2,001 mg, 133%
LE	115 IU; 57%	5 mg, 31%	3 mcg, 2%	690 mg, 69%	141 mg, 34%	1,637 mg, 35%	2,424 mg, 162%

*Note.* Table includes the average amount the participant consumed followed by the percent daily value.



Table 10

*Food Group Intake*

<b>Participant</b>	<b>Bread</b>	<b>Vegetable</b>	<b>Fruit</b>	<b>Dairy</b>	<b>Meat</b>
KX	3.3	3.3	1	1	2 oz
NF	2.3	3.3	2.3	<1	8.3 oz
TN	6.3	2	1.3	1.7	6.7 oz
QX	11.7	1	<1	2.3	10.3 oz
HD	9.3	1.3	<1	1.7	3 oz
KZ	13.3	<1	<1	<1	5.7 oz
KC	5	1	1	1	5.5 oz
NH	5.7	1.3	<1	<1	7.3 oz
IV	6.7	1.3	<1	1.3	4.3 oz
UF	8	1.6	1	1	3.6 oz
LE	5.6	3	<1	1.3	10.7 oz

### Summary of Findings

Participants in the study reported several beneficial strategies and approaches to promote significant weight loss and maintenance. Changes in dietary intake were essential and included self-regulating and self monitoring food intake, finding food substitutions, avoiding food temptations, treating themselves from time to time, dining out only on occasion, and drinking water. Regular physical activity was an essential strategy for both weight loss and maintenance with the majority of participants using both aerobic and strength training type exercises. In addition, the weather played a role in both promoting and hindering physical activity. The participants reported that regular self-weighing was an important strategy during both weight loss and weight maintenance. The most frequently reported response was regular self-weighing everyday or almost every day. The participants reported that social support was a helpful factor for promoting weight loss. Social support varied and came from family members, friends, coworkers, physicians, and personal trainers. Continuing the same types of dietary changes, regular physical activity, and regular self-weighing were the important strategies and approaches used to maintain weight.

Initiating weight loss appeared to be a fairly unique situation, with participants providing their own individual stories about their decisions to lose weight. The most common motivation was wanting to change their self-appearance. Many participants discussed that self-appearance was either a trigger for weight loss, or a motivator once they started to lose weight. Self-appearance continued to remain a motivator for weight maintenance, as the participants did not want to return to how they had looked. Health-related reasons were also a significant motivator for both weight loss and weight maintenance. Participants either believed that their health was suffering, or they wanted to prevent chronic diseases that run in their families. Additionally, 2

participants said that becoming an adult was a motivator for weight loss. These participants did not want to live their adult lives overweight as they had during their childhood.

The participant transition from active weight loss to weight loss maintenance was also explored. Each participant had a fairly unique story about their weight loss maintenance transition. However, the transition generally occurred when participants met their weight loss goal, felt comfortable at the weight loss they had achieved, or were unable to lose additional weight.

Participants continued to consume a lower calorie diet with the total average caloric intake being 1,457 kilocalories per day. Most participants appeared to be consuming a diet balanced in nutrients with the total average nutrient intakes being 48% carbohydrate, 33% fat, and 19% protein. However, this is a slightly higher fat intake than what is generally recommended, suggesting that individuals in weight loss treatment may be able to slightly increase their fat intake after they have successfully lost weight. In addition, eating at least three meals per day and consuming similar types and quantities of foods each day appeared to be favorable for weight maintenance. However, participants were not consuming a balanced diet with adequate intakes from each of the food groups and, as a result, were deficient in some of their vitamin and mineral intakes. A more thorough diet analysis over an extended period of time may be needed to better estimate caloric and nutrient intakes.

## CHAPTER 5

### SUMMARY AND CONCLUSIONS

This chapter describes several conclusions regarding the important factors used for weight loss and weight loss maintenance and what these conclusions mean for society. In addition, future research directions and study limitations are presented.

Obesity is a major public health concern. According to the 2005-2006 NHANES, an estimated 33.3% (over 72 million) of noninstitutionalized U.S. adults age 20 years and over are obese. Obesity increases the risk of many other chronic diseases and health problems, leads to increased medical costs, and can contribute to social stigma; making it essential to reduce the prevalence of obesity by promoting significant weight loss and weight loss maintenance. This study provided a multifaceted look into the lives of successful weight loss maintainers by qualitatively exploring their lives during this period of time. It is important to improve the treatment of obesity by gathering rich data about weight loss and weight maintenance, which this study has provided. To date, little research has been done to allow successful adults the opportunity to speak in-depth about their weight loss and weight maintenance journey. This study allowed these adults to provide their success stories, which in turn can strengthen the understanding of their success.

Eleven obese or previously obese adults, who have lost and maintained a significant amount of weight, participated in this exploratory study. These participants were exceptional in that they were able to accomplish something that most adults cannot; lose weight and keep it off long term. Overall, studies that have reported long-term results of significant weight loss and

weight loss maintenance have shown disappointing results with the percentage of successful participants varying from 5.1% to 10% from 3 months to 9 years (Crawford et al., 2000; Roberts and Ashley, 1999; Sarlio-Lahteenkrova et al., 2000; Westenhoefer et al., 2004). To gather rich qualitative data, in-depth, individual interviews were conducted with all the participants. The range of participant weight loss was 11.9% to 28.6% maintained from 1 to 7.5 years. Several common strategies and approaches were used by the successful weight loss maintainers. Strategies and approaches included these: (1) dietary changes; (2) self-regulating; (3) self-monitoring; (4) physical activity; (5) regular self-weighing; and (6) social support. These strategies and approaches were valuable to the participants during both the weight loss and the weight maintenance periods.

