IDENTIFICATION OF FACTORS WHICH AFFECT WEIGHT LOSS OF SELECTED ADOLESCENTS IN OKLAHOMA

By

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Teenage obesity is one of the major health concerns in the United States (Wharton and Crocker, 1984; Hoerr, 1985; Mellin, 1983). Those who are obese have a greater risk of developing hypertension, cardiovascular disease, diabetes, gall bladder disease, and degenerative joint disorders (Burton and Foster, 1985; Bray, 1982; Mahan, 1981; Simopoulos, 1985; Van Itallie and Kral, 1981). It is also known that the adolescent stage of life is one of great mental, emotional, and physical stress (Satter, 1986; Rees, 1984; Mellin, 1983; Wharton and Crocker, 1984). When the two are combined (obesity and adolescence), there is ample justification for intervention.

Significance of the Problem

Although the data may vary, it has been reported that 15-30 percent of the adolescent population is obese (Rees, 1984; Pipes, 1981; Wharton and Crocker, 1984). As much as 40-45 percent of the adolescent population may be above desirable weight (Wharton and Crocker, 1984). At the same time, Americans are spending

over $10 million each year on weight reduction programs (Greenwood, 1983; Willis, 1982). Most of these programs are quite costly yet boring, repetitious and mentally frustrating. In addition, if any weight is lost there is a 90-95 percent chance that the weight will be regained within the following two years (Wing and Jeffery, 1979). Also, results of some studies warn that extreme weight fluctuations may actually be more harmful than remaining at a constant weight that is only a few pounds above recommended levels (Hoerr, 1985).

Adolescents may have a variety of problems which contribute to weight gain. These include low self-esteem, peer pressure, family conflicts, and/or separations, loss of family members, or a change of school or environment (Rees, 1984; Hoerr, 1985). It is important for any weight control program to incorporate ways to help adolescents deal with all of these situations.

Problem Statement

When treating adolescent obesity, it is important to understand the family background of each participant and the life events that may have contributed to weight gain. The purpose of this research is to identify a profile of overweight adolescents enrolled in a weight loss program and factors which affected the weight loss.

Specifically, the objectives of this study are as follows:

1. To identify a profile of overweight adolescents.

2. To assess change in weight management knowledge, habit scores, and weight during the 12 week weight loss program.

3. To identify factors, such as grade level, gender, relative weight, number of recent life changes, parent sessions attended, and employment status of mother, which contributed to weight loss by adolescents.

Assumptions

In this study the researcher has assumed:

1. The methods of the weight loss program (including instruments) are valid and reliable; and

2. Twelve weeks is sufficient time to realize a change in weight and eating behavior.

Limitations

The limitations of this study are:

1. The collected data is limited to those willing to participate and complete the appropriate information;

2. The techniques and methods used in the Shapedown weight loss program were used in this study;

3. The participants were limited to those who were 11 to 17 years old as of September, 1985;

4. The sample is limited to those who applied to the weight loss program in Broken Arrow, Oklahoma, hence the findings cannot be generalized to the population;

5. The sample is limited to adolescents at least 15 pounds above recommended body weight as defined by National Center for Health Statistics: NCHS Growth Charts (1976);

6. Participants who were in good health and capable of physical exercise; and

7. Those subjects not residing at a permanent residence were omitted from the study.

Definitions

The following definitions were used in this study:

1. Adolescent: a boy or girl between the ages of 11 and 17 as of September, 1985.

2. Desirable weight: the recommended weight for a given individual's height, age, bone structure, and muscular development (Robinson and Lawler, 1977).

3. Overweight: a person who is at least 15 pounds heavier than their desirable weight.

4. Obese: a condition describing a degree of overweight which is usually 20 percent or more above a desirable weight (Robinson and Lawler, 1977).

CHAPTER II

REVIEW OF LITERATURE

Introduction

Over the past ten years, the average weight of men and women of various ages and heights has increased between seven and ten pounds (Dintiman and Greenberg, 1980). Often caloric consumption studies with obese and overweight adolescents reveal that they do not consume as many calories per day as their peer of an average weight and height (Hoerr, 1985; Mahan, 1981; Woodward, 1985). What are the factors which cause some individuals to gain weight while others remain at a more constant and desirable weight? This chapter will explore the incidence of adolescent obesity, health complications associated with obesity, theories related to the development of obesity, and factors affecting growth of adolescents. Procedures for measuring physical growth will also be discussed.

Obesity in Adolescence

Incidence

Statistics from the second National Health and Nutri-

tion Examination Survey (NHANES II) conducted from 1976 to 1980, revealed that 26 percent of adults (34 million people) aged 20 to 75 years are 20 percent above ideal body weight (Miller, 1978). In the adolescent age group, approximately 10-20 percent of junior and senior high students are obese (Dintiman and Greenberg, 1980), although findings from more recent studies predict figures around 30 percent (Rees, 1984) for that population.

Unfortunately, many obese adolescents become obese adults. Abraham and Nordsieck (1960) found that 80 percent of females and 86 percent of males who were overweight at ages 10 to 13 years were overweight 20 years later. Obese adults and some obese adolescents face major health problems, some of which will be discussed in the following paragraphs.

Health Complications

The dangers of obesity are widely publicized (Burton and Foster, 1985; Dairy Council Digest, 1984; Van Itallie and Kral, 1981). Obesity tends to shorten the expected life span due to a variety of factors: atherosclerosis, high blood pressure, diabetes, heart/lung difficulties, early heart attacks, gall bladder disease, and other ailments. Indeed, the mortality rate of obese men age 15-69 is 50 percent greater than that of normal weight persons (Dintiman and Greenberg, 1980). Even those persons classified as overweight (as opposed to obese) have a

mortality rate 30 percent higher than those of normal weight (Dintiman and Greenberg,1980). The NHANES II study has shown a strong association between high body mass index values (27.3 for women and 27.8 for men) and hypertension, hypercholesterolemia, and diabetes (Burton and Foster, 1985).

Factors also complicating obesity, are the psychological, social, and economic aspects of excess weight. Obese adolescents are often excluded in activities with their peers (Frankle, 1985), victims of academic discrimination (Hoerr, 1985), and exposed to disturbed familial interactions (Rees, 1984). The obese individual may also be discriminated against during job placement and advancement (Pipes, 1981). Frequently, they have distorted body images and low self-esteem and often place themselves in social isolation (Pipes, 1981; Mellin, Slinkard, and Irwin, 1987; Dintiman and Greenberg, 1980).

