

# **Patients' Self-Concept and Weight Reduction: Use of Covert Sensitization**

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## INTRODUCTION

Obesity is a complex health problem related to physiologic and psychologic factors and to learned behavior throughout life. As a complex problem, obesity is associated with a variety of illnesses such as diabetes, degenerative joint disease, and cardiovascular, pulmonary, and gallbladder disorders. These illnesses are more prevalent in states of obesity, and their treatment is complicated by excessive weight.<sup>1</sup> In addition to these health problems, the obese person may also experience personal conflict in a youth-oriented society that idealizes the attractive, young, thin person as a model of health, vigor, and success. Because of the health problems related to obesity, the potential risks of obesity, and the growing emphasis on health, many studies have been done in search of answers to problems of excess weight and weight reduction. Presented and discussed in this article are a review of studies concerned with the physiologic, psychosocial, and behavioral aspects of obesity and the results of a holistic weight reduction program designed to promote understanding of behavioral responses and healthy, socially acceptable eating patterns.

### Physiologic Factors

The problem of obesity is the result of excessive intake of food in relation to the energy required by the body. Obesity occurs when a person is 15 percent or more above the ideal body weight according to height and frame. The primary laws

of thermodynamic energy input and output can be applied to the development of obesity. An obese person does not equate the energy input in the form of food with work energy of daily life. The energy output for the human person is heat energy, work energy, and stored energy. An increased caloric intake with decreased work energy and increased stored energy over a period of time results in obesity.<sup>2</sup> From a physiologic point of view, obesity has been studied and classified in terms of the person's physical appearance, skinfold thickness, height-weight comparison, body composition, and way in which the obesity developed.<sup>3</sup>

Obesity has been described as juvenile or adult in onset. Juvenile obesity is characterized by hypercellularity of the adipose tissue with marked increase in the total number of adipose cells. Adult-onset obesity is characterized by a normal number of enlarged adipose cells with fat deposits.<sup>4-6</sup>

In their study of affective responses to weight reduction, Grinker and others<sup>7</sup> showed that five adult-onset, severely obese patients with symptoms of anxiety and depression did not increase these symptoms with weight loss. The need for further investigation of psychosocial aspects of obesity and weight reduction is indicated by an evaluation of their study.

### Psychosocial Aspects

#### Personality Profiles

The personality patterns of obese subjects have been studied in relation to emotional responses and

interpersonal relations. Using the California Psychological Inventory, Wunderlich<sup>8</sup> studied the personality characteristics of 23 super-obese patients and observed that female patients scored significantly higher than the norm group on dominance and psychological-mindedness. Male patients did not score higher on any scale, but female patients scored lower than the normative group on responsibility, socialization, communality, and femininity. Only on socialization and communality did both male and female patients score significantly lower.

The Adjective Check List and the Edwards Personal Preference Schedule were used by Wunderlich et al.<sup>9</sup> to study 16 obese patients in a volunteer program. They found that the obese subjects scored lower than the normative group on achievement, affiliation, dominance, endurance, order, personal adjustment, and self-control scales. The obese subjects scored higher on the aggression, exhibitionism, heterosexuality, and interception scales. Obese subjects also checked fewer numbers of favorable adjectives than the normative group with regard to autonomy.

#### **Anxiety States**

The relationship of psychologic status and weight of 339 men and 400 women was studied by Crisp and McGuiness,<sup>10</sup> who found that men and women who were standard weight were much less anxious than the norm, and that obese men were much less depressed than the norm. Rubin's<sup>11</sup> psychoanalytic studies of obese patients resulted

in construction of a profile of obesity that describes the obese person as someone who has: (1) obsessive preoccupation with food, (2) compulsive eating and other oral activities, (3) compulsions to overeat accompanied by rationalization and self-recrimination similar to alcoholics, and (4) alienation from actual self.

Buchanan<sup>12</sup> reported a 5-year psychoanalytic study of seven women and two men. He noted that during the first 6 to 9 months of the study, there was little change in weight patterns with resistance expressed through excessive discussion of the pros and cons of certain diets and rationalization of eating behavior. The obese patients had basic anxieties such as helplessness, hostility, isolation, and poor adjustment to change. Their major comprehensive defenses were developed to deal with a profound feeling of isolation. The patients' greatest change was in their relationship to self and to others.