Many of these strategies and approaches were very similar to the strategies and approaches suggested in the literature on successful weight loss and used by members of the NWCR. Some of the strategies and approaches suggested in the literature included engaging in high levels of physical activity, restricted intake of certain foods, social support, and regular self-monitoring of weight (Klem et al., 1997; McGuire et al., 1998; NHLBI, 1998; Wing & Hill, 2001). The literature did not distinguish between weight loss strategies and weight maintenance strategies. This may be because the strategies and approaches are similar.

The strategies and approaches appeared to be similar for both weight loss and weight maintenance based on the discussions provided by the participants. It emerged that they have taken the strategies and approaches used to lose weight and incorporated them into their lives to be their weight maintenance lifestyle changes. This is because the achievement of weight maintenance is a never ending struggle for these individuals. The strategies and approaches were continuously used by the participants, but the degree that they were used varied. Changes to

dietary intake, self-monitoring and self-regulating food intake, regular physical activity and regular self-weighing were always used; however the participants were not as strict with their usage now that they are maintaining their weight. The use of the strategies and approaches became more apparent as weight started to increase, indicating that the strategies and approaches never fully disappear, but their usage changes as weight changes.

Even though the participants used similar strategies and approaches, the extent that they were used differed for each participant, and participants tailored the strategies to meet their individual needs. In addition, the most important strategy or approach used to lose weight may or may not have been the same as the most important strategy and approach used to maintain weight (Table 7, p. 136). These factors indicate that although the treatment for obesity may include the same components, individuals need to find what works best for them to be successful. Additional research and information is needed about how the participants tailored the strategies to meet their individual needs. Did the participants need to do their own trial and error of different strategies and approaches or did they find that these were natural choices to make to accommodate their lives? Because the data gathered in this study have provided insight into the types of strategies used, having more specific information about how the participants tailored the strategies could provide health professionals with a deeper insight into the treatment of the obese population. Because the participants in this study needed to take individual approaches to weight loss, it may mean that, to best treat the obesity epidemic, health professionals need to treat the obese individually. Health professionals can provide obese adults with the tools to promote significant weight loss, but it appears that it is ultimately up to the individual to find the combination and degree that the strategies and approaches need to be utilized.

The extraordinary participants in this study were all able to successfully lose weight. One factor related to their success is self-efficacy. Self-efficacy is the confidence one feels about taking part in a specific task and accomplishing an achievement, such as weight loss (Bandura, 1977). According to Baranowski, Perry, and Parcel (2002), self-efficacy is the most important element for behavior change and it has been shown to be a predictor of success in many health behavior changes (p. 173). Studies have shown that self-efficacy is higher in weight loss maintainers and normal weight individuals (Kitsantas, 2000) and higher self-efficacy promotes better success in weight loss treatment (Edell et al., 1987; Oettingen & Wadden, 1991). Because these participants were able to be successful both short-term and long-term, their self-efficacy related to weight loss and weight maintenance most likely has increased and supported their success.

Another factor related to the participant's success is locus of control. Locus of control is the extent that control over one's life is internal, a consequence of one's own actions, or external, determined by fate, chance or luck (Elfhag & Rössner, 2005). Studies suggest that internal locus of control is associated with greater weight loss, implying that the individual has greater ability to accept full responsibility for their actions (Nir & Neumann, 1995). Furthermore, studies report that individuals who regain weight generally attribute the failure to themselves (Goodrick, Raynaud, Pace, & Foreyt, 1992; Jeffery, French, & Schmid, 1990). The findings suggest that in relation to external stimuli in the food environment, participants maintained their internal locus of control.

Related to the use of similar strategies is the significance of regular self-weighing. It is sometimes suggested that individuals who are trying to lose weight should weigh themselves only once per week (Duyff, 1996, p. 40). In addition, those participants who followed the

Weight Watchers program indicated that this weight loss program recommends that participants should not weigh themselves more than once per week. Furthermore, some studies suggest that regular self-weighing may generate negative mood and increase body dissatisfaction (Dionne & Yeudall, 2005; Ogden & Evans, 1996; Ogden & Whyman, 1997). Regular self-weighing aids in improving self-efficacy of the participants and the prevention of weight gain relapse.

Participants indicated that the weight loss results they saw and their improved self-efficacy helped to keep them motivated to stay on track. In addition, participants indicated that weight gain can occur without their noticing it, or without their knowledge of the true amount that has been regained. Many of the participants discussed how regular self-weighing had an effect on their dietary intake and physical activity levels. Their weight would dictate how strict they needed to be with their use of weight loss strategies. If they were comfortable with their weight, they might allow themselves to eat more or exercise less. However, a small amount of weight gain would signify that they needed to increase the intensity of their weight loss strategies by decreasing portion size, resuming self-monitoring, and increasing physical activity. Regular self-weighing needs to be included as part of weight loss treatment and needs to be strongly encouraged to individuals when they are trying to maintain their weight, even when they do not care to. In addition, individuals should be encouraged to weigh themselves as often as they need to, which may be daily. Regular self-weighing can be used both as an indication of success and an indication that individuals need to get back on track.