Related Theories

While it has been known for some time that obesity is caused by an intake of calories beyond the body's output of energy, many theories have been postulated as to why some individuals gain weight while others do not. Rapid weight gain during the first 6 to 12 months has been considered a significant finding regarding obesity at later ages in life (Garn and Clark, 1976).

Most obese children were obese as babies and quite

often were born to mothers who were obese prior to pregnancy (Mayer, 1975). Indeed, when both parents are obese, approximately 70 percent of their children are obese; when one parent is obese the incidence drops to 40-50 percent; and when neither parent is obese, it falls to less than 10 percent as reported by Gurney (1936).

In regard to the relationship between obesity and fat cells, obese children have often been found to have more fat cells than normal adults (Forbes, 1976). Furthermore, endocrine disease accounts for only around three percent of obese cases in children (Brownell and Stunkard, 1980). If an obese child's height is below average, a medical examination to rule out hypothalamic, pituitary, adrenal, thyroid, parathyroid, pancreatic or gonadal problems associated with obesity should be encouraged (Brownell and Stunkard, 1980).

Forbes (1976) identified two common forms of obesity in children. One comprises approximately two-thirds of obese children, who are of normal stature and mature at the usual age of puberty. The other one-third of obese children consists of those who are above average in height, mature early, have advanced bone age, and have increased adrenal androgen production and increased lean body mass.

While research continues in the physiological aspects of childhood obesity, often faulty feeding patterns during infancy can foster the development

of obesity. Collipp (1975) describes six feeding practices that may contribute to obesity including mistaking any crying for hunger; neglecting breast feeding; making baby finish the last drop even if full; overfeeding of solid foods; overfeeding at age 9 to 12 months; and feeding too much protein during the first year. Unfortunately, obese infants too often become obese adolescents and 80-85 percent of obese teenagers are still obese as adults.

Adolescents often are subject to various psychological factors which may contribute to excessive weight gain as well. Bruch (1973) defines developmental obesity as an eating disorder that originates in early life due to familial attitudes and behavior. Reactive obesity is referred to as a short-term reaction to stressful events by abusing food to such a degree that the person becomes obese (Bruch, 1973). Both of these behaviors involve using food for a purpose other than its indended purpose: sustenance of life.

Factors Affecting Obesity

Regardless of which theory or theories may lead to obesity, it is important to recognize those factors that contribute to excess growth of the adolescent. Although there are numerous contributors to growth, the author chooses to review only the following: heredity, physical activity, nutrition, and parental influence.

Heredity

An adolescent may be predisposed to obesity based upon what he or she inherits. Studies show that children of normal-weight parents are obese as youngsters in only about 7-8 percent of the cases studied. With one parent obese, that rises to 40 percent; and with both parents obese, it rises to over 80 percent (Gurney, 1936; Mayer, 1975). In reviewing data from the 10-State Nutrition Survey, Garn and Clark (1976) have found that fatness of children increases with parental fatness. However, there is conflicting data in reporting the extent to which genetics and/or familial practices influence the development of obesity.

While studies done with twins in Sweden have concluded that genetic factors play a decisive role in the origin of obesity (Frankle, 1985), Garn, Barley and Cole (1976) insists that parents often induce fatness in children under their care than by the genetic hypothesis itself. Regardless of the greater influence, retrospective studies of obese adolescents have shown that a large percentage of them had feeding problems during infancy (Collipp, 1975; Pipes, 1981). Because of this parents become overconcerned about the children's eating patterns and then reward children for eating. This may result in the children establishing food habits which are conducive to obesity.

Physical Activity

It has been noted that our society as a whole is becoming more sedentary (Wilkinson, 1973). As the nation has become more advanced, there is less need for human physical activity. Dietz, William and Gortmaker (1985) have examined NHANES II data to discover the relationship between television viewing practices of adolescents and obesity. The prevalence of obesity increased by two percent for each additional hour of television that was viewed by adolescents. At the same time, research has shown us the tremendous benefits from exercise: building cardiovascular strength, burning calories, toning muscles, youthful looks, and attitude improvement (Hoerr, 1985; Mayer, 1973; Wilkinson, 1973).

In a program involving several hundred children, Mayer (1973) has found that one hour of vigorous exercise daily was highly effective in correcting obesity in a majority of overweight children. The noncompetitive program appeared to be more effective if the children started it at an earlier age. Mayer also stated "inactivity is likely the reason for the increased percentage of obese youngsters".

Getting children active is not an easy task. Even physical education programs in schools are rarely providing an hour workout per day. As the students age, less emphasis is placed on physical education primarily due to

lack of concern by school administrators (Wilkinson, 1973). Often, many of the trained physical educators do not have a true dedication to exercise (Wilkinson, 1973). Without a positive approach to physical exercise from the instructors, it is unlikely that the program will have administrative support.

Hoerr (1985) has reported that exercise is often an overlooked factor in adolescent obesity. While students fail to see the future benefits of exercise, they should be able to relate to the attainment of short term goals, such as weight loss, muscle tone, attitude improvement, as well as others. Hoerr (1985) has also emphasized the importance of prescreening adolescents for their motivation to exercise to determine their willingness to exercise 30-40 minutes each day, and maintaining an exercise routine throughout life before admitting them to a weight loss program. Indeed, Weiner (1985) has written that the only practical way to lose weight is to expend more calories than are consumed and involves a change in eating habits, or an increase in exercise, or both.

Nutrition

Several studies have been published which indicate the eating patterns of adolescents. The 10-State Nutrition Survey, which has reported recalls of food intake of lower income families in the U.S., was analyzed for adolescent nutritional status. It was reported that

adolescents did not meet the recommended dietary allowances (RDA) for several nutrients and adolescent males tend to meet more of the RDA than do their female counterparts (Miller, 1978). Nutritional status also varies with age, income, and race (McCoy, Kenney, Kirby, Disney, Ercanli, Glover, Korslund, Lewis, Liebman, Livant, Moak, Stallings, Wakefield, Prentiss and Ritchey, 1984). Ezell et al. (1985) reported that most adolescents eat at least one snack per day.

Obese teens, though overweight, may actually consume calories equal to or sometimes less than their normal weight peers (Rees, 1984). However, their eating behavior is usually reflective of disturbed patterns of eating. These well documented patterns include: consumption of low nutrient dense foods over high nutrient dense foods; justification to eat because of diverse feelings or situations; eating in response to cues not due to physiological needs; avoidance of social eating functions, even family meals; and lack of regular meal times (Frankle, 1985; Miller, 1978; Ten-State Nutrition Survey, 1972; Stare, Cifrino and Witschi, 1973; Skinner, Salvetti, Ezell, Penfield and Costello, 1985; Satter, 1987).

