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IMPLICIT MODELS OF THE BIOLOGICAL BASES  
OF WEIGHT LOSS

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A Thesis  
Presented to the  
Faculty of  
California State University,  
San Bernardino

---

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts  
in  
Psychology

---

by  
Kalin A Anderson  
December 1988

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Approved:



Diane F. Halpern, Chair, Psychology

12/14/88  
Date



Diane Butterworth



Barbara Dickinson

## ABSTRACT

Beliefs about weight loss and weight gain, and methods of weight loss methods of both obese and nonobese subjects were examined. A questionnaire was used to determine and assess beliefs about weight loss, weight gain, obesity, exercise, and dieting, as well as perceived effectiveness of methods of weight loss and number of weight loss methods tried. Two qualitatively different scales were developed for beliefs about the biology of weight loss and weight gain, and beliefs about methods of weight loss. Reliability scores suggest that a person who endorsed a method of weight loss would also be likely to endorse other methods within that scale. Contrary to expectation, there were no gender differences. However, the variables, age and whether the individual felt overweight, were important components in the regression equations. It appears that a person's experience and understanding of weight loss and weight gain influence the method chosen to achieve weight loss. Further, the importance of understanding a person's beliefs may be crucial to predicting adherence to and selection of weight loss methods.

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IMPLICIT MODELS OF THE BIOLOGICAL BASES  
OF WEIGHT LOSS

Pervasiveness of obesity

Obesity is one of the most prevalent health problems in contemporary western society. Most recent studies estimate that between 42% and 73% of American men and women suffer from being overweight or obesity (Louis Harris & Assoc., 1984). This problem is not limited to adults. One quarter of American youth are obese; 40% of fat children and 80% of fat teen-agers will become fat adults. Equally disturbing is the fact that 80% of all fourth graders are on diets. Among the elderly, weight gain is second only to memory loss as the greatest fear in growing old (Life in the Fat Lane, 1987). Fighting obesity has become a way of life for much of the population.

The percentage of persons who are obese generally rises with age from early childhood until late in life, so that far more adults than children or adolescents are obese. Sex differences in the prevalence of obesity do not appear until adulthood. Men gain more weight with age during their early 20's than women do, and by the end of the third decade of life, more men are obese or overweight than women. However, women achieve their maximum weights about two decades later than men and have a greater relative gain with age so that

by early middle age many more women are obese than men (Dwyer, Feldman & Mayer, 1983).

Today, in the United States, the incidence of obesity is higher than it was in the early part of the 20th century. Yet, according to figures published by the U.S. Department of Agriculture, the U.S. per capita caloric intake is approximately 5% less now than in 1910 (Stern, 1984). This difference is a result of living in a more automated world and as a consequence of this, requires fewer calories to maintain body weight. Not only are jobs more sedentary than they were 75 years ago, but people have not made up for this difference in calorie expenditure in their leisure activities. In addition, the aim of most modern conveniences is to remove the physical work from the task. The Bell Telephone Company has estimated that in the course of one year, an extension phone saves an individual approximately 70 miles of walking. This is the equivalent caloric expenditure of 7,000 to 10,500 kcal or 2 to 3 pounds of fat.

#### Psychosocial effects of obesity

Along with the increasing incidence of obesity come increasing social and psychological problems associated with obesity. In our culture, obese persons are particularly subject to a lifetime of intense prejudice and discrimination that begins as early as 6 years of age (Stunkard, Stinnett & Smoller, 1986). Overweight children

are particularly vulnerable to the stigma during the developmental years because of their relative inability to cope with discrimination.

There is concern that childhood onset obesity may exert a powerful effect on early socialization and the development of self-image (Weil, 1977). Stycznski and Langlois (1977) found that unacquainted children in their study expected attractive peers to behave more prosocially and unattractive children to exhibit negative social behavior. Relative to nonobese children, obese children are viewed as having more conduct problems, are nominated as least liked, and receive lower ratings by peers. Obese children often perceive themselves as being more depressed, having a lower overall self-concept, and having a lower self-concept concerning their physical appearance (Strauss, Smith, Frame & Forehand, 1985).

Regarding the psychological problems associated with obesity, the young may be particularly affected. Body image disturbances that persist throughout life occur almost exclusively among persons who become obese during childhood or adolescence (Stunkard & Mendelson, 1983). Research also indicates that puberty-onset obesity is negatively related to ego identity development (Shestowsky, 1983). Self-esteem, an individual's self evaluation, and body esteem, an individual's attitude, evaluation and feeling about one's body, are similarly lower in overweight youngsters.

Elkind (1967) has suggested that a form of egocentrism emerges during adolescence and is likely to lead the young person to become overly concerned with the viewpoints of others. Thus, this period marks the beginning of a self-appraisal process with one's physical appearance becoming a highly salient factor in self evaluation. Some have argued that during this period the consequences of obesity are particularly devastating (Allon, 1976; Jarvie, 1983). The main feature is a preoccupation with obesity, often to the exclusion of any other personal characteristic. It may make no difference whether the person is talented or intelligent; one's weight is an overriding concern. Obese children and adolescents are forced to deal not only with overt discrimination, but are forced by society to see their bodies as misshapen. Furthermore, they are unable to dress fashionably and dating opportunities, as well as other social activities, are severely limited. The result of all this is that obese children and adolescents may grow up holding miserable opinions of themselves as well as of their looks (Allon, 1976).

As in adolescence, obesity can have dramatic effects on body image in adulthood. Body image is the mental picture of one's body. This mental representation gradually changes throughout the lifespan as the body develops and changes. A greater level of unconscious body concern has been found within the obese population (Jupp, Collins, McCabe, Walker &

Diment, 1983). They have negative attitudes toward their bodies, viewing them with hostility and contempt. This lowered physical self-concept reflects their opinion not only of body image, but also of their state of health, physical appearance and sexual functioning. Researchers have found a relation between feelings about the body and feelings about the self (Mendelson & White, 1985).

It is apparent that contemporary society has become intolerant of appearances which deviate from cultural norms, subsequently the obese are stereotyped as being lazy, lacking in self-discipline, and personally responsible for their unesthetic appearance. The result is a stigma which may later limit occupational and educational advancement as well as disrupt heterosocial and heterosexual development (Jarvie et al., 1983). Forced to deal with such external pressures and faced with the almost impossible task of changing their appearance via weight loss, it is no wonder that a poor self-image and negative self-esteem is likely to develop.

#### Health risks

Aside from the social and psychological problems, even more devastating effects can accompany obesity; these effects are evident in the health risks associated with being overweight. Obesity has been associated with several major risk factors. These include an increased risk of cardiovascular disease, a relationship to the early onset of

hypertension, an increase in the risk of developing gallbladder disease, an increase in the risk of developing non-insulin-dependent diabetes mellitus, an aggravation of degenerative joint diseases, and an impairment of physical working capacity (Bray, 1980; Position statement on proper and improper weight loss programs, 1983).

Mortality also increases dramatically as percentage of body fat increases. Data suggest that an individual 30% or more above weight standards for height risks early death from diabetes, digestive diseases and cerebrovascular disease (Stunkard, Stinnett & Smoller, 1986). Risk of early death is 45% higher for those individuals 30% or more overweight and 88% higher for those 40% or more overweight compared to normal weight individuals (Straw & Rogers, 1985).

Cardiovascular disease, including coronary heart disease and stroke, is the number one cause of death among American adults. Obesity has been directly associated with atherogenic factors such as blood pressure, plasma lipids and lipoproteins (Kannel, Gordon, & Castelli, 1979). Obesity's relationship to coronary heart disease is mediated through these factors. There is even some evidence that obesity in children is an independent risk factor for later coronary heart disease.