Social support was the only factor that was used as a facilitator for weight loss, but was not mentioned as a facilitator for weight maintenance. Including social support in weight loss treatment is recommended by the NHLBI clinical guidelines (1998) and has been shown to decrease participant attrition in weight loss treatment and increase weight loss success (Gorin et



al., 2005; Wing & Jeffery, 1999). Social support varied according to the participants and was regarded as the most important element for weight loss for some of the participants. Social support came from family, friends, coworkers, physicians, and personal trainers and was used differently by each participant. In addition, it may be that the need for social support diminishes across time because the individual's sense of self-efficacy increases, making the need for social support to decrease or even be eliminated as a weight loss strategy. To maximize the effectiveness of social support, health professionals may need to first determine how much social support an individual needs and then specify to participants that their use of the social support could gradually be decreased as their weight loss success increases. However, social support was measured based on participant's relationships with other individuals. There may be various types of passive social support available to these adults that were not present while they were actively losing weight. For example, decreased prejudice from others, increased mobility, and increased availability of clothes may provide successful weight losers with social support that they are not consciously aware of.

The participants in this study were successful weight losers, but they were not consuming healthy diets. Diets with no more than 30% of total calories from fat are recommended, however many of the participants in this study were consuming greater than 30% of their total calories from fat. The range of total fat intake was 22% to 40% for all the participants (Table 8, p. 139). Additionally, the amount of saturated fat consumed was also greater than what is recommended for heart health. No more than 7% of total calories should come from saturated fats. Ten of the participants consumed greater than or equal to 7% of their total calories from saturated fats (American Heart Association, 2008), with the range being 6.5% to 14.5% of total calories from saturated fats for all of the participants. Furthermore, these participants were not consuming

balanced intakes from all of the food groups and are lacking in many vitamin and mineral intakes (Tables 9 and 10, pp. 140-141). Prior to interviewing these successful weight loss maintainers, I thought that they would be following healthy diets to maintain their success. This does not appear to be the case. These participants have learned how to manipulate their dietary intake to prevent significant weight regain. These data suggest that health professionals, counseling obese adults on their diet, may be able to be more liberal with their recommendations. Obese adults should be informed that they do not have to follow perfect diets to be successful with weight loss; they just have to eat differently. It should be noted that these dietary data are based on only a 3-day diet recall. A more comprehensive diet analysis, that includes a greater number of days, is needed to validate this analysis. Furthermore, these data are based on dietary intakes now that the participants have successfully lost weight. Participants were not questioned if they changed their dietary intake from when they were actively losing weight.

The participants discussed how they needed to reduce their portion size of food to lose weight. Many participants indicated that it was an eye-opening experience to learn the true portions of food. The participants who followed the Weight Watchers program learned portion size by measuring out food with measuring cups and food scales. The other participants simply cut back on the portion size of foods that they would normally consume. The participants said that they had never been taught portion size, and some participants blamed the restaurant industry because they had become used to the portions they were served when they dined out. These participants did not know how many calories they should be consuming each day and how to portion out their food to limit their caloric intake. The participants who followed the Weight Watchers program indicated that, because they were limited in the number of “points” they could consume each day, they were forced to decrease their food intake. It is apparent that weight loss

treatment should include nutrition education that provides individuals with the basic information to be able to control the portion size of their meals. In addition, education on the types and portion sizes of foods that should be consumed at restaurants needs to be included. Health promotion and nutrition professionals need to ensure that individuals in weight loss treatment receive the needed education on caloric intake and portion size to promote significant weight loss and sustained weight loss maintenance.

One interesting component to this study was the motivators for weight loss and weight maintenance. Fletcher (2003) interviewed “masters at weight control – people who had lost at least 20 pounds and kept the weight off for a minimum of 3 years” ( $N = 208$ ) (p. xiii). The focus of the interviews was to gain a deeper understanding of the motivational strategies used by these individuals to control their weight. The author developed a list of the “10 Keys to Success” that the masters have taken to reach their weight loss and weight maintenance goals and include factors such as dietary changes, physical activity, belief in yourself, regular self-weighing, positive self-talk, coping strategies, and social support (p. xiv). This study provided support for some of these motivational strategies. However, the participants in this study discussed how self-appearance and health were also strong motivators. Keeping individuals motivated in weight loss treatment is an obstacle to successful weight loss that must be overcome. It appeared to be important to help obese individuals recognize their own personal motivations and reasons for weight loss to keep them involved long term. Helping obese adults recognize their motivations for weight loss may help to strengthen weight loss treatment and promote sustained weight loss maintenance.

Gathering the information provided in this study allowed these adults to offer their personal success stories, which in turn can strengthen the understanding of their success and can lead to better strategies, treatments, and advice for the obese population.