#### **Aspects of Self-Image**

Quereshi<sup>13</sup> studied some psychologic factors that distinguished 234 remediable and irremediable obese patients participating in TOPS and KOPS Clubs. Significant differences were found between these two groups in factors of unhappiness and extraversion based on self-rating, as well as in the factors of persistence and extraversion based on mother-rating. The rating of self, father, mother, and spouse on these personality characteristics as predictors of remediability of obesity is justified by these findings.

Glucksman and Hirsch<sup>14</sup> found that six obese subjects overestimated their body size during and after weight loss, while four nonobese subjects underestimated their body size.

Katz<sup>15</sup> used closed-circuit television for self-confrontation to evaluate subjects' total body image. Obese subjects had more negative total body weight attitudes and significantly underestimated their actual body weight and their deviance from the cultural ideal of physical size and attractiveness.

Weiss<sup>16</sup> studied 36 black and 36 white females, whose ages ranged from 20 to 50 years. He found that their attitudes toward body size differed between those who were process obese (early onset obesity), and those who were reactive obese (developed obesity after age 20). Black, process obese subjects overestimated their body size more than black, reactive obese subjects. White, reactive obese subjects rated their large body profile more negatively than white, process obese subjects.

Thomas,<sup>17</sup> after studying the relationship of attitude toward self to obesity, neuroticism, and sex with 40 male and 40 female eumorphic Caucasians between the ages of 20 and 35 years, concluded that their attitudes were influenced by obesity, neuroticism, and sex. Obese subjects evaluated their bodies more negatively than non-obese individuals. In a random survey of 1,059 subjects, Ashwell and Etchell<sup>18</sup> studied attitudes toward body weight and determined that

women who were overweight were more aware of their size and made more attempts to lose weight. In addition, a higher prevalence of overweight was associated with older and lower social class women.

Leon<sup>19</sup> studied the body image and eating patterns of 48 patients on a 6-month weight reduction program and noted that 14 of the 48 patients had changed their weight significantly and that 34 had no significant change. The amount of weight loss was directly related to the degree of positive change in body image. The weight loss group reported less response to eating when lonely and bored and greater frequency in responding to hunger cues than the group that had no weight change.

Stunkard and Burt<sup>20</sup> and Stunkard and Mendelson<sup>21</sup> studied obesity and body image of subjects in medical and psychiatric clinics. They reported three factors predisposing to disturbed body image in obesity: (1) age at time of onset, (2) presence of emotional disturbance, and (3) negative evaluation of obesity during formative years. Disturbance in body image included feeling grotesque and feeling that others view them with hostility and contempt. These feelings were associated with self-consciousness and impaired social functions.

### **Behavioral Responses to Eating**

Because the way a person eats is a learned experience, obesity has been studied in relation to behavioral responses to eating. Many

studies have been based on the behavioral modification investigations of Skinner<sup>22</sup> and of Ferster et al.<sup>23</sup> In his research on behavior modification treatment for weight control, Harris<sup>24</sup> noted that obese subjects had significantly greater weight loss than the control group. Schachter<sup>25</sup> and Schachter et al.<sup>26</sup> found that the food intake of obese subjects was controlled by external influences even if these subjects had sated themselves. The food intake of the normal weight person is primarily controlled by the internal cue of hunger.

Nisbett's<sup>27</sup> findings are support to the notion that obese subjects respond to external cues and that obese subjects tend to eat food available rather than responding to internal hunger. The findings by Hill and McCutcheon<sup>28</sup> do not support Schachter's<sup>25</sup> findings that obese subjects are unresponsive to internal hunger cues. Hill and McCutcheon compared the eating responses of seven obese and of seven nonobese subjects in a meal setting. They found that as hunger and preference increased, the amount of food eaten, the meal length, and the number of bites significantly increased. Obese subjects ate more high-preference foods and less low-preference foods as well as more food per second than nonobese subjects.

A comparison of a three-dimensional behavioral modification program with a self-control program was done by Stuart.<sup>29</sup> Three obese women in the self-control program were instructed on reduced

caloric intake and increased exercise. Three other obese women were prepared in a program of environmental control, reduced caloric intake, and exercise. The investigator found that there was little change in subjects' personalities after the test compared to that obtained before the test. In both groups, however, significant weight losses occurred.