Diabetes is another risk factor associated with an increase in body fat. Directly, obesity is linked to an

increase in blood glucose levels and glucose intolerance.

Along with the more severe health risks associated with being overweight, the composition of the body is clearly related to general health and the ability to work. Fortunately, successfully reducing body fat can allay the mortality and morbidity of these diseases that are associated with being overweight.

### Obesity assessment

An inherent problem in obesity research is the difficulty in accurately assessing it. What appeared initially to be a relatively simple problem is in fact a complex set of problems with many theories of weight gain, loss and maintenance. There are many measures of "overfatness" ranging in complexity and accuracy. Methods include the use of height-weight tables, body density measures, skin-fold measures, total body water measures, and a measure of fat soluble gases and solids (Ward, Johnson & Stager, 1984). The body density, total body water, and the fat soluble gases and solids methods measure the true components of a body's composition directly, but are by their very nature generally more complicated and expensive than the other measures. More indirect methods such as the height-weight tables and skin-fold measures may be less accurate, but other considerations such as ease of administration, time requirements, subject trauma and reliability of operation by staff need to be considered when



selecting a method.

Height-weight tables are the simplest and probably the most widely used method of assessing overweight. The Metropolitan Life Insurance tables are the standard. Degree of overweight can be determined in many ways and several formulas have been developed to improve the estimation of fatness. Relative weight is calculated simply as the ratio of percentage of actual weight to desirable weight. For this measure, overweight is defined by being above some upper value for each height and obesity as some percentage above the desirable weight. Calculating a body mass index is another method which uses various ratios of height and weight. This index uses the weight (in kilograms) divided by the height (in meters) squared. Overweight is defined as a body mass index between 24 and 30 and obesity as a body mass index above 30.

The use of skin-folds to measure body composition has been widely used and correlates well with other more sophisticated measures, specifically body density (Bray, 1980). Moreover, it appears to be a better indicator of being overfat as opposed to being overweight, and it is overfatness that tends to have a greater link to heart disease. Regardless of the method used to assess obesity, determining and achieving one's ideal weight remains a major problem for a large portion of the population.

## Weight loss methods

Millions of people are involved in weight reduction programs. There are approximately 400 diets in print and on videocassette available with another 37 diets due out by the end of summer 1987 (Life in the Fat Lane, 1987). Most monthly women's magazines tout at least one diet per issue. The "Drinking Girl's Diet," "The Anti-Cellulite Diet," "The Flabaway Youth Diet," and "The 14 Days to Thinness Diet" were weight loss methods published in a recent issue of Cosmopolitan, Mademoiselle, Harper's Bazaar, and New Body respectively. Claims made by these diets vary from the realistic to the absurd. Advertisement claims such as "Lose up to 50 pounds without dieting," "Millions of fat cells will begin to shrink within 24 hours as your body goes on a fat burning spree" (New Body, 1987, p.21), "This clinically proven formula in the Grapefruit Herbal Diet is the ultimate fat destroyer. It actually pulls excess fat from hard to reach areas such as waist, hips, thighs, and buttocks," "a fat attacker so powerful that you will see visible results the very first day" (Cosmopolitan, 1987, p. 299) were found in all magazines sampled. (See Appendix A for sample ads.)

The average overweight person goes on 1.5 diets per year and most of these attempts end in failure (Redd & Sleator, 1976). The recidivism rate in obesity treatments is estimated at more than 95% for the morbidly obese and 66% overall (Stunkard, Stinnett & Smoller, 1986). It may be

this failure to lose weight and maintain weight loss that fuels the public's desires and wishes to believe that the newest popular diet will be "it", the long awaited answer to the problem.

Literally billions are spent trying to achieve weight loss and maintenance. In 1981, an estimated \$50 million was spent on diet and exercise books, \$200 million on diet pills, \$6 billion on diet drinks, \$5 billion on health clubs and company fitness programs, and \$1 billion on cosmetic surgery (Toufexis, 1981). These figures continue to skyrocket yearly as we search for painless weight control methods to stay thin forever.

Diets and other weight loss methods can be grouped into categories according to purported mechanisms of action. However, weight loss is the result claimed in all cases regardless of the action.

Altered proportion diets. Altered proportion diets are based primarily on alterations in the proportion of protein, carbohydrates and fat typically recommended for sound nutrition. These may include diets that are high in protein and fat and low in carbohydrate such as the "Dr. Atkins' Revolutionary Diet" or "Drinking Man's Diet"; or high in protein and low in fat and carbohydrates such as "Calories Don't Count," "The Cambridge Diet," and "The Complete Scarsdale Medical Diet"; or high in carbohydrate and low in protein and fat as in the "Macrobiotic Diet," or

"Dr. Stillman's Quick Inches-Off Diet," or "Pritikin Diet" (Porcello, 1984).

Thermic action diets. Other diets exist which claim that specific substances enhance fat catabolism. Examples of this kind of diet programs are "The Grapefruit Diet" which relies on grapefruit consumption with each meal to purportedly stimulate the breakdown of fat and the "Human Chorionic Gonadotropin (HCG) Diet" requiring daily injections which claim to stimulate rapid weight loss.

Food combination diets. Specific food combination diets are based on different combinations of food being able to enhance weight loss. Examples among these diets are the "Beverly Hills Diet" which relies on fruit as the staple food to be eaten in combination with other foods or the "Fit for Life Diet" which allows food only to be eaten in specific combinations.

Fasting diets. Starvation diets are another popular weight reduction method and have a long history of usage. Fasting diets may consist of water only or may permit small amounts of fruit juices. Other fasting diets consist of a liquid protein drink such as "The Last Chance Refeeding Diet" or the "Fasting is a Way of Life Diet" or a protein sparing modified fast available only with medical supervision.

Drugs. Drugs have been and are widely used in the treatment of obesity. There are many anorectic drugs, or

diet pills, commonly prescribed to inhibit appetite. There are also several over-the-counter drugs available that claim to suppress appetite. Thyroid preparations have been used in some cases for the treatment of obesity. Generally, this method is associated with a decreased metabolic rate which was once thought to be a major cause of obesity (Lasagna, 1980). It is now known, however, that few obese persons have low metabolic rates, and it is no longer popular in the medical community to ascribe obesity to glandular disorders. Growth hormone releasers claim to increase release of growth hormone to stimulate weight loss while asleep. Diuretics have also been used by some to produce an initial, short term weight loss consisting entirely of water loss which can only be maintained with the continued use of the drug. Bulking agents, such as fiber pills or other calorically inert bulk materials have also been used to inhibit food intake and reduce the feelings of hunger.

Exercise. Physical activity is another method used by some to achieve weight loss. The role of exercise in weight loss is one of energy expenditure. The total number of calories expended during exercise is the primary concern. Some specific exercises are touted to be effective in spot reducing, for example, the belief that sit-ups can reduce the amount of fat in the stomach area. Currently, there are many video cassettes marketing these ideas to the public from Jane Fonda's Workout to Raquel Welch's exercise video.

Passive methods. Other methods that tout a more passive approach to weight loss are mechanical vibration of fat, weight reducing clothing, saunas, skin creams, and body wraps. These modes of weight reduction usually claim to be an effortless way to take-off or redistribute fat (Neiman, 1987). Examples of some of these items are roller machines, massagers, heated belts, rubberized suits, and electrical muscle stimulators.