Parental Influence

While the genetic tendency towarde obesity is inherited from the parents, eating patterns are formed largely due to parental influence (Berdanier, 1986;

Brownell and Stankard, 1980). The family determines to what extent the adolescent is committed to good eating practices, exercise, and weight control (Frankle, 1985). Unfortunately, the obese adolescent may be unable to communicate with other members of the family, feel inadequate due to unnecessary pressure, or even feel defeated by exaggerated anxiety (Satter, 1986). Of added interest is the role the working mother plays in the nutritional quality of the adolescent diet. Skinner et al. (1985) has found that there was no significant difference in overall nutritional status of adolescents of employed versus non-employed mothers.

Equally important, parents sometimes suffer from the same psychological disorders as the obese adolescent. These include low self-esteem, anxiety, lack of problem solving skills, and little or no authority (Satter, 1986). For this reason, it is very important that the family be included in treatment. In a controlled study, Brownell et al. (1980) reported that children whose mothers were involved in treatment though attending sessions separately from their mothers, lost significantly more weight than those children who met in sessions with their mothers or children whose mothers were not involved in treatment.

Physical Growth at Adolescence

During the adolescent growth spurt, nearly all dimensions of the body enlarge including every organ system

(Hamilton and Whitney, 1979). While girls accumulate body fat progressively, boys begin showing a decline in body fat around age 16 (Guthrie, 1979). Both sexes increase in muscle mass but with males the rate of increase is considerably greater. For girls, the growth spurt begins at 10 or 11, peaks around age 12 and is completed by age 15 (Hamilton and Whitney, 1979). It is often during this period of life that many adolescent girls begin going on weight reducing diets. Boys, however, begin their growth spurt at age 12 to 13, peak at 14, and end around 19 (Hamilton and Whitney, 1979).

Measurement of the Body

In the United States, age-adjusted height and weight of children is greater than in past generations (Christakis, 1974). This trend may be influenced by nutritional status, absence of chronic disease, and urban versus rural living. While desirable weights can be suggested for adults using life insurance tables, standards for adolescents are not predictable or readily available. However, the National Center for Health Statistics (NCHS) has compiled data in the form of growth charts which help to judge weight when compared to others of the same height and age.

Sex differences in body composition are most visible in adolescence although it begins in infancy. Garn et al. (1976) reported that at 10 years of age approximately 80

percent of maximum stature has been attained, however only 50 percent of adult skeletal mass has developed. The percentage of lean body mass rises in adolescents particularly in males, who finish growth with 1.5 times the lean body mass of females. Because of the sex differences in body composition in adolescents, total body weight alone is not a valid measure for assessing growth or predicting caloric requirements.

Conclusion

Current trends in adolescent obesity show that it continues to rise regardless of all the research being done in this area. The many health complications associated with obesity make it necessary to provide intervention. Because of the multiple factors involved in the development of obesity, it is important that intervention programs be designed to provide education and assistance in all areas.

CHAPTER III

METHODS AND PROCEDURES

Introduction

Data for this study was collected from overweight adolescents enrolled in a weight control program in Broken Arrow, Oklahoma. The program was initiated because of the researcher's observed need of and because of requests for a program of this type made from individuals within the community. The Shapedown program (Mellin, 1983) was used because the researcher had previously attended a training seminar in June, 1984, which qualified her to purchase and use the Shapedown curriculum. All methods, procedures, and instruments (including registration form, pre- and posttest on nutrition knowledge, and food habit survey) as outlined in the Shapedown leader's guide (Mellin, 1983) were closely adhered to by the researcher. In this study, selected data has been analyzed to identify and describe several factors relating to participants' weight loss.

Population and Sample

The overweight adolescents who participated in this study were obtained on a voluntary basis from Broken Arrow, Oklahoma, a suburb of Tulsa. Criteria for enrollment in the program included current attendance in a secondary school (grades 6-12), being at least 15 pounds overweight according to height for weight tables (Mellin, 1983), and a desire to lose weight. The initial contacts and recruitment for participants was made through school nurses, posters, newspapers, and a community education brochure. Prospective candidates were sent letters explaining the purpose of the program and registration forms (Appendix A). Over 30 requests for information were answered, and 14 completed applications were returned to the researcher. Of these, 5 were boys and 9 were girls. Seven were enrolled in grades 6-8, while the other 7 were enrolled in grades 9-12.

Instrumentation

The Shapedown program was outlined extensively in a lecture series offered through the American Dietetic Association during 1984-85. During the workshop, participants were given information on how to obtain workbooks and leader's guides for use with overweight adolescents. Other information on how to conduct weight control classes was presented at that time.

All instruments used in this study have been tested for validity and reliability (Mellin, Slinkard and Irwin, 1987). A registration form providing personal and family background data, a nutrition knowledge pre- and posttest, and a pre- and posttest food habit inventory were used as instruments in this study. Forms to record each participant's height and weekly weight as well as attendance were also used (See Appendices A-D).

Data Collection

Data was collected over a 12 week period from September through December, 1985. All meetings were held in a classroom at South Intermediate High School in cooperation with the community education program. The fourteen participants were divided into two groups: 7 students in grades 6-8 met from 3:00 - 4:30 p.m., and 7 students in grades 9-12 met from 5:00 - 6:30 p.m. on Monday afternoons.

The program was designed as a 12 week course with one hour of lecture and 30 minutes of aerobic exercise. The researcher followed the leader's guide verbatim throughout the course of the program. At the first meeting, registration forms were collected as well as a $15.00 fee to cover the cost of handouts and a workbook.

The registration form provided background information on the subjects. This data included name, date of birth, address, names and ages of all people living with the subject, occupational status of parents, physician's name, current health problems and/or medications and school grade level. Applicants were also asked on the registration form about school grades, problems, changes in their life and the effect of these changes, onset of overweight and if their family members are overweight.

To pretest weight management concepts (Appendix B) a 25 question true/false test was administered to the subjects. The key to scoring the Weight Management Test is 1 = correct response, 0 = incorrect response. A perfect score = 25. Scores were recorded and given to the participants, but the answers were not discussed or returned to the individuals. Participants were told that throughout the 12 week course they would learn the answers to the test.