#### Future Directions

This study used qualitative research methods to gain a deeper understanding of obese adult's lives during their attempts to lose and maintain weight. To date, little research has been done to allow successful weight loss maintainers to tell their stories. This study has given these adults the opportunity to speak in-depth about their successes and struggles. Exploring obesity through the eyes of the obese individual is essential to obtaining a deeper and more thorough understanding of this complex problem. The obesity epidemic continues to be a major public health concern. It will take more than a standard questionnaire to get to the real roots of the problem. Focusing on those who have been able to be successful is one approach to finding some of the answers to this complex problem. Future research is needed in this area using qualitative research methods to make a stronger case for these findings.

The individuals who took part in this study used similar strategies to lose weight, but they placed different levels of emphasis on different strategies, and they seemed to customize the strategies to their particular needs, preferences, and situations. They have also learned to revert back to the strategies that helped them to be successful in the first place, when they detect the need to make modifications to prevent weight regain. Future qualitative research can be conducted to follow similar participants to determine the exact extent and importance of these strategies and approaches to weight maintenance. Having participants provide a more insightful description of their day-to-day behavior may help to improve our understanding of how these strategies were used.

One area that these data may benefit weight loss interventions is by helping to determine a participant's success in obesity treatment. If obese adults in weight loss treatment are not willing to make the necessary lifestyle changes, (e.g., self-regulating food intake, regular self-weighing, etcetera) it may not be possible for them to be successful losing weight. Furthermore, it may make it much more difficult for individuals to maintain any weight loss they have achieved. These data could be used to create a screening tool to determine the likelihood of success with weight loss treatment.

Another area of future research is to conduct a similar study, but target populations that were not well represented in this study sample. It is important to determine if there are similar stories, strategies, motivators, and triggers for weight loss and weight maintenance in other population groups. The target populations would include older adults, adults of different ethnic backgrounds, and a larger sample of men. In addition, research should include the socioeconomic status and education attainment of participants to determine if there are any differences among populations in various income levels. Conducting this type of research will help to strengthen the theory that these should be the recommended strategies and approaches for successful long-term obesity treatment.

Another possibility for future research may be to explore this same group of participants to determine if there are any noteworthy differences between successful weight loss maintainers who have recently lost weight and those who have been successful for several years. Do the individuals who have maintained the weight loss for a longer period of time find it more difficult to maintain their weight or does it become easier as more time goes by? Are there different motivations for individuals who have been successful longer? This type of follow-up would include a deeper look into the weight maintenance phase to determine if there are any interesting

differences between these two groups. These data could help to inform or create improved treatments for successful weight loss by providing a greater understanding of the long-term success.

Another opportunity for future research is to explore how the social context plays a role in weight loss and weight loss maintenance. Participants were not questioned about their social environment and if there are any significant benefits or hindrances. An individual's work environment, family life, community environment and resources, and access to food are just a few examples of how the social context can affect weight. Whether any of these factors play a significant role in weight loss and weight loss maintenance should be explored. These data could help to inform or create improved treatments that target social factors related to weight loss.

A final area for future research is to conduct a more comprehensive dietary analysis. The results of this study came from only a 3-day diet recall. Having participants provide their dietary intake on additional days will provide a better estimate of their caloric intake, nutrient intake, vitamin and mineral content, and food group intake.

### Study Limitations

One potential limitation to this study was reliance on self-reported weight. According to Shapiro and Anderson (2003), many studies of health have relied on self-report to determine weight, because it is quick, cost-effective, and a practical method of gathering both current and retrospective data. Several studies have also shown that, in general, people accurately report their weight (Cash, Counts, Hangen, & Huffine, 1989; Stunkard & Albaum, 1981; Wada et al., 2005). Shapiro and Anderson (2003) conducted a study on the effects of restraint, gender, and BMI on the accuracy of self-reported weight. The authors found that, on average, people were generally accurate at self-reporting their weight. An implication of the study was that, because

most people are generally accurate at self-reporting weight, using self-report data from the general population seems reasonable (Shapiro & Anderson, 2003). To validate self-reported weight for this study, it was proposed that participants would be asked to weigh themselves during their in-depth interview. However, the first couple participants refused to be weighed, and it seemed to be affecting the rapport with the participants. Therefore, this component of the study was eliminated to promote positive rapport with the participants.

A second limitation to this study was that 7 participants used the Weight Watchers program. The Weight Watchers program encourages its members to self-regulate and self-monitor dietary intake and use regular self-weighing. It is difficult to generalize these beneficial strategies and approaches to the general public. However, these strategies were also used in some manner by those who did not use the Weight Watchers program. Additionally, these results highlight the potential benefits that this type of program can afford to obese adults. Furthermore, because the 7 participants used the Weight Watchers program differently, the flexibility of the program must also be recognized.

A third limitation to this study was the lack of diversity in the sample. Eight of the participants were female, White and in their 30's and only three of the participants were male. These beneficial strategies and approaches may not prove as successful for older adults or various ethnic groups. Future research on this topic, targeting these populations, would need to be done to determine whether these strategies separate successful weight loss and maintenance among these other groups.