Penick et al.<sup>30</sup> did a more comprehensive study of behavior modification with 32 obese subjects and observed that two groups treated with behavioral modification lost significantly more weight than the control group. Ince<sup>31</sup> presented two cases in which black obese subjects had a poor self-concept as manifested by negative verbal behavior. With the use of modified behavioral therapy and verbal conditioning during 17 sessions, both subjects increased the number of positive self-references as evidence of improved self-concept.

## **PROGRAM DESIGN**

### **Comprehensive Approach**

A comprehensive approach to obesity was designed to emphasize the promotion of health through weight reduction and the development of a positive self-concept. The program included specific nursing care for client-centered self-management of weight reduction through the development of cognitive, psychomotor, and affective awareness of coping with specific health needs related to obesity.

A pilot study, designed to provide a program for comprehensive self-management with nursing support for weight reduction, was conducted on 9 of 16 patients referred as possible candidates to the nurse practitioner. Specific health needs related to obesity were identified as: (1) personal, cultural, and socioeconomic factors influencing diet, (2) psychosocial situations that influence eating responses, and (3) behavioral patterns of overeating. The weight reduction program was designed as a response to each of these areas of need. The program included:

(1) individual diet, designed for the client, (2) behavioral modification to change eating habits, and (3) relaxation and meditation as covert sensitization to promote positive attitudes and eating habits. Each of the components of the personalized weight reduction program was directed toward a weight reduction goal identified by the client in collaboration with the nurse practitioner (Fig. 1).

### Purpose

The study was designed to develop a self-concept profile as a means of evaluating health outcomes after

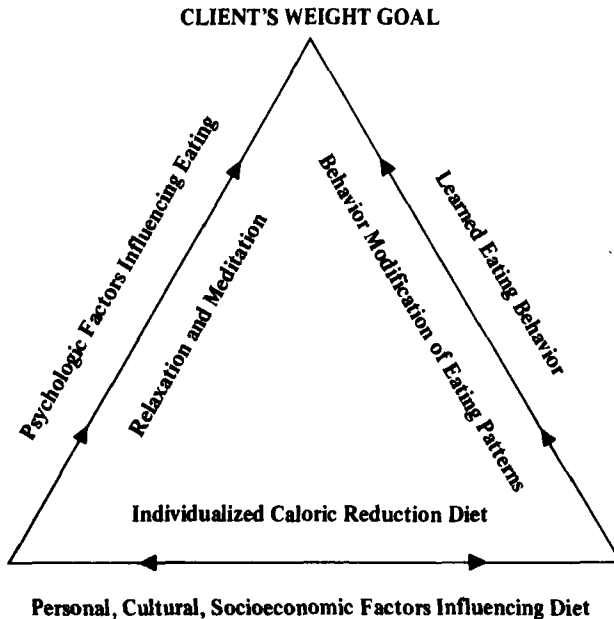


Fig. 1. Components of the personalized weight reduction program. The outer aspect of the triangle represents life-style factors related to the development of obesity. The inner aspect of the triangle represents a personalized weight reduction program with the components of an individualized caloric reduction diet and the process of relaxation and meditation and behavior modification directed toward the client's weight goal.

a therapeutic program for weight reduction. The major purposes of the study were to:

1. develop—using the Tennessee Self-Concept Scale—a baseline profile of the self-concept of obese subjects;
2. implement a therapeutic weight reduction program which includes a weight reduction diet, behavioral modification of eating patterns, and meditation techniques to modify the desire to eat;
3. measure the health outcomes in terms of weight loss and self-concept at the end of the 5-month program, and 1 year after the program was completed.

It was hypothesized that the obese subjects would have a significantly lower baseline score than the norm in the areas of total positive self-concept (self-esteem), physical self, personal self, and family self. It was further hypothesized that the subjects' scores in these areas would increase significantly as a result of the therapeutic weight reduction program.

The principal investigator worked with subjects in the weight reduction program in an ambulatory health care clinic for 5 months. The weight reduction program was designed to help subjects develop new patterns of thinking and eating which were expected to enable them to cope with weight reduction and to maintain their weight loss over an extended period of time.