In addition, subjects were required to complete a Habit Inventory Summary (Appendix C). The inventory covered 15 behaviors related to fat and thin habits (Table I). Participants were asked to respond to four questions in each area, with each response correlated with a number. The numbers for each category were summed to obtain scores for each habit. Scores for

TABLE I

BEHAVIORS MEASURED IN HABIT INVENTORY

1. Type of food	8. Eating environment
2. Frequency of eating	9. Eating style
3. Quantity of food	10. Assertiveness
4. Exercise	11. Peer interaction
5. Activity	12. Compulsive eating
6. Internal cue responsibility	13. Self-esteem
7. Hyperemotional state eating	14. Depression
	15. Locus of control

TABLE II

TOPICS COVERED IN THE 12 WEEK WEIGHT CONTROL PROGRAM

Week	Lesson
1	1. Assessing Yourself
	2. Joining Shapedown
2	3. Exercise
3	4. Types of Food
	5. How Much You Eat
4	6. When You Eat
	7. Family and Friends (Parent Session 1)
5	8. Review and Taking Inventory
	9. Eating Style
6	10. Eating Environment
	11. Hunger
7	12. Eating Cues
8	13. Activity (Parent Session 2)
9	14. Speaking Up
10	15. Treating Yourself Well
	16. Review and Taking Inventory
11	17. Special Occasions
	18. Binges
	19. Preventing Relapse
12	20. Assessing Your Progress

each habit may be as low as 0 or as high as 8. The total score may be as low as 0 or as high as 120. Lower scores are indicative of fat habits; higher scores suggest thin habits. Participants recorded their individual scores on the Habit Inventory and gave them to the researcher.

Near the end of the first meeting, the researcher explained that the participants would be weighed weekly at the beginning of class. For the first measurement, both height and weight were measured using a portable metric scale and a tape measure. At this time they were advised that weight loss or gain should not play a factor in the success in the program. Weekly topics as listed in Table II were followed exactly as directed in the Shapedown leader's guide.

Parent sessions were scheduled for weeks 4 and 8 and designed to provide information and reinforcement of classroom instruction. Parents were highly encouraged to attend and ask questions during these sessions. The sessions were held during the subject's exercise time, yet separately for the two groups.

The weekly exercise period was held outdoors (except during inclement weather in which case it was held in the cafeteria). The school's asphalt track was used for the majority of the sessions, but a few times the cross country track was used for variety. Participants

were taught how to take their own pulse and were advised to work up to and maintain a heart rate between 20 to 25 beats per ten seconds during the 30 minute exercise period. The heart rate was checked periodically during each exercise time with the use of a stop watch. The main form of exercise was brisk walking, although some of the participants worked up to a steady jog as their capacity for exercise increased.

Data obtained weekly included weight, completion of assignments and attendance. During the last session, the two pretests were administered as posttests (Weight Management Test and Habit Inventory) to test for change in knowledge of weight management concepts and habits related to food, social and psychological behaviors.

Data Analyses

Of the 14 participants, only 12 have been used in the data analyses. Of the two not included, one of the participants was not residing at a permanent residence. The other participant had developed gall bladder disease and was forced to resign from the program due to surgery.

To determine a profile of the subjects, descriptive statistics such as mean, range and frequency distribution have been calculated. Desirable weights for each participant were calculated from charts derived from data

from the National Center for Health Statistics: "Height and Weight of Youths 12 - 17 years, United States" (1973). Once a desirable weight was determined, relative weights for each participant were calculated using the formula:

$$\text{relative weight in percent} = \frac{\text{current weight}}{\text{desirable weight}} \times 100$$

Two subjects (a male and female) were randomly selected from those participants who had completed all portions of the program and reported as case studies.

CHAPTER IV

RESULTS AND DISCUSSION

The objectives of this study are to identify a profile of overweight adolescents, to assess change in weight management knowledge, habit scores, and weight during the 12 week weight loss program, and to identify factors which contribute to weight loss. The weight loss program used is the same one which Mellin et al. (1987) used and validated.

A Profile of the Sample

Information regarding subjects' age, onset of obesity, family background, grade level, life changes, and employment status of the mother was collected on a sample of 12 adolescents. Mean values and ranges for age, onset of obesity, actual weight, and relative weight are included in Table III.

The mean age for this sample was 13.5 years with a range from 11-17. In comparison with the Mellin et al. (1987) study, the average age was lower for this group by 2.1 years. However, quite similar was the onset age of obesity for both groups being highest between the ages of 2 and 12. The mean weight in

kilograms (kg) was 80.5 with a range of 63 to 105 kg. The average relative weight for the group was 145.5 percent with a range of 122 to 172 percent relative weight.

TABLE III

PROFILE OF SUBJECTS: CALCULATED MEAN VALUES AND RANGES

n = 12

PARAMETERS	WEIGHT CONTROL GROUP	
	Mean Value	Range
Gender		
All	12	
Female	7	
Male	5	
Age	13.5	11 - 17
Onset of obesity (+)	2.92	1 - 4
Actual Weight (kg)	80.5	63 - 105
Relative Weight (%)	145.5	122 - 172

(+) Scoring relates to age groups: 1 = birth to 2 years
4 = 12 years or older

TABLE IV

PRE- AND POSTTEST WEIGHT MANAGEMENT SCORES:

MEAN AND RANGE

n = 12

	Mean +	Range
Pretest	16.93	(16-20)
Posttest	19.83	(15-22)

+Perfect score = 25
1 point for each correct response.

Change in Knowledge

Weight management scores (Table IV) increased from pre- to posttest although the range did not vary greatly. This signifies an increase in knowledge of weight management practices of participants. However, an improvement in knowledge about weight management practices did not necessarily indicate a change in behavior. Although the kinds of questions missed varied significantly, questions relating to exercise were most often missed on both the pretest and posttest.

Changes in Behavior

Changes in behavior are outlined in Table V. Of the behaviors measured, the greatest increase was in self-esteem scores. This is in keeping with the finding of Mellin et al. (1987) where they found self-esteem increased significantly regardless of weight change.

Other areas improving at least by one point according to the change in habit inventory scores included depression, activity, hyperemotional state eating, type of food and compulsive eating. All areas either remained constant (eating environment) or improved slightly.

While most of the food habit behaviors showed less improvement than self-esteem and exercise related behaviors, it is probable that 12 weeks was not sufficient time to make changes in that area. Perhaps a longer term study would show behavior changes in the food related areas as well.