A common problem that may arise when using a grounded theory approach is the issue of having preconceptions about the data prior to analyzing it. This may lead researchers to fail to develop their own interpretations of the data (Dey, 1999). However, according to Charmaz,

(2006) it is important for researchers to become highly familiar with their studied phenomenon to help to reveal potential preconceptions up front. This familiarity includes “an in-depth knowledge of people who contend with the phenomenon, but also a level of understanding that pierces their experience” (p. 68). Initial coding can help the researcher to think about the participants’ responses from their point of view. “You cannot assume what is in someone’s mind - particularly if he or she does not tell you” (p. 68). However, researchers can also compare the data to what the participant is saying to strengthen their preconceptions about the phenomenon. In addition, researchers do not want to ignore their preconceptions about the data, but to try to prevent the preconceptions from limiting what is observed and what theory develops (Ezzy, 2002).

A potential limitation of grounded theory methods is the idea that there are many different views on how it should be used, particularly the differing views of the two men who created it. This may lead to using grounded theory methods in different and conflicting ways, therefore, making it difficult for a novice researcher to determine where to start and what to do. Finding out which specific philosophical stance researchers agree with, determining their logic of inquiry, and developing procedures and a set of guidelines provide a starting point for addressing these issues (Charmaz, 2006, p. 178).

Limitations of interviews include these:

Distorted responses due to personal bias, anger, anxiety, politics, and simple lack of awareness since interviews can be greatly affected by the emotional state of the interviewee at the time of the interview. Interview data are also subject to recall error, reactivity of the interviewee to the interviewer, and self-serving responses (Patton, 2002, p. 306).



Using a variety of methods for data collection in this study increased the strength of the study.

Using multiple methods helped to increase the likelihood that the methods made a more complete picture of the studied phenomenon when examined together (Patton, 2002).

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## APPENDICES

## Appendix A

### *General Interview Guide*

I am going to ask you some questions about your story of weight loss. I will begin with questions about your weight history and move from there to more specific matters. Please take your time in answering. Feel free to “pass” on any question that you do not want to answer. Do you have any questions before we start?

1. What is your age?
2. What was your highest lifetime weight?
3. What is your current height?
4. What is your current weight?
5. How long have you been at your current weight?
6. When do you first remember going on a diet?
  - a. How old were you?
  - b. Did you feel pressured from someone else to lose weight?
  - c. What did you do to try and lose weight?
  - d. How much weight did you lose?
  - e. Did you gain the weight back? If so, how much?
7. How many times in your life have you lost weight and gained it back?

Think about this last time that you lost weight to answer the following questions.

8. Was there a motivation in your life that helped you to start the weight loss process?
  - a. What was the motivation?
  - b. How did it help you to start losing weight?
9. Did you change your diet to lose weight? If no, continue to # 9.
  - a. What was the diet?
  - b. Did someone provide you with the diet?
  - c. If no, how did you learn what to do?
  - d. Did you find it difficult to do?
  - e. Do you still follow this diet or currently use any components of the diet?
10. Do you self-regulate how much you eat?
  - a. Do you weigh or measure out foods?
  - b. Do you keep a food journal?
  - c. Do you count calories?
11. Did you change your physical activity level to lose weight? If no, continue to # 11.
  - a. What did you do to change your physical activity level?
  - b. Did someone provide you with an exercise routine?
  - c. If no, how did you learn what to do?
  - d. Did you find it difficult to do?
  - e. Do you still follow this exercise routine or use any components of the routine?
12. Did you have a support person or system that helped you to lose weight or maintain weight loss?
13. Have you changed your daily screen time (e.g., TV, computers, video games)?
14. Once you learned how to be successful in losing weight, did you find the weight loss process to be easier?
15. What was the most important factor that helped you to lose weight?

16. How often do you weigh yourself?
17. At what point did you transition from weight loss to weight maintenance?
18. Is there a motivation that helps you to keep the weight off?
  - a. What is the motivation?
  - b. How does it help you to remain successful in maintaining weight loss?
19. Since you mentioned that this was not the first time that you tried to lose weight, what, if anything, was different about this time?
20. What is the most important factor that helps you to maintain weight loss?
21. What would you recommend to others?

Photo Elicitation Questions:

1. What about this person, object, place has either aided or hindered your weight loss and weight maintenance?
2. How does this person, object, place make you feel?
3. How important was this person, object, place to your success?
4. Does this person, object, place continue to aid in your weight loss maintenance success?

These are all the questions I have. I appreciate your cooperation. You have shared some very interesting ideas. Do you want to add to anything you have said? Is there anything else about your attitudes toward weight loss that I should know? Do you have any final questions?

## Appendix B

### *Consent Form*

I agree to take part in a research study titled “Exploring the Factors Associated with Significant Weight Loss and Maintenance in Obese Adults”, which is being conducted by Joanne Christaldi, MS, RD, LD, Department of Health Promotion and Behavior, University of Georgia, (706) 247-2233. This study is under the direction of Dr. Dave DeJoy, Department of Health Promotion and Behavior, University of Georgia, (706) 542-4368. My participation is voluntary; I can refuse to participate or stop participating at any time without giving any reason; without penalty. I can ask to have information related to me, returned to me, removed from the research records, or destroyed if the information can be identified as mine.

The purpose of this research is to determine how some adults are able to lose a significant amount of weight and maintain that weight loss over time. It is important to increase the knowledge of the approaches and strategies that can lead to promoting significant weight loss and successful weight loss maintenance in adults. This information can lead to improved strategies, treatments, and advice for the obese population.

There are no direct benefits for participating in this study.