Behavior Modification. Behavior Modification has been used in the treatment of obesity. Major behavioral treatment centers, as well as audio cassettes, books and other weight control programs such as Weight Watchers all employ the basic self-control procedures to alter the obese person's eating and activity habits (Wilson, 1980). The emphasis of behavioral treatment is to make weight loss rewarding or reinforcing and to educate the obese person with facts about obesity, metabolism, treatment and goal-setting.

Group support. Self-help or weight reduction groups play a role for some people in achieving weight loss and maintenance. These groups, such as Take Off Pounds Sensibly (TOPS) and Weight Watchers, offer packaged behavioral self-management programs to individuals that attempt to change attitudes and beliefs about weight loss as well as offering group support.

Psychotherapy. For many years, psychoanalysis and

other forms of psychotherapy have been used in the treatment of obesity. Treatment may consist of searching for unconscious causes of overeating or developing strategies for coping with stress. It is based on the belief that perhaps by helping people to lead more gratifying, less stressful lives, they may be less apt to overeat.

Surgical methods. More drastic methods of weight loss exist in gastric bypass, gastric bubbles, jaw wiring, vagotomy and liposuction. The use of surgery as a mode of treatment has increased rapidly over the last ten years (Bray, 1980). In fact, liposuction has become the most popular plastic surgery, even surpassing rhinoplasty. It has become a booming business costing from three to seven thousand dollars per surgery.

### Health beliefs

Health behavior includes any behavior a person engages in that may have a significant impact on his/her health. These behaviors can have either a positive or negative impact. The basic question that continues to be examined in psychology is why people behave the way they do, and what influences them to behave differently. Some researchers have examined the influences of health beliefs on health behavior. Formal models of the relationship between health behavior and actions are generically referred to as the Health Belief Model.

The Health Belief Model suggests that specific

conditions must be met before people will seek medical care or comply with a medical regimen. This model considers a network of beliefs in predicting people's behavior. First, a person's perceived necessity of action must be considered. This is determined by how severe the person believes the problem to be (Mazur, 1981).

A second factor contributing to compliance or non-compliance is the person's perceived benefit or subjective appraisal of the health behavior. This is taken into account in terms of its feasibility, availability and efficacy. Both internal (bodily states) and external (media campaigns) cues to action also trigger and influence a person's behavior (Stunkard, 1981).

In a study by O'Connell, Price, Roberts, Jurs & McKinley (1985), the Health Belief Model was used to explain differences in dieting and exercise behavior in obese and nonobese adolescents. They found that dieting behavior could be predicted by beliefs about benefit of dieting, susceptibility to the causes of obesity, and social approval. Another study looked at dietary compliance and the Health Belief Model in terms of how a mother's attitudes affect her child's compliance (Becker, Maiman, Kirscht, Haefner & Drachman, 1977). Results of this study suggest that indeed a mother's perceptions of susceptibility and severity of obesity as well as benefits and barriers of a dietary regimen can predict and explain dietary adherence of



her child.

Research in other areas suggests that, indeed, attitudes and beliefs do affect the actions a person will take in a situation. Meyer, Leventhal & Gutmann (1985) looked at the actions taken to reduce the health risk of hypertension based on the subjects subjective or common-sense constructions of the health threat. They found that, as predicted, patients develop implicit models or beliefs about disease threats which guide their treatment behavior.

Another study looked at the complexity of the attitude-behavior relationship of addictive behaviors, specifically the effects of attitudes about marijuana (Schlegel & Norris, 1980). This research found that not only do attitudes and beliefs affect behaviors but they prove to be highly resistant to change, and simple lessons and/or presentations may not be capable of altering them.

Given the strong support for the effect of beliefs on other health related behaviors, it seemed likely that the popularity of fad diets and other weight loss methods could be explained by an examination of people's implicit beliefs about weight gain, weight loss and body fat. Accordingly, the present research examines the implicit beliefs that underlie people's endorsement of weight loss programs. Do people's beliefs about their bodies and the process of weight loss lead them to choose diets that are congruent with these beliefs? How do common-sense representations of

weight loss and weight gain, that is "lay cognitive models" of obesity, affect the action or lack of action chosen? It is hypothesized that a person's experience and understanding of weight loss and weight gain will determine the type of methods endorsed to achieve weight loss. Specifically, that weight loss/weight gain beliefs will serve as a guide to the person's behavior.

The problem with most methods of weight loss is not that they won't result in an initial loss of weight but that most fail at being effective for the long term. The fact that recidivism rate in obesity treatments is estimated at between 66 percent and 95 percent (Kolata, 1985) suggests that most weight loss methods' lack of success may be due to the tendency to ignore fundamental attitudes and subjective perceptions about weight loss and weight gain. Perhaps, initially, these beliefs need to be changed in order to obtain any long term lifestyle changes. However, as Schlegel & Norris (1980) found in their study, beliefs are highly resistant to change, and simple lessons or presentations may not be capable of altering people's attitudes. In order to achieve successful weight loss, intensive education may be needed to alter inaccurate beliefs about how the body works and why some diets are more effective than others.

Surprisingly, few studies have investigated the possibility that health beliefs, and in particular beliefs about weight loss, could predict endorsement of weight loss methods.

## METHOD

### Subjects

Subjects were recruited from introductory health science classes at the university and an out-patient weight reduction program at a local hospital. University students ranging in age from 18 to 60 with a mean age of 26.9 were recruited from a health sciences' lab that incorporated skinfold measurements in the requirements for that class (N=119, males=41, females=78). The hospital sample (N=21, males=2, females=19) were recruited from an orientation for a medically supervised fasting diet. Subjects' weights ranged from underweight, according to height-weight tables and caliper measurements, to obese, based on the same measurements.

### Instruments

A questionnaire was developed to assess the respondents' beliefs and attitudes about weight loss, weight gain, and weight loss methods. Items were reviewed for appropriateness, relevance, and clarity. Demographic information, such as gender, age, self-reported weight, and weight history, was collected. Two different sets of beliefs were assessed -- beliefs about the biological basis of weight loss and weight gain, and beliefs about the effectiveness of weight loss methods. Beliefs about weight

loss and weight gain were measured by having subjects rate some commonly held beliefs on a 7-point scale with 1 = strongly disagree and 7 = strongly agree. A list of beliefs (35 items) about weight loss, weight gain, and body fat were generated from claims in popular women's magazines such as Cosmopolitan, Mademoiselle, New Body, Harper's Bazaar and Shape. All items were generated in an attempt to thoroughly sample the domain of each weight loss method. Beliefs about the effectiveness of weight loss programs and methods were assessed by listing several diets, exercise programs, drugs treatments, psychosocial programs, surgical methods, and passive approaches (33 items) and requesting a rating on an 7-point scale in which 1 = not effective and 7 = extremely effective. Diet history was assessed by asking whether the subject had tried each method of weight loss. (See Appendix B for questionnaire.)

#### Procedure

The questionnaire was administered in small groups of no more than 20. After the questionnaire was completed, each subject was weighed and caliper measurements were taken at three sites. Females were measured at the triceps, supralium, and the thigh. Males were measured at the chest, abdomen, and thigh (Horne, 1986).

Each subject's degree of overfatness was determined by both skinfold measurements and scale measurements. Weight was taken on a standard balance scale measured to the

quarter pound. Skinfold measurements were made using TEC calipers. Measurements were made at each site by pinching a fold of skin and subcutaneous tissue with the thumb and forefinger of the left hand and pulling away from the underlying muscle approximately 1 cm from where the calipers were placed. The dial was read to the nearest 1mm. Two measurements were made at each site with the stipulation that they must agree within 5 per cent. Measurements were made at each site and then repeated to allow the adipose tissue compressed out of that region to return. The average of the two values at each site was then calculated and recorded as the final value. Each reading was made after the spring pressure of the caliper had taken effect and before the fat began to be squeezed out of the skinfold. The reading was taken approximately 5 seconds after the release of the caliper.