TABLE V

CHANGES IN PRE- AND POSTTEST HABIT INVENTORY SCORES

TYPE OF BEHAVIOR	SCORES (+)			CHANGE
	PRE* n=12	PRE* n=6	POST* n=6	
Type of food	3.83	3.83	5.17	+1.34
Frequency of eating	4.25	5.17	5.83	+ .66
Quantity of food	4.33	5.17	6.00	+ .83
Exercise	3.67	4.00	4.50	+ .50
Activity	3.50	3.83	5.50	+1.67
Internal cue responsibility	3.17	4.00	5.00	+1.00
Hyperemotional state eating	3.83	4.17	5.67	+1.50
Eating style	4.25	4.83	5.67	+ .84
Eating environment	6.50	6.50	6.50	-0-
Assertiveness	3.17	4.67	5.33	+ .66
Peer interaction	5.50	6.33	7.17	+ .84
Compulsive eating	4.42	5.00	6.33	+1.33
Self-esteem	1.83	2.33	5.83	+3.50
Depression	3.50	3.83	5.67	+1.84
Locus of control	3.83	5.17	6.00	+ .83

+Scores could range from 0 to 8 with lower scores mean fat habits; higher scores mean thin habits.

*Pretest scores are reported for all subjects n = 12. Scores are reported for those subjects completing both the pre- and posttest Habit Inventory n = 6.

Change in Weight

Weight loss for participants was calculated according to changes in relative weight due to differences in individual desirable weights (Table VI). According to grade level, there was no difference in the amount of weight lost by participants. However, when compared with gender, girls lost one percent more relative weight than the boys.

When participants were grouped according to the number of recent life changes, there was a slight difference in weight loss between the two groups. This was comparable to Mellin et al. (1987) where those who had no life changes lost more weight than those with one or more changes. Perhaps one explanation for this is those respondents under stress reacted to it by excess eating.

Contrary to Mellin et al. (1987), the amount of weight lost was greater for those whose parents attended no or only one parent session, as compared to those whose parents attended both sessions. However, the rate of parent participation for subjects in this study was 42 percent attending two sessions compared with 19.1 percent in the earlier study (Mellin et al., 1987).

Those subjects whose mothers were unemployed lost approximately one percent more relative weight than those subjects whose mothers were employed. This may

TABLE VI

CHANGES IN RELATIVE WEIGHT AT THREE MONTHS FOR PARTICIPANTS (n=12) ACCORDING TO SELECTED VARIABLES

Variable	No.	Mean change in (%)
Grade level		
middle school	7	-2.29
high school (9-12)	5	-2.4
Gender		
Female	7	-2.71
Male	5	-1.80
Relative weight		
less than 140%	6	-3.17
140% or more	6	-1.50
Number of recent life changes		
0	6	-2.50
1 or more	6	-2.17
Number of parent sessions attended		
0 or 1	7	-4.29
2	5	+ .40
Mother's employment status		
employed full time or part time	5	-1.80
unemployed	7	-2.71
Idea to seek intervention		
own	6	- .67
parent	5	-2.40
friend	1	-12

be in agreement with Ortiz, MacDonald, Ackerman and Goebel (1981), who suggested that families with employed homemakers may have eaten more foods in a convenience and higher calorie form.

Subjects whose parents encouraged them to enroll in the program lost more weight than those subjects who enrolled on their own accord. However, the greatest change in relative weight occurred with a subject who joined only because his best friend enrolled and encouraged him to join, too.

Although the amount of weight lost was not as evident as with the Mellin et al. (1987) group, there was overall improvement in weight management knowledge, change in habits, and a decrease of relative weight by most subjects.

Case Studies

Female Subject

The female randomly selected for case study was 16 years old at the time of enrolling for Shapedown. Her first session height was 5' 7", and her weight was 220 pounds. Her desirable weight was estimated at 140 pounds, and her relative weight was calculated at 157 percent. She had tried to lose weight several times before; it was her own choice to join the weight loss program.

Her family was composed of natural parents and a younger brother (15 years old). Both parents were employed; the father was an engineer, and the mother was a substitute aide within a school district. Her mother as well as her mother's parents were overweight at the time she enrolled in the program. Her brother was of normal weight for his height. She first became overweight during ages 10 to 12.

A junior in high school, the female made C's and B's in her classwork, and there had been no change in her grades recently. In the last year prior to joining the program, she had experienced several changes in her life, each affecting her at different levels. Those changes affecting her significantly were health problems of a parent or someone close, school problems and fights with her brother over a pet. Changes

affecting her somewhat included health problems (allergies) and family problems. The change affecting her hardly at all was the change to a new school. At the time she became overweight (age 10 12), she was experiencing some stresses in her life. These included changes of schools, moving to a new home, death of someone close and school problems.

Her score on the weight management pretest was an 18 out of 25. A posttest score on the same test was 21, an increase of 3 correct responses. Most of the questions she missed dealt with exercise.

On the food habit inventory, she scored a total of 99 out of 120 on the pretest. As a posttest her score dropped to 92 out of 120. As indicated previously, lower scores are associated with fat habits, higher scores with thin habits. Those areas where she improved were listening to hunger cues, assertiveness and self-esteem. Those areas of behavior which decreased from the pretest were eating when she is not hungry, depression and self-control. It is interesting to note that her pretest exercise behavior scored lower than her posttest score. This could be associated with her lack of knowledge about exercise in the weight management test.

During the last session, her height measured 5' 7". Her weight measured 223 pounds, an increase of 3 pounds from the first session. Review of the 12 week weight record revealed that her weight actually

had been on an increase the first four weeks of the program. Indeed, by week four she weighed 11 pounds more than her entry weight of 220 pounds. The last eight weeks of the program there was a gradual decline in her weight, averaging about one pound lost per week. Therefore, stopping weight gain had been achieved by week 4, followed by a gradual decline in weight the following weeks.

The mother was employed part time within the school district her daughter attended. She always made an effort to attend any school or church activities when her daughter was participating. The mother attended both parent sessions and appeared to be overly concerned about her daughter's progress.

The researcher's observation of this subject included many personal conversations with her. The subject appeared to be very outgoing and usually was the leader in the group. Her mood fluctuated greatly, and she always expressed her emotions outwardly. Her mother was also overweight, and at times, seemed to try to be more controlling of her daughter. It almost appeared that the subject could more easily accept herself as an overweight person than could the mother. During the last couple of weeks of the program, the female and one of her friends began working at a local fast food restaurant. Although concerned about the participant being exposed to food continuously, the researcher

supported her decision. It was obvious that the female enjoyed the job both monetarily and socially, and the researcher observed that her weight was still consistently declining.

Male Subject

The male randomly selected for case study was 12 years old at the time of enrolling in the weight control program. At the first session his height was 5' 2", and his weight was 138 pounds. His desirable weight was estimated to be 104 pounds, and his relative weight was calculated as 133 percent. He decided to join the weight control program because his best friend was joining and wanted him to join, too.