A psychologist administered the self-concept scale and interpreted subjects' profiles in relation to normative data. Data from the self-concept scale were not used to screen or counsel subjects. Rather, they were used as a measure of baseline level and health-outcome change. The psychologist was not involved in the weight reduction program.

### Definition of Terms

**Obesity** is a condition of excessive deposits of fat of juvenile or adult onset characterized by a weight excess of 15 percent or more according to the Metropolitan Life Insurance Company standards.

**Self-Concept** refers to a person's perception of self which emerges from social interaction.<sup>32</sup>

**Self-Esteem** refers to one's experience of liking self, a feeling that one has value and self-confidence.<sup>32</sup>

**Physical self** relates to the person's view of his or her body, state of health, physical appearance, skills, and sexuality.<sup>32</sup>

**Personal self** refers to the individual's sense of personal worth, the feeling of adequacy as a person, and the individual's self-evaluation apart from the body or relationship.<sup>32</sup>

**Family self** reflects one's feelings of adequacy, worth, and value as a family member. It refers to the individual's perception of self in relation to the closest and most immediate circle of associates.<sup>32</sup>

**Covert sensitization** is relaxation and meditation using guided reflections about foods to avoid, foods to emphasize, and situations that tend to promote eating behavior.

### **Nursing Intervention**

The nursing interventions in this study were based on a holistic approach that combines concepts of covert sensitization, behavioral modification, and weight reduction through dietary management. This holistic approach was derived from the existential theory developed by Maslow,<sup>33</sup> who proposed that a person is continually developing and trying to realize personal goals and potential. Inner needs are not always obvious but may be hidden and unfulfilled. Such hidden needs may produce negative responses that should be identified in order to develop appropriate, healthy, socially acceptable responses.

The obese person may elect weight reduction as a personal health goal to be achieved within his or her human potential. Like those of other people, the obese person's inner needs may be hidden and unfulfilled. From an existential viewpoint, obese persons extend themselves in complex interpersonal relationships as they develop attitudes and learn to respond to personal needs. The potential for altering responses depends upon identifying these needs, developing insight into the reasons for behavioral responses, and making new

choices to modify interpersonal relations and eating patterns.

A holistic program for weight reduction, then, was designed to promote insight into behavioral responses to needs and to help the client develop appropriate, healthy, and socially acceptable eating patterns.

### **Covert Sensitizations**

The therapeutic program of covert sensitization was designed to promote the obese client's self-management of weight reduction through relaxation and guided meditation. The obese clients were encouraged to use the process of relaxation and guided meditation to enter into their complex worlds of human experience related to weight gain. The clients were encouraged to consider experiences from a positive point of view and were guided to view: (1) the way they look at obesity and at the weight reduction goal, (2) personal beliefs and values about diet, and weight reduction, and (3) interpersonal relationships that influence patterns of eating.

Covert sensitization for weight reduction involves the use of guided meditation and relaxation which produces physiological changes. These physiological changes include hypermetabolic and hypothalamic responses with decreased sympathetic nervous system activity as reported by Wallace and Benson<sup>34</sup> and by Wallace et al.<sup>35</sup> In a person who is relaxed, oxygen utilization is decreased, carbon dioxide pro-



duction is reduced, respiratory rate is decreased, and cardiac rate is slowed. In a relaxed person who is responding to covert sensitization, the electroencephalogram shows increases in alpha and theta waves, the electrical resistance of the skin increases, and blood flow to muscle tissue increases. During the state of relaxation induced by covert sensitization, a person is open to new insights and decision-making related to personal goals about weight reduction.

Meditations with covert sensitization were guided reflections in which themes were presented throughout the period of relaxation. Resolutions were made by the client according to personal goals and insights developed. The meditation process was taught in one-to-one therapeutic sessions, and specific directions were given for relaxation, breathing, and reflections during the meditation. The time suggested for meditation was a minimum of 20 minutes in the morning, preferably before breakfast, and for 20 minutes in the evening. The time and place of meditation were adapted by the client to fit lifestyle and personal commitments.