Skinfold measurements were always taken on the right side. A tape measure was used to find and mark each site to assure accuracy between measures.

## RESULTS

Out of a total of 140 subjects there were 100 subjects who reported feeling overweight, of these, 18 were males (18%) and 82 (82%) were females. These subjects had an average age of 28.8 ranging from 18 to 60. The average age these subjects first felt overweight was 18 years, with a range between 5 years and 45 years. These subjects also reported that they were an average of 13 pounds overweight, with ranges between 0 pounds and 68 pounds overweight.

### Zero order correlations

An exploratory analysis of the data began with computing selected correlations between variables. The relationships among gender, the number of diets tried, whether the subjects felt overweight, the number of pounds overweight the subjects felt they were, and the subjects' reported weight and actual weight were investigated.

Significant correlations were found between gender and several of the other variables such as whether the subject felt overweight ( $r = -.43$ ,  $p < .001$ ) with more females reporting feeling overweight than males; the number of diets tried ( $r = -.35$ ,  $p < .001$ ) again with females trying more diets than males; the number of pounds overweight they believed they were ( $r = -.27$ ,  $p < .01$ ) with females believing they were more pounds overweight than males; their

reported weight ( $\bar{r} = .29, p < .001$ ); and their actual weight ( $\bar{r} = .44, p < .001$ ) with males weighing more as would be expected.

Significant correlations were also found between whether they felt overweight and the number of diets they had tried ( $\bar{r} = .41, p < .001$ ); whether they felt overweight and the number of pounds they believed they were overweight ( $\bar{r} = .44, p < .001$ ); and whether they felt overweight and their reported weight ( $\bar{r} = .25, p < .01$ ). The number of diets tried was found to correlate with the number of pounds overweight the subject believed he/she was ( $\bar{r} = .43, p < .001$ ). The number of pounds the subjects believed they were overweight correlated highly with both their reported weight ( $\bar{r} = .73, p < .001$ ) and their actual weight ( $\bar{r} = .63, p < .001$ ). Interestingly, subjects appeared to know how much they actually weighed as their reported weight and their actual weight had a high correlation ( $\bar{r} = .98, p < .001$ ). (These data are summarized in Table 1.)

In order to explore the relationship between gender, number of diets tried, and feeling overweight, an analysis of variance was performed. Results revealed a main effect for gender and whether the subject felt overweight. Females tried significantly more diets than males ( $F[1,134]=6.36, p < .01, MSe=99.24$ ). Subjects who felt overweight tried more diets ( $F[1,134]=14.61, p < .01, MSe=227.92$ ). An interaction was also found between gender and feeling overweight.

TABLE 1

## Correlations Between Gender and Weight-Related Variables

	Gender	Feel over- weight	Number tried	Number lbs.	Reported weight	Weight
Gender	--					
Feel overweight	-.4269**	--				
Number tried	-.3515**	.4146**	--			
Number of pounds	-.2657*	.4420**	.4349**	--		
Reported weight	.2912**	.2458*	--	.7291**	--	
Weight	.4398**	--	--	.6331**	.9826**	--

N = 140

\* = .01

\*\* = .001

Note: Gender was coded as females = 1 and males = 0



Results showed that females were more likely to feel overweight than males ( $F[1,134]=4.04$ ,  $p<.05$ ,  $MSe=62.94$ ).

### Frequencies

Further exploratory examination of the data shows the frequency with which people are likely to endorse certain methods of weight loss paired with the percentage of people who have tried that method. (See Table 2 for summary.) Of the thirty-three diets listed on the questionnaire, 15 of the diets were endorsed as being at least somewhat effective by anywhere from 53.6% to 97.1% of the people. Some of these methods include jaw wiring, exercise videos, liposuction and fasting. Even the two least endorsed methods, massage and cellulite creams, were endorsed as being at least somewhat effective by 14.2% of the people and were tried by 7.9% and 1.4% of the people respectively. The most endorsed and most tried method of weight loss was exercise with 97.1% of the people believing it to be at least somewhat effective and 61.4% of the people having tried this method to lose weight. This support of exercise as a good method to lose weight is not unexpected considering the enormous exercise craze over the last ten years which has included running and aerobics. More interesting, however, are the number of methods that are endorsed by a larger number of people as being at least somewhat effective but are tried by an extremely small number of people. These are methods such as group support (TOPS or Overeaters Anonymous) which are

TABLE 2

Percent of Diets Tried  
and Believed to be at Least Somewhat Effective

METHOD	% TRIED	% BELIEVED EFFECTIVE
Exercise	61.4	97.1
Group support	6.4	91.4
Diet groups	19.3	89.3
Behavior modification	14.3	85.0
Limited portion diets	32.9	82.9
Exercise videos	22.1	70.0
Liposuction	0	69.9
Fasting	27.1	67.2
Psychotherapy	5.0	65.6
Altered portion diets	18.6	62.9
Reduced calorie drinks	24.3	62.8
Combination food diets	12.9	60.8
Gastric bypass	.7	56.4
Stomach stapling	0	55.0
Jaw wiring	2.1	53.6
Spot reducing exercises	20.7	49.3
Hypnosis	5.7	49.2
Diet pills	20.0	47.1
HCG shots	7.1	45.0
Gastric bubble	.7	42.8
Thyroid pills	5.7	41.4
Diuretics	7.1	34.9
Vitamins	12.1	31.4
Muscle stimulators	3.6	31.4
Laxatives	4.3	30.0
Sauna suits	4.3	29.3
Saunas	9.3	29.2
Grapefruit pills	1.4	25.0
Vomiting	3.6	24.2
Body wraps	3.6	23.5
Enemas	.7	22.1
Massage	7.9	14.2
Cellulite creams	1.4	14.2

endorsed by 91.4% of the people but only tried by 6.4%; liposuction which is endorsed by 69.9% but not tried by any; psychotherapy which is endorsed by 65.6% but only tried by 5%; and behavior modification which is endorsed by 85% but only tried by 14.3%. What this data confirms is that people are making subjective opinions about the perceived effectiveness of a diet while having little if any experience with that method.

#### Development of scales

Two qualitatively different types of scales were developed: beliefs about the biology of weight loss, and beliefs about the effectiveness of various methods of weight loss. Initial item loadings onto the scales were determined by exploratory factor analysis.

Beliefs about the biology of weight loss were explored and five scales were distinguished: 1) the Health Club/Spa Scale, 2) the Intake Scale, 3) the Thermic Scale, 4) the Helpless Scale, and 5) the Fat Cell Scale. (See Table 3.)