The family background for this male consisted of his father, mother, and two brothers ages 15 and 9. His father held a professional position for an oil company, and the mother was a housewife. His mother was the only member of the family who was overweight. The subject first became overweight as a baby.

A seventh grader, the male made A's and B's in his classwork at a middle school. There had been no change in his grades over the past year; however, he had been experiencing some problems with his younger brother which seemed to bother him somewhat. He also experienced some health problems (allergies), but they did not affect him at all.

Since he had been overweight since infancy, he did not remember if there were any stresses in his or his family's life at that time. However, if he currently experiences any problems he usually discusses them with his mother.

His weight management pretest score was 16 out of 25. A posttest score on the same test was 15 out of 25, an increase of 1 incorrect response. Of all of those participants taking both the weight management pre- and posttest (n = 12), he was one of two participants whose score decreased.

On the food habit inventory, he scored a total of 50 out of 120 on the pretest. As a posttest his score increased to 84 out of 120, indicating an increased improvement in thin eating habits. Those areas where the biggest improvement of behavior was indicated were types of food, quantity of food, exercise, activity, eating style, peer interaction and depression. Only one area of behavior decreased: compulsive eating.

During the last session, his height measured 5' 3", an increase of 1 inch over the 12 week period. His weight also measured an increase of 3 pounds from week 1. Once again, it is interesting to note that his weight had been increasing the first five weeks of the program. His heaviest weight measured 143 pounds during week 5. A gradual loss of 2.5 pounds occurred during the final seven weeks of the program. The percent of relative weight decreased by 12 percent (even though there was a weight gain) due to the change in desirable weight because of the gain in height and age (his birthday fell immediately after the first session).

His mother attended both of the parent sessions. In her evaluation of the program she noted the following changes in her son's behavior:

1. He is much more aware of what he is eating.
2. He is eating more vegetables and fruits.
3. He is more aware of his desire to eat when he is bored and tries to do something else.

The most helpful aspects of the program to him were that it was not a diet, and he learned how to change habits in order to lose weight. He feels better about himself.

While the male enrolled in the program because of the encouragement of a friend, it soon became obvious to the researcher he really desired to lose weight. Upon weighing, he would report his weight with a very emotion-filled face. At one point during his gradual weight gain the first weeks, he became very frustrated. He claimed he was really trying to lose weight by increasing his activity and watching his food intake. The researcher tried to temper his anger by reminding him of his age (he had just turned 12 and had not reached puberty), the possible changes his body was making in relation to body fat versus muscle and the desire of gradual weight loss. At the final meeting when heights were measured, he was quite excited that he had grown an inch. He said that he was also learning

to be more assertive with his family in terms of refusing sweet desserts and second helpings.

CHAPTER V

SUMMARY

A study was undertaken to identify a profile of overweight adolescents and to determine which factors may contribute to weight loss. Twelve subjects aged 11 to 17 who were at least 15 pounds overweight enrolled in a 12 week weight loss program in Broken Arrow, Oklahoma. The weight of participants ranged between 63 to 105 kilograms, with an average relative weight of 145.5 percent.

The objectives of the study were: 1) to identify a profile of overweight adolescents by comparing personal data and familial background to weight loss; 2) to measure change in weight management knowledge; 3) to measure change in behaviors related to habits; and 4) to measure change in relative weight during the 12 week program.

The Shapedown curriculum was used verbatim throughout the program. Registration forms, weight management knowledge pre- and posttest, habit inventory summary and weekly weight were collected. Desirable weights were estimated for each participant from growth charts and relative weights were calculated. Information regarding subjects' age, onset of obesity, family background, grade level, number of life changes and

employment status of the mother was compared with weight loss to determine factors which may contribute to weight loss. Both a male and female subject were randomly selected to review as case studies.

Scores for both the weight management test and habit inventory summary increased for nearly all participants (10 out of 12) during the 12 week period. While there was no difference in relative weight lost by participants according to grade level or number of life changes, there was some difference according to gender, employment status of mothers and whose idea for intervention. Improvement in self-esteem and in depression were the most marked changes in behavior.

Both of the subjects chosen for case study gained weight during the first few weeks of the program. After a mid-course plateau, both subjects began losing weight. The male subject lost 2.5 pounds during the final seven weeks of the program while the female subject lost approximately 7 pounds during that time. While the female's height remained constant during the course of the program, the male grew one inch. Both of the subjects appreciated the support the group gave to them.

Although the amount of knowledge gained and number of pounds lost may vary according to the participants,

programs such as the one described in this study provide a support group for overweight adolescents. Because many overweight adolescents tend to isolate themselves from their peers, weight control programs provide an outlet for communicating and socializing with others who share a common situation. Indeed, support groups such as this one may provide an outlet for the prevention of eating disorders such as bulemia and anorexia.

The researcher highly recommends the continuation and offering of weight control programs for adolescents. Greater emphasis in future programs should be placed on a close follow-up of participants for an extended length of time. The researcher offers encouragement to those considering future studies with adolescents. The rewards of working with adolescents provides personal satisfaction to those willing to devote the effort.

SELECTED REFERENCES

Abraham, S.; Carroll, M.D.; Majjar, M.F.; Fulwood, R.: Obese and overweight adults in the United States. National Center for Health Statistics. Data from the National Health Survey Series 11, No. 230. DHHS Publ. No. (PHS) 83-1680. Hyattsville, MD: Public Health and Human Services, 1983.

Abraham, S.; Nordsieck, M.: Relationship of excess weight in children and adults. Publ. Hlth. Rep. 75:263, 1960.

Bell, L.; Chan, L.; Penchary, P.: Protein-sparing diet for severely obese adolescents: Design and use of an equivalency system for menu planning. J. Am. Dietet. A. 85:459, 1985.

Berdanier, C.R.: You are what you inherit. Nutr. Today 26:18, 1986.

Bray, G.A.: Obesity. Current Concepts (The Upjohn Co.), 1982.

Brownell, K.; Stunkard, A.: Behavioral treatment for obese children and adolescents. In: A.J. Stunkard(Ed.): Obesity. Philadelphia: W.B. Saunders, 1980.

Bruch, H.: Eating Disorders. New York: Basic Books, Inc., 1973.

Burton, B.T.; Foster, W.R.: Health inplications of obesity: An NIH Consensus Development Conference. J. Am. Dietet. A. 85:1117, 1985.

Christakis, G.(Ed.): Nutritional Assessment in Health Programs. American Public Health Association, Inc. Conference Proceedings. HSM 21-71-531, Atlanta, GA., 1974.