The form of covert sensitization used to encourage each subject to relax and meditate (through a series of guided visualizations) was adapted from covert sensitization described by Cautela,<sup>36,37</sup> Janda and Rimm,<sup>38</sup> and Tilker and Meyer.<sup>39</sup> A positive approach was always used in three different types of meditation sessions: (1) a view

of self, as motivation to lose weight, (2) foods to be emphasized and de-emphasized, and (3) situations clients present as factors that increase their eating behavior and that need to be dissociated from eating.

### Behavioral Modification

The behavioral modification component of the program was adapted from the work of Stuart,<sup>40</sup> Stunkard et al.<sup>41</sup> and Williams.<sup>42</sup> This program included a description of the behavioral modification process and the behavior to be controlled. Clients were taught about the purpose of behavior modification as a method of changing overeating behavior to more desirable behavior for weight reduction.

Each client was encouraged to identify those various stimuli that result in the behavior of overeating reinforced by satisfaction. Stimuli such as hunger, boredom, frustration, anxiety, or watching television were noted. The client's dietary journal helped the nurse practitioner to understand each client's pattern of eating. Clients were taught behavioral modification related to food as the stimulus for the response of eating, which reinforced the effect of satisfaction. Each subject was taught to narrow down the number of stimuli that encourage eating by reducing the number of places to eat to one environment with a particular place setting. Reinforcement was limited to the positive

verbal encouragement of subjects for weight reduction and compliance. Negative reinforcement was not used by the nurse practitioner.

### **Diet Therapy**

The diet proposed for each client was designed for an individual weight reduction program of 500 calories fewer than the daily requirement with an estimated weight loss of 1 pound each week. Flexibility was encouraged in the diet, and cultural adaptations were made as needed. Each client received: (1) a personalized dietary guide based on his or her caloric intake plan; (2) a written menu guide and instructions on how to select foods from the exchange lists prepared by the American Diabetes Association and the American Dietetic Association, in cooperation with the National Institute of Arthritis, Metabolism, and Digestive Diseases,\* and the National Heart and Lung Institute,\* and (3) a booklet for the recording of food intake, location of eating, and behavioral modification activity. The latter item served as a dietary journal and was reviewed by the nurse practitioner at the time of each visit in order to identify specific dietary problems encountered by the patient.

### **Weight Reduction Schedules**

The first 6 weeks of the weight reduction program included 1-hour

sessions in which each subject met with the nurse practitioner for specific activities and assigned follow-up projects. The program during these 6 weeks is presented in Table 1.

During the next 6 weeks of the program, the nurse met with each client individually every other week. At these sessions, the nurse reviewed the client's journal and weight, offered appropriate verbal encouragement, and introduced specific meditation.

During the last 8 weeks of the program, the clients met individually with the nurse once a month for the purpose of encouraging the client, reviewing records, and making suggestions for dealing with problems related to behavioral adaptation and meditation. During this last 8-week period, the nurse was available for consultation as needed by the client.

At the end of the therapeutic program, clients were encouraged to continue their weight reduction program independently. The Self-Concept Scale was administered at the end of the 20-week program. Clients were encouraged to return for a follow-up appointment with the nurse 1 year after the start of the program.

### **Self-Concept Instrument**

The Tennessee (Department of Mental Health) Self-Concept Scale (TSCS) was developed by Fitts<sup>32</sup> to meet the need for a scale, which is simple for the subject, widely applicable, well standardized, and multidimensional in its description

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\*These organizations are divisions of the National Institutes of Health, U.S. Department of Health, Education, and Welfare.

Table 1. Initial Schedule of the Weight Reduction Program

Period	Session Activities	Assigned Follow-Up Projects
First Week	<p>Introduction to the program                      Informed consent agreement                      Health information form                      Administer self-concept scale                      Introduction to recording baseline data and other information in the dietary journal</p>	Develop dietary journal
Second Week	<p>History and physical examination                      Clinical laboratory tests: fasting blood sugar, cholesterol, and urinalysis                      Review dietary journal                      Introduce meditation: motivation for weight loss</p>	Continue dietary journal Meditation*
Third Week	<p>Review journal and weight changes                      Introduce personal dietary program                      Meditation: foods to emphasize and de-emphasize</p>	
Fourth Week	<p>Review journal and weight changes: present basic theory of behavior modification                      Introduce new place setting and selected environment for eating</p>	Continue dietary journal Continue meditation*
Fifth Week	<p>Review journal and weight change                      Meditation related to specific problem                      Behavioral modification related to specific problem</p>	Continue behavior change Continue meditation*
Sixth Week	<p>Review journal and weight changes                      Meditation related to specific problem</p>	Continue behavior change Continue meditation*