The belief scale designated Health Club/Spa included beliefs about weight loss and weight gain that one would expect to correspond to beliefs commonly held by people who frequent health clubs and spas, and are in fact used in advertisements for health clubs and spas. The ideas that loaded into this scale follow: you can sweat it off, exercise and turn fat to muscle, tighten it up, take vitamins to help burn it off, compress it, or eat the right

TABLE 3

Reliability of Beliefs about the Biological Basis  
of Weight Loss and Gain Scales

Health Club/spa

1. sweat off fat	Cronbach's alpha = .74
2. exercise and turn fat to muscle	X = 3.69
3. tighten fat up	range = 2.50
4. use vitamins for energy to burn fat off	
5. compress fat	
6. use combinations of food to lose weight	

Intake

1. fatty foods turn to fat	Cronbach's alpha = .52
2. starchy foods turn to fat	X = 4.17
3. "blow it" and you'll gain weight	range = 2.30
4. eat too much and you'll gain weight	
5. eat the wrong food and you'll gain weight	
6. combinations of food can make you gain weight	

Thermic

1. fat evaporates	Cronbach's alpha = .64
2. fat melts	X = 3.53
3. fat dissolves	range = 2.80
4. you can burn off fat	
5. you can lose it through bowel movements and urination	
6. fat has a low melting point	

Fat Cell

1. fat cells get bigger	Cronbach's alpha = .56
2. you can tighten up fat	X = 3.85
3. fat shrinks	range = 1.80
4. fat can be compressed	

Helpless

1. some people have no willpower	Cronbach's alpha = .51
2. some people have a slow metabolism	X = 4.00
3. you inherit the tendency to be fat	range = 3.30
4. some people gain weight without even trying	
5. God made some people fat	
6. there is no successful method of weight loss	
7. societal pressures make some people gain weight	
8. some people have setpoint that are difficult to change	
9. no matter how hard some people try, they can't lose weight	

combination of foods to lose fat.

The Intake Scale addresses the notion that fat is gained simply by means of what you consume. That fatty, greasy or starchy food; eating too much, or eating the wrong food; "blowing it" once, as well as certain combinations of food, will cause weight gain were some of the beliefs included in this scale.

The Thermic Scale included those beliefs that support the concept that heat and/or excretion is needed in the loss of fat. Among the ideas in this concept were that fat melts, dissolves, evaporates, is burned off, and has a low melting point, and can be lost through urination and bowel movements.

The Fat Cell Scale expresses the idea that weight loss and weight gain occur at the level of the cell either by increasing or decreasing cell size. The fat cell is believed to get bigger or shrink; it can also be tightened up or compressed.

The last scale, the Helpless Scale, reflects the idea that there is really nothing one can do about being overweight. In fact, obesity is seen as being caused by forces beyond one's control. It can be attributed to genetics, a slow metabolism, lack of willpower, society or God; setpoints or plateaus are seen to effect one's ability to lose weight; and some believe that even though weight can be gained without even trying, losing weight is impossible

and there is no truly successful method of weight loss.

Beliefs about the effectiveness of various methods of weight loss and gain were also assessed and six scales were established using exploratory analysis in a similar fashion to that used for the beliefs about the biology of weight loss. The six method scales that were distinguished were: 1) the Calorie Scale, 2) the Social Scale, 3) the Drug Scale, 4) the Surgical Scale, 5) the Passive Scale, and 6) the Emetic Scale. (See Table 4.)

The Calorie Scale included methods of weight loss that would produce a modification in the amount of calories consumed or burned off. These methods included reduced calorie drinks, fasting, exercise and exercise videos, limited portion diets, diets that were unbalanced with regard to the amount of carbohydrates, fats and proteins they contained, weight reduction diet groups and behavior modification.

More socially oriented methods such as weight reduction diet groups, group support, psychotherapy, hypnosis and behavior modification were grouped into the Social Scale.

The Drug Scale is comprised of those methods that presumably have a drug-like action such as vitamins, thyroid pills, grapefruit pills, diet pills, HCG shots and diets that suggest certain combinations of food to lose weight.

Methods that adopt a surgical or invasive approach;

TABLE 4

Reliability of Beliefs about the Methods  
of Weight Loss Scales

## Calorie

1. reduced calorie drinks	Cronbach's alpha = .66
2. exercise	X = 4.64
3. unbalanced diets	range = 2.60
4. fasting	
5. exercise videos	
6. limited portion diets	
7. weight reduction diet groups	
8. behavior modification	

## Social

1. psychotherapy	Cronbach's alpha = .71
2. hypnosis	X = 4.41
3. weight reduction diet groups	range = 1.80
4. group support	
5. behavior modification	

## Drugs

1. vitamins	Cronbach's alpha = .72
2. thyroid pills	X = 3.06
3. combination food diets	range = 1.50
4. grapefruit pills	
5. HCG shots	
6. diet pills	

## Surgical

1. liposuction	Cronbach's alpha = .80
2. gastric bypass	X = 3.55
3. jaw wiring	range = 1.20
4. gastric bubble	
5. stomach staple	

## Passive

1. massage	Cronbach's alpha = .87
2. sauna suit	X = 2.54
3. cellulite cream	range = 1.40
4. saunas	
5. spot reducing exercise	
6. muscle stimulators	
7. grapefruit pills	
8. body wraps	

## Emetics

1. enemas	Cronbach's alpha = .74
2. vomiting	X = 2.43
3. laxatives	range = .40
4. diuretics	

for example, liposuction, gastric bypass, gastric bubble, jaw wiring or stomach stapling, were grouped into the Surgical Scale.

Another scale, called the Passive Scale, is comprised of those methods that are believed to work with little or no effort on the part of the user. These methods include massage, sauna suits, cellulite creams, saunas, spot reducing exercises, muscle stimulator, body wraps, and grapefruit pills.

Grouped into the last scale, called the Emetic Scale, were those methods commonly known as to produce expulsion of foods eaten. Methods clustered in this group were the use of laxatives, diuretics, enemas and vomiting.

Reliability for each scale was computed along with the mean and range. Overall, the beliefs about the method of weight loss scales had higher reliability scores, Cronbach's alpha ranged from .65 for the calorie scale to .87 for the passive scale. (A summary is provided in Table 4.) The beliefs about the biological basis of weight loss scales were slightly lower but still good ranging from .51 to .74. (A summary is provided in Table 3.)

#### Multiple regression

In an attempt to predict those factors that would influence a person's choice of diet program, a stepwise multiple regression was performed for each of the six method scales determined earlier as a function of: each of the



belief scales; age; gender; feeling overweight; reported weight; number of pounds overweight the subjects believed they were; and the number of diets tried. The criteria for including a predictor variable in the equation was that the partial F for the equation be significant at the .05 level. A summary of the variables loaded into the equations for each method is provided in Table 5.

Calorie. To predict a choice of the diet methods called Calorie (for example: fasting or reduced calorie drinks) as a function of the belief scales about the biology of weight loss, age, gender, feeling overweight, reported weight, number of pounds overweight the subjects believed they were, and the number of diets tried, a stepwise multiple regression was performed. The only variable to enter the regression equation was age:  $\text{Calorie} = .116(\text{age}) + 34.623$ ,  $R \text{ square} = .027$

Social. Looking at the results of the multiple regression on the method scale called Social, age was once again the only predictor variable found to be significant to predict a choice of a weight loss method such as psychotherapy, hypnosis or diet groups. The regression equation for this scale is:  $\text{Social} = .113(\text{age}) + 19.375$ ,  $R \text{ squared} = .053$ .

Drugs. A multiple regression was also performed to determine which factors might predict a person choosing the methods in the Drug scale to lose weight (for example: diet

pills, vitamins or grapefruit pills). The factors that loaded into this equation were the beliefs about the biology of weight loss called Health Club/Spa and whether the subject felt overweight. The regression equation for this scale is:  $\text{Drugs} = .369(\text{Health Club/Spa}) - 2.534(\text{feel overweight}) + 12.060$ ,  $R \text{ squared} = .197$ .

Surgical. Several variables were found to load into a multiple regression equation for the method scale called Surgical which includes liposuction, gastric bubble or stomach stapling. These variables were age, feeling overweight and the number of diets tried. The regression equation for this scale is:  $\text{Surgical} = .148(\text{age}) - 4.392(\text{feeling overweight}) + .385(\text{number of diets tried}) + 16.305$ ,  $R \text{ squared} = .123$ .