Collipp, P.J.: Childhood Obesity. Littleton, Massachusetts: Publishing Sciences Group, 1975.

Dairy Council Digest: Weight control. 55(2):9, 1984.

DeWolfe, J.A.; Jack, E.: Weight control in adolescent girls: A comparison of the effectiveness of three approaches to follow up. J. Sch. Health 54(9):347, 1984.

Dietz, J.; William, H.; Gortmaker, S.L.: Do we fatten our children at the television set? Obesity and television viewing in children and adolescents. Pediatrics 75(5):807, 1985.

Dintman, G.B.; Greenberg, J.S.(Eds): Weight control. In: Health Through Discovery. Reading, Massachusetts: Addison-Wesley Pub. Co., 1980.

Ezell, J.M.; Skinner, J.D.; Penfield, M.P.: Appalachian adolescents' snack patterns: Morning, afternoon and evening snacks. J. Am. Dietet. A. 85:1450, 1985.

Forbes, G.B.: Lean body mass and fat in children. Acta. Pediat. Scand. 65:279, 1976.

Frankle, R.T.: Obesity a family matter: Creating new behavior. J. Am. Dietet. A. 85:597, 1985.

Garn, S.M.; Barley, S.M.; Cole, P.E.: Similarities between parents and their adopted children. Am. J. Physical Anthropol. 45:539, 1976.

Garn, S.M.; Clark, D.C.: Trends in fatness and the origins of obesity. Pediatrics 57:443, 1976.

Greenwood, M.R.C.(Ed.): Obesity. New York: Churchill Livingstone, 1983.

Gurney, R.: Hereditary factor in obesity. Arch. Intern. Med. 57:557, 1936.

Guthrie, H.A.(Ed.): Introductory Nutrition. St. Louis: C.V. Mosby Co., 1979.

Hamilton, E.M.N.; Whitney, E.N.(Eds.): Nutrition: Concepts and Controversies. St. Paul: West Publishing Co., 1979.

Hoerr, S.M.: Exercise: An overlooked factor in adolescent obesity. Food and Nutrition News 57(3):17, 1985.

Mahan, L.K.: Obesity: New knowledge and current treatments. In: Washington-Roberts, B.S.(Ed.): Contemporary Developments in Nutrition. St. Louis: C.V.Mosby Co., 1981.

Mayer, J.: Obesity during childhood. In: Winick, M.(Ed.): Current Concepts in Nutrition. Vol. 3. Childhood Obesity. New York: Wiley, 1975.

Mayer, J.: Why exercise pays. Blue Print for Health 24:10, 1973.

McCoy, H.; Kenney, M.A.; Kirby, A.; Disney, G.; Ercanli, F.G.; Glover, E.; Korslund, M.; Lewis, H.; Liebman, M.; Livant, E.; Moak, S.; Stallings, S.F.; Wakefield, T.; Prentiss, S.; Ritchey, S.J.: Nutrient intakes of female adolescents from eight southern states. J. Am. Dietet. A. 84:1453, 1984.

Mellin, L: Shapedown: Weight management program for adolescents: Leader's guide. San Francisco: Balboa Publishing Co., 1983.

Mellin, L.: Shapedown: Weight management program for adolescents. San Francisco: Balboa Publishing Co., 1983.

Mellin, L.M.; Slinkard, L.A.; Irwin, C.E.: Adolescent obesity intervention: Validation of the Shapedown program. J. Am. Dietet. A. 87(3):333, 1987.

Miller, H.W.: Plan and operation of the Health and Nutrition Examination Survey, United States, 1971-1973: A description of the National Health and Nutrition Examination of a Probability Sample of the U.S. Population 1-74 years of age. DHEW Publ. No. (PHS) 79:1310, 1978.

Mirkin, G.B.; Shore, R.N.: The Beverly Hills diet: Dangers of the newest weight loss fad. J. Am. Med. A. 246:2235, 1981.

National Center for Health Statistics: NCHS Growth Charts, 1976. Monthly Vital Statistics Report. 25(3), Supp. (HRA) 76-1120. Health Resources Administration, Rockville, Maryland, 1976.

National Health and Nutrition Examination Survey 1971-1974 of United States, Vital Health Statistics, Series 11, No. 202; Pub. No. DHW-HRA 77-1647, 1977.

National Institutes of Health Consensus Development Conference: Statement on health implications of obesity. 5:9, 1985.

Newell, G.K.; Voden, A.G.; Aitken, E.F.; Dayton, A.D.: Food consumption and quality diets of Kansas elementary students. J. Am. Dietet. A. 85(8):939, 1985.

Ortiz, B.; MacDonald, M.; Ackerman, N.; Goebel, K.: The effect of homemakers' employment on meal preparation time, meals at home, and meals away from home. Home Economics Research J. 9:200, 1981.

Pipes, P.L.: Special concerns of dietary intake during infancy and childhood. In: Pipes, P.L.(Ed.): Nutrition in Infancy and Childhood. St. Louis: C.V. Mosby Co., 1981.

Rees, J.M.: Eating disorders. In: Mahan, L.K.; Rees, J.M.(Eds.): Nutrition in Adolescence. St. Louis: Times Mirror/Mosby College Publishing Co., 1984.

Rees, J.M.: Nutritional counseling for adolescents. In: Mahan, L.K.; Rees, J.M.(Eds.): Nutrition in Adolescence. St. Louis: Times Mirror/Mosby College Publishing Co., 1984.

Robinson, C.H.; Lawler, M.R.: Normal and Therapeutic Nutrition. New York: MacMillan Publishing Co., Inc., 1977.

Satter, E.: The feeding relationship: Implications for obesity. Food and Nutrition News 59(3):59, 1987.

Satter, E.M.: Childhood eating disorders. J. Am. Dietet. A. 86:357, 1986.

Sims, E.A.H.: Why, oh why can't they just lose weight? Nutrition and the M.D. 11(5):1, 1985.

Skinner, J.D.; Salvetti, N.N.; Ezell, J.M.; Penfield, M.P.; Costello, C.A.: Appalachian adolescents' eating patterns and nutrients intakes. J. Am. Dietet. A. 85:1093, 1985.

Skinner, J.D.; Ezell, J.M.; Salvetti, N.N.; Penfield, M.P.: Relationships between mothers' employment and nutritional quality of adolescents' diets. Home Economics Research J. 13(3):218, 1985.

Stare, F.J.; Cifrino, P.J.; Witschi, J.C.: We're flunking food. Blue Print for Health 24:5, 1973.

Steele, R.G.; Torrie, J.H.: Principles and procedures of Statistics, A Biometrical Approach. New York: McGraw-Hill Book Co., 1980.