If I volunteer to take part in this study, I will be asked to do the following things:

1. Take part in an in-depth individual interview. In this interview I will be asked to talk about my life changes while losing weight and how I have been able to maintain the weight loss. This interview will take approximately one to one and a half hours and will be audio-taped.
2. Take part in a photo elicitation. I will be given a disposable camera and asked to take pictures of people, objects, or places that have either aided or hindered my weight loss and weight maintenance. I will be given an envelope to return the camera to the researcher. I will be reimbursed for postage charges at the time of the interview. These photographs will be discussed during the in-depth individual interview. This portion of the interview will take approximately 30 minutes.
3. Complete three 24-hour recalls. For two weekdays and one weekend day I will be called by the principal investigator. I will be asked to recall all the food and beverages that I consumed and approximate portion sizes. I will also be asked if I took part in any physical activity on those days. It will take approximately 15 minutes each day to complete the recall.

No discomforts or stresses are expected with my participation in this study.

No risks are expected with my participation in this study.

If I complete all the components of this study, I will receive a \$40.00 gift card from Target. In order to process the payment for your participation, the researcher(s) need to collect your name, mailing address, and social security number on a separate payment form. This completed form will be sent to the Department of Health Promotion and Behavior’s Business Office and then to



the UGA Business Office. The researcher(s) has been informed that these offices will keep your information private, but may have to release your name and the amount of compensation paid to you to the IRS, if ever asked. The researcher(s) connected with this study will protect your private information and will keep this confidential by storing in a secured location. However, the researcher is not responsible once your name, social security number, and mailing address leave her office/laboratory for processing of your payment.

Any information that is obtained and connected with this study and that can be identified with me will remain confidential. My interview will be audio-taped and the researcher will be the only person to have access to the taped interview, however I have the option to review and/or edit any of the audio-taped information. There will be no traceable identifiers used on the transcription of the interview. The taped interview will be destroyed after the interview and all of the information has been transcribed. The photographs will be kept and stored a secure location in the researchers home for future reference. No traceable identifiers will be written on the photographs. Any photographs used in the study that contain identifiable persons will have the face blurred out so the individual cannot be identified. All raw data, including transcripts, photographs, journals, and all other collected data will be retained by the principal investigator for three years after the close of the project.

The researcher will answer any further questions about the research, now or during the course of the project, and can be reached by telephone at (706) 247-2233.

My signature below indicates that the researcher has answered all of my questions to my satisfaction and that I consent or volunteer for this study. I have been given a copy of this form.

\_\_\_\_\_  
Name of Researcher  
Telephone: (706) 247-2233  
Email: joanne76@uga.edu

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Participant

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Please sign both copies, keep one and return one to the researcher.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

## Appendix C

### *Participant Instructions*

To complete the photo elicitation:

1. You will be supplied with a disposable camera.
2. Take pictures of any people, places, or objects in your environment that have either helped or hindered your weight loss and weight loss maintenance.
3. Take as many pictures as are available on the camera, or as few as you would like.
4. Return the camera in the self-addressed envelope. You will be reimbursed for shipping cost at the time of the interview.
5. The pictures will be developed and will be discussed at the time of your interview.

## Appendix D

*Recruitment Flyer***Volunteers Needed for Weight Loss Research Study**

Looking for adults who have intentionally lost weight and maintained that weight loss for at least 1 year\*

As a participant in this study you will be asked to take part in an in-depth individual interview, take pictures and discuss how the photographs have played a role in your weight loss, and complete three diet and physical activity recalls.

Your participation will involve 1 interview session for approximately 1 to 2 hours and if needed, a 30-minute follow-up interview.

Participants will receive a \$40.00 Target gift card.  
For information about this study, or to volunteer for this study,  
please contact:

Joanne Christaldi  
University of Georgia  
Department of Health Promotion and Behavior  
(706) 247-2233  
Joanne76@uga.edu

\*Obese or previously obese adults who intentionally lost at least 10% of their body weight and maintained the weight loss at least 1 year.

This project has been reviewed and approved by the Institutional Review Board at The University of Georgia, Athens, GA

## Appendix E

### *Phone and Email Participant Screen*

1. How old are you?
2. What was your highest lifetime weight?
3. What is your current height?
4. What is your current weight?
5. How long have you been at your current weight?
6. What did you do to lose weight?
  - a. Was the weight loss intentional? Yes or No?
  - b. Did you use a commercial program to lose weight (e.g., Jenny Craig or NutriSystem)? Yes or No?
  - c. Was the weight loss the result of a pregnancy? Yes or No?
  - d. Did you experience any illness or disease prior to the weight loss? Yes or No?
  - e. Have you had gastric bypass or gastric banding? Yes or No?
  - f. Did you take any medications to lose weight? Yes or No?
  - g. Did you use a liquid or formula diet to lose weight? Yes or No?
  - h. Have you ever been diagnosed with an eating disorder? Yes or No?

## Appendix F

*Payment Form*

I have agreed to be a subject in a research study # 2008-10434-0 conducted by (Joanne Christaldi). I understand that taking part in this study entitles me to receive the compensation described in the research consent form. To be able to process my payment, the University of Georgia Business Office requires that I provide my Name, Mailing Address, and Social Security Number for tax reporting and/or audit purposes. I realize that if I do not provide this information, I will not be compensated. I also understand that if I decide not to provide the requested information and I waive my right to compensation, I can still take part in the research study."