Passive. Examples of the methods that were included in the scale called Passive are massage, cellulite cream and body wraps. A multiple regression on this scale suggests that those variables which can predict a choice of these methods of weight loss are the belief scale called Health Club/Spa, the belief scale called Helpless, and feeling overweight. The regression equation for this scale is:  $\text{Passive} = .558(\text{Health Club/Spa}) - .320(\text{Helpless}) - 3.790(\text{feeling overweight}) + 21.874$ ,  $R \text{ squared} = .28$ .

Emetics. A stepwise multiple regression was used to predict a choice of weight loss method scale called emetics, which included those methods such as laxatives and

diuretics. The significant predictor variables that loaded into this equation were the age the subject first felt overweight and the belief scale called Thermic. The regression equation for this scale is: Emetics = .034(age first felt overweight) + .198(Thermic beliefs) + 4.518, R squared = .062.

Table 5

Summary of Predictor Variable for Weight Loss Methods

	Calorie	Social	Drugs	Surgical	Passive	Emetics
Health club	-	-	X	-	X	-
Thermic	-	-	-	-	-	X
Helpless	-	-	-	-	X	-
Age	X	X	-	X	-	-
Feel overweight	-	-	X	X	X	-
Number of diets tried	-	-	-	X	-	-
Age first overweight	-	-	-	-	-	X

Note: X indicates loading of variable into regression equations for belief scales about the effectiveness of weight loss methods

## DISCUSSION

This exploratory analysis was undertaken to see if there was any relationship between the commonly held beliefs about weight loss and the methods chosen to achieve weight loss. A unified theory linking beliefs about the biological mechanisms of weight loss and gain, and perceived effectiveness of various methods of weight loss was not achieved. However, the results of this study present meaningful information which could be the basis of further research in this area. First, it appears that the scales that were developed for beliefs about the biological basis of weight loss and weight gain, and the beliefs about weight loss methods are significant and interpretable. Second, there does not appear to be any gender differences in the derivations of the scales; and third, the variables age and feeling overweight appear to be important in predicting the method of weight loss.

It appears that theories about the effects of mental models as they relate to health behavior, such as compliance in health regimens and choices in therapy, may also extend to choices in and compliance with weight loss methods. In short, people may have mental models and/or rules that represent situations and predict either outcomes or subsequent situations. These models and rules are the

products of information and experience gathered from many sources, but can often be shown to be erroneous in many important respects.

Where, in particular, do we get the information about the weight loss and weight gain that influences our mental models of how one's body functions? Primarily, most information about the effectiveness of diets comes from experience. If a weight loss method is tried and weight loss is achieved and maintained, then one would have knowledge that this method was successful. Alternately, advertisements also provide enormous amounts of information about the success of diets as well as about the underlying mechanisms of the body that produces these results. However, the claims made in many advertisements are not only false, they are oftentimes outrageous. As we develop conceptual models about the outside world, we develop them about our bodies as well. Research in other domains supports this view. For example, research has found that conceptual models of heating systems can predict whether people will set their thermostats back (Kempton, 1986). Depending on whether someone views their thermostat as a valve or a feedback device will determine whether someone will actively regulate the temperature, setting it up and down or setting it to a constant temperature and letting the house regulate itself. This is a compelling example of the influence of mental models on behavior.

Scales were developed to explore what types of models might exist about weight loss. The beliefs about methods of weight loss scales that were developed showed good reliability within each scale, meaning that a person who endorsed a method of weight loss would also be likely to endorse another method within that scale. The common link among most methods within each scale appears to be in their mode of action. One can see, for instance, a similar mode of action in methods contained in the scale Emetics. The methods consist of enemas, vomiting, laxatives, and diuretics which all have to do with forcible expulsion from the body.

Each of the single beliefs contained in the belief scales about the biology of weight loss appears to be linked by being similar in the way weight loss or weight gain is suspected to occur or are beliefs that are all related to a specific context or setting. Although some reliability scores for the belief scales were less strong than scores for method scales, the belief scales that were found to load into the regression equations were comparable in strength to the method scales. For instance, the belief scale called Health Club/Spa contains such individual beliefs that one might encounter in a health club or spa setting. These beliefs include such ideas as: exercise can turn fat to muscle, one can sweat it off, tighten it up, use vitamins to increase energy to burn it off, compress it, or use

combinations of food to lose weight.

Therefore, the next question is: does endorsement of a set of beliefs about weight loss indicate future endorsement of certain types of weight loss methods? In general, these results suggest that for some methods of weight loss, beliefs can predict behavior. However, feeling overweight and age are as likely to be involved in the equations to predict endorsement of certain methods. Most likely, these variables influence endorsement of certain methods to the extent that they represent the influence of each person's life experiences. Contrary to what was expected, gender seems to play little or no role in the endorsement of these diets. The conceptual models of beliefs about both the biological basis of weight loss and gain, and the methods of weight loss do not differ by gender. Specifically, beliefs do not appear to be gender specific, and are equally likely to be endorsed by either gender.

It appears that the best predictor of endorsement of weight loss methods in either the Social or Calorie scales is age. These include methods such as reduced calorie drinks, fasting, and exercise, as well as behavior modification, psychotherapy and hypnosis.

Good predictors of endorsement of methods in the Drug scale such as vitamins, grapefruit pills or diet pills appear to include the beliefs about the biology of weight loss in the Health Club/Spa scale as well as not feeling



overweight. It is plausible that endorsement of beliefs that are often found in health clubs and spas about weight loss and gain such as vitamins, combinations of food, and even vitamin B shots and steroid use might also lead to endorsement of methods in the Drug scale. Further, perhaps those individuals who feel overweight have more experience with these methods, and finding that they failed to reduce with them, were less likely to rate them as effective.

The endorsement of methods in the Surgical scale, such as liposuction, jaw wiring or stomach stapling appeared to depend on age, feeling overweight, and the number of diets tried. These are drastic methods that have been tried by very few people. It does not seem unusual that individuals who continue to feel overweight would resort to these methods after having tried and failed at many others.

Endorsement of passive methods to lose weight depends on support of the beliefs in the Health Club/Spa scale, the Helpless scale, and feeling overweight. Many of these passive methods would indeed be methods that were endorsed by many health clubs and spas such as massage and saunas. At first glance, it may appear contradictory that there would be a negative relationship between passive weight loss methods and helpless beliefs regarding the biology of weight loss. However, a person believing that weight loss is helpless would not endorse any method of weight loss. For a person to try even a passive method of weight loss, they

would have to believe, even superficially, that it will work. The negative loading of feel overweight can again be speculated to be the result of overweight individuals having already tried them and found them to be unsuccessful.

Lastly, support of methods such as enemas, vomiting or laxatives to lose weight seems to depend upon the age one first felt overweight and belief in the ideas listed in the Thermic scale. The value for the variable 'age first felt overweight' is so small that any discussion would be speculative. However, it is not at all unusual that the Thermic scale belief that fat can be lost through bowel movement and urination would load into the equation for emetic methods.

These results suggest that people who are overweight might indeed think differently about the way weight is lost and gained than those who are not. The overweight person's reality is distinctively different than the normal weight person. They have a different relationship with the world based on their experience with it. This experience has consisted of more diets tried and failed, feelings of loss of control over one's body, and perhaps less willingness to believe in more traditional methods to lose weight.

The findings in this study were the result of an initial examination of the relationships among a network of explanatory variables including both demographic and belief models about the biology of weight loss and beliefs about

the effectiveness of methods of weight loss. Future research in this area, first and foremost, needs to confirm the results found in this exploratory research. Second, the belief statements, that were presented in the questionnaire regarding beliefs about the biology of weight loss and weight gain, should be refined and clarified.