\*Meditations last for 20 minutes before breakfast and again 20 minutes before evening activities.

of the self-concept. A large amount of clinical and research data has been gathered by a variety of workers, even prior to the formal publication of this scale in 1964.

The scale consists of 100 self-descriptive statements which the subject uses to portray his or her own self-image. The scale is self-administered by either individuals or groups and can be used with subjects age 12 or higher and having at least a sixth-grade reading level. The subject reads each item (e.g., "I am a cheerful person") and responds by pencil-marking the answer sheet to indicate one of five choices: (1) completely false, (2) mostly false, (3) partly false and partly true, (4) mostly true, or (5) completely true. Most subjects complete the scale in 10 to 20 minutes.

The scale is scored by adding the item scores which fall into the particular categories of the phenomenological classification system developed for interpreting the instrument. A two-dimensional, 3 by 5 category scheme contains 90 items, equally divided as to positive and negative items. The remaining 10 items comprise a Self-Criticism Scale.

Along one dimension of the scoring scheme are three sub-scores which portray the subject on an *internal* frame of reference: (1) identity ("What I am"), (2) self-satisfaction ("How I feel about myself"), and (3) behavior ("What I do"). Along the other dimension of the scoring scheme are five sub-scores which form the *external* frame of reference: (1) physical

self, (2) moral-ethical self, (3) personal self, (4) family self, and (5) social self. Adding the sub-scores along either of the two dimensions yields the Total Positive Self-Concept (Self-Esteem) Score. The Self-Criticism Scale is composed of mildly derogatory statements that most persons admit as being true for them (e.g., "I get angry sometimes.")

### The Relaxation-Meditation Process

The process of relaxation and meditation was presented in a demonstration-participation nurse-client interaction in a one-to-one session and was presented in three phases: (1) relaxation and breathing, (2) composition of place, and (3) reflections about a series of topics related to weight reduction goals and process.

The relaxation and breathing stage was introduced by having the clients assume a comfortable position and become aware of their postures. They were then asked to close their eyes and relax while breathing in and out slowly and deeply. Attention was then directed to each part of the body, beginning with the head and proceeding to the feet—allowing each part to relax or "let go." When this was completed, the composition of place was introduced through visualizing a meditation room designed by the patient as an ideal place for the patient to relax and meditate.

The client was then encouraged to reflect on a series of topics by carrying out and participating in the following directions and activities:

1. The client was asked to view self as one really is, reflecting about areas of excessive weight, and to picture this image in a black frame.
2. The client was then asked to reflect on an ideal image of self (as the client desired to appear) and to place this image in a white frame.
3. Undesirable foods were then visualized in a black frame by the client, who was urged to note that they were not in keeping with the desired outcome of weight reduction.
4. The undesirable foods and the black frame were then replaced by visualization of ideal foods as substitutes in the client's therapeutic diet. These foods were presented in a white frame. Attention was called to the fact that these foods were desirable, satisfying, and in keeping with the client's goal presented as an ideal image of self in the first white frame.
5. Problems encountered by the client that caused overeating responses were then presented for reflection. Clients were guided to face the conflict as it really was, and to note that it was not related to eating. Solutions to the problems were not proposed. Rather, an open-ended approach was used to encourage the client to consider alternatives for responding to the problem.

Clients were instructed to meditate a minimum of 20 minutes,

two times a day, following the process described above. At subsequent visits with the nurse practitioner, the client was encouraged to share problems related to eating and to consider situations that related to stimulating overeating.

### **Characteristics of the Clients**

#### **Marital and Employment Status**

Six of the nine clients who completed the program were married, and each of the remaining three clients was either single, divorced, or widowed.

Four of the clients were employed on a full-time basis; two were part-time employees, and three were unemployed.