---

*Signature of Subject*


---

*Date*


---

*Printed Name of Subject*


---

*Mailing Address (Please Print):*


---



---



---

*Social Security Number:* \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

\_\_\_\_\_ (Please put your initials.) I do not want to provide the above information. I will not be compensated for my participation.

**To UGA Business Office:**

The individual listed above is eligible for compensation as a result of participation in my study. If the payment type is denoted as "check" below, please issue and mail a check to the participant at the address listed above. I verify that the person named above is participating, or has participated, in the research study cited above and is entitled to this compensation.

---

*Signature of PI*


---

*Date*


---

*Printed Name of PI*


---

*Specify Payment Type (Check, Gift Card, Cash, Other) & Amount*

## Appendix G

### *Code Definition Bank*

1. Accountability: being accountable or answerable to one's weight loss.
2. Activity accessories: sneakers, iPod, etc.
3. Aerobic activities: walking, jogging, running, swimming, etc.
4. Affects of weather: increase or decrease in exercise based on the weather outside.
5. Always overweight or obese: being overweight or obese for most of your life, including childhood.
6. "Bad" foods in the house: having unhealthy or high calorie foods in the house that may be tempting to eat.
7. Changing dietary intake: changing the types and kinds of foods that are consumed.
8. Changing exercise routine: changing up workouts or types of activities performed to promote weight loss.
9. Changing food preparation: changing the way food is prepared (e.g., baking instead of frying).
10. Changing screen time: changes to TV, computer, or video game time.
11. Cheating: eating foods that do not fit into calories or points allowed per day.
12. Choosing alternate foods: choosing healthier or lower calorie foods.
13. Clean plate syndrome: feeling the need to always eat all the food on your plate.
14. Consuming similar foods: eating the same foods a lot of the time.
15. Counting calories: adding up all the calories consumed throughout the day.
16. Counting points: counting up all the points (based on the Weight Watchers program) consumed throughout the day.

17. Daily eating patterns: the way an individual eats from day to day and the types of foods that they choose.
18. Diet pills: over the counter or prescription medications taken to promote weight loss.
19. Educational resources: using books or websites to find weight loss related information.
20. Emotional eating: eating during times of stress, depression, sadness, etc.
21. Exercise tapes: workout videos that are performed at home.
22. Exercising/Physical Activity: Any structured, formal activity used to sustain or improve health.
23. Extrinsic motivation: external factors that increased interests to lose weight and maintain weight loss (e.g., new clothes, wedding/getting married, gained weight, financial incentive, receiving complements, weight loss competition, social stigma).
24. Fad diets: Atkins, soup diet, etc.
25. Finding alternate foods: finding varieties of foods that can be substituted for other foods (e.g., low-fat version).
26. Food journal: a diary of all the foods and beverages consumed.
27. Frequency of exercise: the number of days per week or month that a person exercises.
28. Goal-setting: creating an ambition for yourself.
29. Gradual weight gain in adulthood: gradually gaining weight as an adult. Was normal body weight as a child.
30. Intrinsic motivation: internal or self-generated factors that increased interests to lose weight and maintain weight loss (e.g., being an adult, self appearance, health, feeling unfit).

31. Negative reinforcement: negative feelings that hinder someone from losing or maintaining weight (e.g., frustration, scared, guilt, weak, failure, etc.).
32. Paying attention to food intake: paying attention and thinking about the food an individual is eating.
33. Portion size: amount of a particular food that is consumed.
34. Portioning out food: measuring out portions of food prior to consumption.
35. Positive reinforcement: positive feelings that help someone to lose or maintain weight (e.g., happy, accomplished, proud, etc.).
36. Pregnancy weight gain: gaining weight as a result of pregnancy or during pregnancy.
37. Pressures: feeling pressure from someone or something to lose weight.
38. Previous weight loss attempt: previously trying to lose weight.
39. Problem foods: unhealthy or high calorie foods that people have a hard time saying no to.
40. Professional advice to lose weight: receiving advice from a physician or other professional in order to lose weight.
41. Reading food labels: looking at the nutrition facts panel to determine the nutrient makeup of foods.
42. Regular self-weighing: getting on a scale on a regular basis to determine actual body weight.
43. Self-monitoring: monitoring dietary intake, weight or physical activity on a regular basis.
44. Self-regulation: regulating food intake by counting calories, weighing out foods, using measuring cups, etc.
45. Sharing recipes: sharing recipes with family or friends.
46. Social Support: prevention from failing, strengthening, or encouraging.



- 47. Strategies/Approaches: cognitive or behavioral changes or tools used to aid in the weight loss and weight maintenance processes.
- 48. Temptations from others to eat certain foods: feeling pressure from others to eat unhealthy or high calorie foods or go out to eat.
- 49. Thinking about food intake: thinking about the calories or point value of foods that you choose to consume.
- 50. Timing of eating: time of day one chooses to eat or not to eat.
- 51. Treats: foods that people like and allow themselves to have on occasion.
- 52. Weight creeping up: gradual weight gain over time.
- 53. Weight cycling: any significant increase or decrease in weight.
- 54. Weight gain: gaining weight.
- 55. Weight history: changes in body weight throughout life.
- 56. Weight loss: losing weight.
- 57. Weight loss initiation: starting the weight loss process.
- 58. Weight maintenance: maintaining current weight.
- 59. Weight maintenance transition: point at which an individual stops losing weight and starts maintaining weight.
- 60. Work out classes: aerobics, spinning, etc.
- 61. Weight plateau: weight remaining constant regardless of changes made to diet or physical activity.