### Implications

The importance of understanding beliefs about the biology of weight loss as well as beliefs about weight loss methods appears compelling as to the prediction of adherence to and selection of weight loss methods. The results suggest that the incorrect and misleading advertising is having significant impact on the dieting public. Literally millions of dollars are spent by people willing to endorse ridiculous methods to lose weight. For most people, the choice to try these absurd methods making outrageous claims does not appear to be one that is subjected to reason. It does, in fact, appear to be at least somewhat dependent on whether they feel overweight or not. Perhaps the first diet one chooses would fall into the more realistic Calorie or Social scales, but after a few or several failures with these methods, a person's reality or beliefs about the body might alter. With this in mind, it seems reasonable to suggest that both advertising and education should be adapted to the separate needs of the thin and the overweight.

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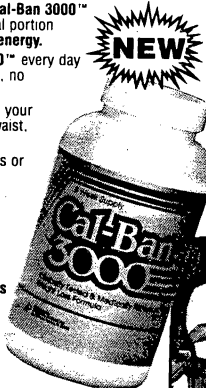
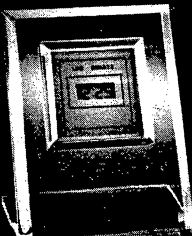
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THERE IS A PROVEN WAY TO LOSE WEIGHT EVEN IF YOU HAVE TRIED EVERY OTHER DIET ON THE MARKET. YOU MUST TRY THE GRAPEFRUIT-HERBAL DIET. Why? Because THE GRAPEFRUIT-HERBAL DIET is unlike any other weight loss system ever developed. Nothing works as Fast. Nothing is as Safe. Nothing can help you lose more weight . . . and best of all it is positively guaranteed to take off pounds and inches starting the very first day you use it or your money back. Break out of your rut. Now you can really do something about the way you look and feel. Your body can be "Born Again." You can be that slim, chic woman of your dreams and be admired by everyone. DON'T LET THIS GOLDEN OPPORTUNITY AND CHANCE OF A LIFETIME PASS YOU BY. The sooner we receive your order, the faster you can be on your way to a happier and more attractive you. Just fill out the coupon below and let it be the ticket to the new slimmer you waiting to come out and enjoy life to the fullest. So, what are you waiting for? Do it right now and let this be the first day of an exciting new life for you.

SATISFACTION GUARANTEED OR YOUR MONEY BACK

**DON'T DELAY - DO IT TODAY**

GRAPEFRUIT-HERBAL DIET - DEPT. C-87  
BOX 1347, HALLANDALE, FLORIDA 33009

Yes, I want to lose weight fast. Please send me the Grapefruit-Herbal Diet Plan. Order size checked below. If I am not completely satisfied, I may return it in 30 days for a full refund.

<input type="checkbox"/> Cash	60 Day Supply \$19.95	
<input type="checkbox"/> Check	120 Day Supply \$34.95	Save \$ 0.00
<input type="checkbox"/> Money Order	180 Day Supply \$49.95	Save 10 00
<input type="checkbox"/> Charge to Visa	Plus Postage and Handling	\$1.75
<input type="checkbox"/> Charge to MasterCard	USA Orders Add Appropriate Tax	
	TOTAL	

Exp. Date \_\_\_\_\_ Card # \_\_\_\_\_  
NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

1985 Outside U.S.A. add \$5.00 - Total Price \$28.20 per order.  
AMERICAN PHARMACEUTICALS - 1420 Diplomat Pk. Hollywood, FL 33018

**NEW! SUPER-FAST JAPANESE FAT-REDUCING PILL JUST RELEASED IN U.S.A.!**

**"I LOST 22 LBS.\*  
THE FIRST WEEK  
WITHOUT DIETING  
& LOOK & FEEL GREAT"**

**RESULTS  
100%  
GUARANTEED**



**INCREDIBLE TRUE FACTS**  
**NO Diet or Calorie Count**  
**NO Exercise. Automatic Weight Loss**  
**NO Side Effects. Natural, Gentle, Safe**

**NO Caffeine, Stimulants**  
**NO Nervousness or Irritability**  
**NO Starvation, Discipline, Strong Willpower or Plan to Follow**

**TRIMOLITE WORKS HARD WHILE YOU RELAX!  
TRIMOLITE REDUCES CALORIE ABSORPTION!**

**SCIENTIFIC PROOF — TRIMOLITE WORKS!**

Eat as much food of what you like as you want, even sinfully rich food, and still lose as many pounds, inches and sizes as you want. TRIMOLITE is fast, easy, safe, automatic, healthy and natural. Burn off all undesired stored fat for energy starting your first day using TRIMOLITE. Many medical journals worldwide are confirming in study after study of science's newest way to eliminate fat and cellulite off your waist, thighs, hips and rear with TRIMOLITE's formula. The British Journal of Nutrition stated TRIMOLITE's C.T. was 100% successful. Every overweight woman lost weight, even though they did not alter their dietary habits. The International Journal of Obesity reports that people given G.K., another TRIMOLITE ingredient, showed significant weight loss without changing their eating habits.

**FREE 30-DAY TRIAL OFFER!**

This product is so effective that we want to let you try it on what amounts to a 30-day free trial. If you postdate your check a full 30 days from today, we will hold it uncashed those 30 days to let you prove to yourself that you will lose the weight you wanted. If you are not 100% satisfied with the remarkable change you see in the mirror, just return the bottle within 30 days after you receive it and Dr. Michael will return your check uncashed or send a refund so you will have a full 30 days from your date of receipt so you can test it without any risk. You have no risk; you can't lose money, only unwanted fat and years off your appearance.

**YOUR DREAMS & PRAYERS COME TRUE!**

Yes, you can literally feel your body becoming slimmer and more sensuous day by day. You can dramatically improve to a beautiful figure faster than you ever dreamed possible. Quickly and easily get back your girlish figure as your dreams and prayers come true. Shape your

body into the fashionable figure all will admire, as your self-image and self-confidence automatically improve. Experience the joy of a slim, firm, new, graceful body as admirers are dazzled by you. The sooner we receive your order, the faster you can be on your way to a happier, more attractive you.

**UNCONDITIONAL**

**100%  
GUARANTEE**

If you do not lose more weight than you ever have before, or if you are not satisfied for any reason, simply return the empty bottle within 30 days for a prompt and full refund. **NO QUESTIONS ASKED.**

**MONEY-BACK**

**SPECIAL NOTE:** Since TRIMOLITE works silently and so effectively without annoying and noticeable side effects, sometimes weight loss is too rapid! Do not allow yourself to lose weight too quickly. If so, skip a day or so of use. And as with all weight loss programs, check with your doctor to make sure you are in normal health. Weight loss varies based on amount one is over their ideal weight. The ordinary person will lose less than 22 lbs. the first week.

**NEVER STOP EATING!**

Stopping eating (fasting) can be dangerous to your health. Please continue eating three meals a day.

*"I once thought the only way to lose weight was to stop eating. I stopped once for a week and felt sick. The weight I lost came back too soon. A short time ago, I started taking TRIMOLITE's formula, and ate as I normally did. I never stopped eating, yet I lost 54 pounds so fast I was amazed. I feel prettier, sexier, happier, more confident, relaxed, energetic, alert, excited and in love with life. I look and feel years younger."* —Mama F., Corpus Christi, TX

**DOCTOR ENDORSED**

Dr. Weight, M.D., from California says, "I use TRIMOLITE to lose weight. I recommend it to my patients, family and friends. My first patient lost 30 pounds in 30 days. I feel this product is safe and effective as advertised."