#### **Life-Style Problems and Overeating**

Problems encountered by clients that stimulated overeating were influenced by their state in life, their employment, or life-style. Clients reported problems that stimulated overeating as they encountered them in the environment of their life or work situation. These types of problems are presented in Table 2.

Five of the nine clients expressed problems related to their childrens' behavior that caused responses consisting of worry and overeating. Three of the nine clients responded by overeating when there were problems in each of the following areas: conflicts with employment situations, sexual conflicts, and experience of loss of a significant loving person.

When each of these problems was shared with the nurse practitioner, she responded by acceptance, and in the course of the therapeutic ses-

**Table 2. Problems Subjects Had Encountered Due to Overeating**

<b>Problems Encountered</b>	<b>No. Subjects*</b>
Childrens' behavior upsetting to parents	5
Conflicts with employees or fellow workers in employment situations	3
Sexual conflicts due to unmet personal needs	3
Experiences of rejection or loss due to the absence of a loved one	3
Loneliness due to a lack of social and recreational activities	1
Conflicts with studies and the need to achieve in a competitive environment	1

\*Total sample size (n) = 9.

sion, introduced these situations into the guided reflections of meditations. The problems were presented in the meditation by repeating the situation presented by the client in a nonthreatening relaxed state. Solutions were not proposed, but the client was guided to recognize the problem and note that it had nothing to do with food or overeating. The situation was left open to the subject with opportunity to confront the problem and select alternatives for action or response.

At the subsequent clinical encounters with the nurse practitioner, clients were encouraged to share how they dealt with particular problems. In one problem situation, a client with an employment problem

was able to confront the employer who made excessive work demands. Frequently, the pressure of limited time in a work situation were dealt with by finding some time to relax and meditate rather than confront the persons involved. Clients frequently expressed concern about the threat of authority in the employment situation. In some situations, clients were not able to cope with the work pressures and responded to the situation by overeating.

In situations related to childrens' noncompliance with parents' expectations, there was very little ability to change the family life situation. Clients were able to cope with eating responses by sharing their conflicts with the nurse and others in their daily life. Clients repeatedly related their ability to deal with individual problems of childrens' behavior. However, similar conflicts continued throughout the program. Many of these conflicts could not be resolved in these therapeutic sessions. However, these conflicts point out the need for further involvement of significant others in therapeutic programs for weight reduction.

Problems of sexual conflict related to unmet personal needs were not always dissociated from overeating behavior. In many situations, clients were able to relate how they not only talked with their spouses about their own personal and sexual needs in a manner that initiated interpersonal relations but also dealt with the conflicts encountered.

Clients were able to dissociate the

loss of loved ones or friends from the response of overeating. However, they continued to verbalize this loss throughout the clinical encounters and made efforts to substitute other activities and persons for the losses they experienced.

## **PROGRAM RESULTS**

Of 16 patients referred to the nurse practitioner as possible candidates for the health outcome study in self-concept and weight reduction, 10 met the stated qualifications for inclusion in the study, and all of these began the weight reduction program. However, of these 10 subjects, one discontinued the program because of family concerns, but the other 9 completed the program.

All participants in the program lost weight at the end of the program, but according to the follow-up data collected 1 year later some clients gained some weight after the intervention ceased. The data for the initial, attained, and follow-up levels of weight and Tennessee Self-Concept Scale (TSCS) scores for the study group, along with TSCS norm values and changes over time were evaluated. Each of the variables are now examined in turn.

### **Weight Changes**

The mean weight loss of 15.6 pounds during the intervention was statistically significant as shown by the results of the *t* test for correlated data. The mean gain of 8.4 pounds from the end of the program

to the follow-up time was not statistically significant. The strong positional stability of the weight data over time, as indicated by the positive Pearson product-moment correlation coefficients, shows that each individual participant's weight level tended to maintain the same relative position in the group over the period of the intervention and through the follow-up period. The first regression equation showed that over the program the subjects as a group tended to lose 5 percent of their initial weight along with another 5 pounds.

The second regression equation showed that the follow-up weight can be predicted by adding about 64 pounds to 72 percent of the subject's weight at the end of the program.

### **Total Positive Self-Concept Score**

The participants, as a group, showed a gain in total positive self-concept score over the length of the program, but this gain was not statistically significant.