## Appendix H

### *Sample of Coding*

I: Ok. did you have, so this last time, so for this last 3 year period, was there something that like a motivation that you had, that triggered you to start?

KX: I was getting married and in 2005 was my wedding and in January 2004, my I said to my aunt and my mom and my other aunt I said lets, I need to, this is it these pictures are going to be forever I need to lose weight [Weight loss initiation; Getting married; Self-appearance; Extrinsic motivation] and I was at my heaviest, I was at 161 and a half that I went and got weighed I bought all the stuff and I never went back we did it ourselves and both of my aunt's and my mom and I did it together and we checked in with each other every Monday [Weight Watchers; Family support] and we, we lost, I lost 30 some pounds I actually went down, right before my wedding I was down to like 129 and I was very happy there I liked how I looked and I was very happy and I've stayed within that 5 pound range, you know give or take if it's you know near my period I go a little up if it's after the holiday and I eat like everyone else I go a little up and then you know I pay attention and I go back down [Paying attention to food intake; Positive reinforcement; Self-appearance; Weight loss; Intrinsic motivation].

I: So what's a little up?

KX: Ah like, like maybe I'm 136 if I'm bloated you know and then I'll go and it will be the week after my period and I'll be 132 you know so it's a it's [Weight cycling].

I: So maybe like 5 pounds?

KX: Yeah, I got up. I think I feel like I go 5 pounds either way [Weight cycling].

I: Ok, and you went on Weight Watchers?

KX: Mmm Hmmm

I: But you didn't go to the meetings you just had the books and?

KX: I just went and I got weighed in and I bought the books, so that I could have those [Weight Watchers; Educational resources] and we, I checked in with my aunt's and we were honest with each other, I'm up a pound this week or I'm down 2/3 of a pound or whatever and that kept us, felt like that kept us honest and all in all we all, all 4 of us actually lost a lot of weight [Family support; Accountability].

I: Ok. Did you think that, did you find Weight Watchers difficult?

KX: No. I found it really really really easy and I thought, God why didn't I do this earlier. I found it really simple, I did the points, I know that there's a bunch of different things you can do there, but I did the points and I found that I stopped looking at food as food and I looked at it as

points, I was like that's not worth those points [Counting points; Ease; Weight Watchers], so that's how that happened. But I'm an emotional eater that's why, you know if I was stressed or have any of those things going on I like to eat so, if I look at things not as food but as points and like that's not worth my points for the day so I will choose something that's healthier [Emotional eating; Changing dietary intake].

I: Can you think of any specific examples that you distinctly remember saying that's not worth the points?

KX: Soda, juices, like my treat for myself is a Diet Pepsi and that's zero points because it's a diet soda most of the time I drink a lot of water or crystal light which is zero points [Counting points; treat; Finding alternate foods]. I will never drink points, it's a waste of points I'm always like that's not worth it, I won't have that so, juices and regular sodas and things like that unless I'm in some sort of bind and that's all they have, I don't have it. So things like that like I make sure doughnuts, cakes, candies, things like that like I look them up but I'm like, wow really that that's many points that's not worth it I'm not going to do that [Giving up foods], so that's, you know a lot of those times and then I'll inevitably I'll choose fruit over anything else and I really like fruit and vegetables but sometimes it's not what's in the house that my husband likes so if he's got the cookies even though I don't like cookies if there's times where I'm craving a sweet, and there's not fruit in the house I will take a cookie, so I have to like watch myself but if I look at the cookies like a point then I'm fine and I'm like there not worth the points I won't eat that and I actually won't eat it [Bad foods in the house; Temptations] which I, I don't know why I talked myself into that because before it wasn't like that and once I lost all the weight I actually found that it was very interesting that I ate so much less and I was like, wow I used to be able to eat this much and now I can barely eat you know any of that and it's, I found that pretty interesting how I used to be able to consume so much more than I do now. It's very interesting [Portion size].

I: So, with the Weight Watchers, that requires portioning, like weighing food?

KX: Yeah I guess, I see I don't eat a lot of meat so I think you do have to weigh the meats, like you need to know how many ounces certain meats are, like I do cups of you know a cup of grapes or a cup of rice or a cup of you know this or that I do portion out the food like I do use and until I can eye it up I definitely use the measuring spoons and the cups because sometimes I'll think I have a cup and I'll pour it in and I'll be like well I got like 2 cups here (laugh) so you know I have to I have no sense of a helping things are, I have no sense of measurement actually so I have to, I use those and that really helps me [Portioning out food; Weight Watchers; Self-Regulating].

I: You use, you still continue to do that?

KX: Every once in a while yeah, absolutely when I, like right after a holiday or definitely like ok I'm back on you know and things like that [Self-regulating; Portioning out food; Holiday weight gain].