Ten-State Nutrition Survey, 1968-1970: U.S. Dept. of Health, Education and Welfare. DHEW Pub. No. (HSM) 72:8134, 1972.

U.S. Department of Health, Education and Welfare: Nutrient requirements in adolescence. DHEW Pub. No. (NIH) 76:771, 1975.

Van Itallie, T.B.; Kral, J.G.: The dilemma of morbid obesity. J. AM. Med. A. 246:999, 1981.

Weiner, L.: Your weight is your number one concern. CO-ED 30(4):19, 1985.

Wharton, R.; Crocker, R.: Adolescent obesity. Child Today 13(6):12, 1984.

Wilkinson, C.B.: We're failing phys-ed. Blue Print for Health 24:27, 1973.

Willis, J.: Diet books sell well but... FDA Consumer HHS Pub. No. (FDA) 82:1093, 1982.

Wing, R.R.; Jeffery, R.W.: Outpatient treatments of obesity: A comparison of methodology and clinical results. Int. J. Obesity 3:261, 1979.

Woodward, D.R.: What sort of teenager has low intakes of energy nutrients? Br. J. Nutr. 53(2):241, 1985.

APPENDICES

APPENDIX A

REGISTRATION FORM

SHAPEDOWN REGISTRATION

1. Name _____
   Today's date _____ Birthdate _____
2. Address _____
   City _____
   Telephone _____
3. List the names and ages of all of the people you live with:

NAME	AGE	RELATIONSHIP
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

4. Your mother's occupation _____
   Your father's occupation _____
5. Your doctor's name _____
   Address or city _____
   The date of your last physical exam _____
   What health problems do you now have? _____
   _____
   What pills or medication do you take? _____
   _____
6. Have you had psychological counseling?
   Yes _____ No _____ if yes, when? _____
7. Your school's name _____
   City _____
   What grade level are you in? _____
   What grades do you get in school?
   _____ Fs and Ds
   _____ Ds and Cs
   _____ Cs
   _____ Cs and Bs
   _____ Bs
   _____ Bs and As
   How have your grades changed recently?
   _____ worse
   _____ no change
   _____ better
8. When you have a problem, to whom do you talk?
   _____

9. What changes have happened to you in the last year?
   _____ change of school
   _____ move to a new home
   _____ health problems
   _____ death of a parent or someone close
   _____ health problems of parent or someone close
   _____ divorce or separation of parents
   _____ school problems
   _____ family problems
   _____ other (describe _____
   _____
   _____ none

   If you had changes, how much have they affected you?
   _____ very much _____ very little
   _____ somewhat _____ not at all

10. When did you first become overweight?
   _____ as a baby
   _____ age 2 to 5 _____ age 10 to 12
   _____ age 6 to 9 _____ age 13+

   Think about the time within one year of when you first became overweight. What stresses were going on then?
   _____ change of school
   _____ move to a new home
   _____ health problems
   _____ death of a parent or someone close
   _____ health problems of parent or someone close
   _____ divorce or separation of parents
   _____ school problems
   _____ family problems
   _____ other (please describe _____
   _____
   _____ none

11. Who else in your family is overweight?
   _____ mother _____ grandmother
   _____ father _____ grandfather
   _____ brother or sister

12. Have you tried to lose weight before? Yes _____ No _____
   If yes, how many times? _____

13. How did you learn about SHAPEDOWN?
   _____

14. Whose idea was it for you to join? _____

APPENDIX B

WEIGHT MANAGEMENT TEST

WEIGHT MANAGEMENT TEST

Please read each statement below and circle either TRUE or FALSE. If you don't know, guess.

T F 1. You should try to lose weight because your mother told you to.
T F 2. The main difference between overweight people and thin people is their habits.
T F 3. A healthy weight loss is 3 to 4 pounds per week.
T F 4. Your exercise is aerobic if your heart rate afterwards was 22 beats in 10 seconds.
T F 5. Playing baseball is aerobic exercise.
T F 6. When you do aerobic exercise you get the training effect.
T F 7. Foods high in calories usually have a lot of fiber in them.
T F 8. Complex carbohydrates are good to eat when you are trying to lose weight.
T F 9. Only people who have high blood pressure should not add salt to their food.
T F 10. Flavored yogurt is a higher calorie food.
T F 11. To measure your food you must always use a food scale.
T F 12. Skipping breakfast does not help you lose weight.
T F 13. Avoid telling your family ways to help you manage your weight.
T F 14. Watching TV while eating usually makes people eat more.
T F 15. To lose weight, you should stop eating when you are full.
T F 16. You will probably gain weight if you eat when you are not hungry.
T F 17. If you are really overweight you should not wear a swimsuit.
T F 18. Acting assertively helps you lose weight.
T F 19. Positive self-talk is when you say to yourself "My stomach looks big."
T F 20. You can go to parties often and still lose weight.
T F 21. A diet plate at a restaurant is always low in calories.
T F 22. A binge is when you eat a lot and feel out of control.
T F 23. People who binge do it because they love to eat.
T F 24. To lose weight set a goal to change a habit all 7 days of the coming week.
T F 25. Weighing yourself daily tells you exactly how much your body fat changes each day.

SHAPEDOWN®

APPENDIX C

HABIT INVENTORY SUMMARY

SHAPEDOWN HABIT INVENTORY SUMMARY — Leader's Copy

In the space below, enter the score for each group of four questions in the Habit Inventory and add up the scores to get the Total Score.

	Scores
1. The types of food I eat	_____
2. How often I eat	_____
3. How much I eat	_____
4. How much I exercise	_____
5. How active I am	_____
6. Listening to my hunger cues	_____
7. Eating when I am not hungry	_____
8. My eating style	_____
9. My eating environment	_____
10. Speaking up	_____
11. Time with friends	_____
12. My feelings about eating	_____
13. My feelings of self-esteem	_____
14. My feelings of depression	_____
15. My feelings of self-control	_____
Total Score	_____

Lower scores mean FAT HABITS; higher scores mean THIN HABITS. Your scores for each habit may be as low as 0, or as high as 8. Your Total Score may be as low as 0 or as high as 120.

APPENDIX D

WEIGHT AND SELECTED HEIGHT RECORD

LEADER'S RECORD

Weight and Selected Heights

Week:	1		2	3	4	5	6	7	8	9	10	11	12	F/U	
Participants' names	wt.	ht.	wt.	wt.	wt.	wt.	wt.	wt.	wt.	wt.	wt.	wt.	wt.	wt.	ht.

VITA

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