Even at the end of the program the mean level was substantially below that of the norm group. The positional stability of this score was only moderate. However, the mean level at the follow-up testing had risen to be practically the same as the norm group.

### **Identity, Self-Satisfaction, and Behavior Scores**

These self-concept component scores all exhibited mean levels and changes in the same general pattern as the Total Positive score, with the

mean self-satisfaction score showing the greatest increase over time. The positional stability of these component scores ranged from low for the identity score to moderate for the self-satisfaction and behavior scores.

### **Physical Self Scores**

As expected, the group mean physical self score was initially very much below the norm and showed a gain through the length of the program. However, the increase was too small to be statistically significant, and the positional stability was only moderate.

When the components of the physical self are analyzed separately, the identity and self-satisfaction sub-score means show no significant changes over time; but the behavior sub-score mean is significantly increased over the intervention period and is substantially decreased over the follow-up interval.

### **Moral-Ethical Self Score**

Interestingly, the group mean moral-ethical self score was initially very slightly above the norm and increased slightly during the program. However, it increased significantly during the follow-up period.

The relative position of each individual's score was fairly stable over time.

### **Personal Self Score**

The group mean of the personal self scores showed a slight increase over the program period, but still stayed below the norm.

This score showed moderately high positional stability.

### **Family Self Score**

The family self score group mean showed a significant increase over the duration of the program, the attained level being slightly below the norm group mean. The relative position of each person's score was very stable over time, yielding the fairly straightforward interpretation that this aspect of self-concept was substantially increased for almost all subjects.

### **Social Self Score**

The group mean of the social self scores showed a moderate gain over the program period, where its level was slightly above the norm. The positional stability of this score was moderate. Another moderate gain was made during the follow-up period.

### **Self-Criticism Score**

The self-criticism score group mean was initially somewhat higher than the norm and decreased very slightly over the program period. The positional stability of this score was very high, indicating that this small decrease in self-criticism was probably true for almost all subjects. No substantial change in self-criticism was shown through the follow-up period.

### **Total Conflict Score**

The group mean of the total conflict score was initially well above the norm group mean and showed a significant decrease during the program period. However, because the positional stability of this score is only



moderate, general statements about individual changes would be tenuous.

During the follow-up period, the total conflict scores increased—but not significantly—while the positional stability was virtually absent.

The relationships between weight change and self concept were also analyzed. The change in weight over the program was operationally represented by the percent of excess weight lost, where excess weight was calculated by subtracting the subject's ideal weight (based on height and body build) from the actual initial weight. This indicator was subjected to a correlational analysis with the initial, attained, and changeover intervention (i.e., attained minus initial) values of each of the TSCS scores. It must be kept in mind that the weight loss indicator is a *positively-signed* weight change, thus making a straightforward relationship between weight loss and positive changes in the TSCS variables.

## SUMMARY

In general, weight loss was associated with increased, positive self-concept over the duration of the program, and those subjects who were relatively high in self-concept at the beginning of the program tended to lose a greater percentage of their excess weight. The TSCS sub-score (which stands out as a significant predictor of successful weight loss) is the behavior component of the

physical self score. Taken as a group, the subjects who were the more successful weight-losers tended to score significantly higher in total positive, physical self, personal self, and the self-satisfaction component of the physical self TSCS values. Not shown is the significant correlation between the weight loss indicator and the age of onset of obesity, with the late-onset subjects being more successful.

During the follow-up period, the successful weight-loss keepers tended to be those subjects who maintained a stable life-style and became involved in other weight reduction programs. There were smaller positive influences due to increased exercise, and the continuation of the behavior modification technique on their own.

Finally, the expected relationships between successful weight reduction and change in various aspects of self-concept were generally confirmed—some to a striking degree, considering the small sample size ( $n = 9$ ). The importance of the behavioral component of one's physical self-concept is seen to be of high importance in a program of this type. The role of the family support system is another aspect which has been affirmed by this study.

People do feel better about themselves when they lose excess weight in this type of program, probably because both weight loss and increased self-concept are results of a change in not only the way people relate to food but also in the way people relate to others in their lives

who are important in determining their self-esteem.

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