**ORDER TODAY!**

You have nothing to lose but fat, flab, and cellulite. Say goodbye to fat by printing your name, address,

apartment number, city, state, and zip code on a piece of paper. Or use the coupon below.

**CREDIT CARD ONLY  
702-871-9333**

**ASK FOR OPERATOR CODE**  
Monday thru Saturday 10 a.m. - 6 p.m.  
No C.O.D. or Collect Calls

Send \$19.95 check or money order for 300 tablets. Send \$35.95 for 600 tablets plus FREE 6-in-1.



**FREE!  
SIX-IN-ONE  
If You Order Now!**

30-day supply diet aid with 600 tab order of TRIMOLITE.

**A \$19.95 Value!**

This superb diet aid contains: Grapefruit, Glucomannan, Amino Acid, Protein, KLA-B6, Herbs, Cellulose, Vitamins & Minerals.

**SPECIAL INTRODUCTORY OFFER!**

**TRIMOLITE**  
4170 Solteros #2 C-2  
Las Vegas, NV 89103

Yes, I want to enjoy weight loss, shrink fat cells and lose pounds and inches as never before in my life. Rush my TRIMOLITE as indicated below. I understand that if I am not 100% thrilled and delighted, I can return it within 30 days for a prompt refund. **CHECK OFFER DESIRED**

600 Tablets only \$35.95, plus FREE 6-in-1  
 300 Tablets only \$19.95

Total amount enclosed \$ \_\_\_\_\_  
 or charge my  VISA  Mastercard  Am. Exp.

Acct. # \_\_\_\_\_  
 Exp. Date \_\_\_\_\_  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone (\_\_\_\_\_) \_\_\_\_\_  
 out of USA: 300 tabs \$25; 600 tabs plus free 6-in-1 \$41  
 U.S. Intl. money order. Canadian cash or check: 300 tabs \$38; 600 tabs plus free 6-in-1 \$63.

## APPENDIX B

### WEIGHT BELIEF QUESTIONNAIRE

This questionnaire is designed to examine the beliefs people have about weight loss, weight gain, and dieting. Specifically, you will be asked to indicate the extent to which you agree or disagree with certain statements. Your responses to this questionnaire will remain completely anonymous. Participation in this study is voluntary, and you are free to discontinue participation at any time. Information we get from you and others could have significant implications regarding diet programs. Your participation in this study is greatly appreciated. Thank you for taking the time to help us.

#### PART I

#### INSTRUCTIONS:

Listed below are sample statements about weight loss similar to the ones you will encounter on the questionnaire. Please indicate the extent to which you agree or don't agree with these statements. In rating them, first read each statement and decide how you feel about it. If, for example, you strongly agree with the statement, you would circle the 7 on the same line as the statement. On the other hand, if you strongly disagree with the statement, you would circle the 1. If you are neutral, that is you neither agree nor disagree, then you would circle 4. If you agree with the statement somewhat, then you would circle 5 or 6 -- with 6 being a stronger indication of agreement than 5. Similarly, if you disagree somewhat with the statement, then circle either 2 or 3 -- with 2 being a stronger indication of disagreement than 3.

#### EXAMPLE:

LISTED BELOW ARE SEVERAL STATEMENTS REGARDING WEIGHT LOSS AND WEIGHT GAIN:  
PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE OR DON'T AGREE WITH THEM

	STRONGLY DISAGREE		NEITHER AGREE OR DISAGREE			STRONGLY AGREE	
	1	2	3	4	5	6	7
1. IT IS IMPORTANT TO BE THIN	1	2	3	4	5	6	7
2. OUR SOCIETY IS OVERLY CONCERNED WITH FOOD	1	2	3	4	5	6	7
3. IT IS VERY EASY TO LOSE WEIGHT	1	2	3	4	5	6	7

## APPENDIX B (continued)

LISTED BELOW ARE SEVERAL STATEMENTS REGARDING WEIGHT LOSS AND WEIGHT GAIN:  
PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE OR DON'T AGREE WITH THEM

	STRONGLY DISAGREE		NEITHER AGREE OR DISAGREE			STRONGLY AGREE	
	1	2	3	4	5	6	7
1. IN ORDER TO LOSE WEIGHT YOU MUST BREAK UP YOUR BODY FAT	1	2	3	4	5	6	7
2. FATTY OR GREASY FOODS QUICKLY TURN INTO BODY FAT	1	2	3	4	5	6	7
3. FAT EVAPORATES WHEN WEIGHT IS LOST	1	2	3	4	5	6	7
4. A PERSON CAN LOSE FAT BY SWEATING IT OFF	1	2	3	4	5	6	7
5. PEOPLE WHO ARE OVERWEIGHT CAN EXERCISE AND TURN THEIR FAT TO MUSCLE	1	2	3	4	5	6	7
6. THERE ARE EXTREME HEALTH RISKS ASSOCIATED WITH BEING OVERWEIGHT	1	2	3	4	5	6	7
7. WHEN PEOPLE GAIN WEIGHT THEIR FAT CELLS GET BIGGER	1	2	3	4	5	6	7
8. YOU CAN TIGHTEN UP FAT TO LOSE WEIGHT	1	2	3	4	5	6	7
9. WHEN PEOPLE ARE FAT THEY SHOULD GET MORE EXERCISE	1	2	3	4	5	6	7
10. WHEN PEOPLE LOSE WEIGHT THEIR FAT SHRINKS	1	2	3	4	5	6	7
11. DURING WEIGHT LOSS SOME PEOPLE HIT PLATEAUS OR HAVE CERTAIN WEIGHTS THEY CAN'T GET BELOW	1	2	3	4	5	6	7
12. WHEN PEOPLE LOSE WEIGHT THEIR FAT MELTS AWAY	1	2	3	4	5	6	7
13. STARCHY FOODS TURN TO FAT	1	2	3	4	5	6	7
14. THERE ARE PEOPLE WHO CAN GAIN WEIGHT SIMPLY BY SMELLING/LOOKING AT FOOD	1	2	3	4	5	6	7
15. SOME PEOPLE ARE FAT BECAUSE THEY INHERITED IT	1	2	3	4	5	6	7
16. PEOPLE WHO ARE OVERWEIGHT DON'T GET ENOUGH EXERCISE	1	2	3	4	5	6	7
17. WHEN PEOPLE LOSE WEIGHT THEIR FAT DISSOLVES AWAY	1	2	3	4	5	6	7
18. IF YOU ARE ON A DIET AND YOU "BLOW IT" YOU WILL GAIN WEIGHT	1	2	3	4	5	6	7
19. GOD, OR SOME OTHER HIGHER POWER, MADE SOME PEOPLE OVERWEIGHT	1	2	3	4	5	6	7
20. WHENEVER ANYONE EATS TOO MUCH, IT TURNS TO FAT	1	2	3	4	5	6	7



APPENDIX B (continued)

	STRONGLY DISAGREE		NEITHER AGREE OR DISAGREE			STRONGLY AGREE	
	1	2	3	4	5	6	7
21. IN ORDER TO LOSE WEIGHT YOU HAVE TO BURN OFF FAT	1	2	3	4	5	6	7
22. SOME PEOPLE ARE FAT BECAUSE THEY HAVE A SLOW METABOLISM	1	2	3	4	5	6	7
23. PEOPLE WHO ARE FAT HAVE NO WILLPOWER	1	2	3	4	5	6	7
24. FAT CAN BE LOST THROUGH BOWEL MOVEMENT AND URINATION	1	2	3	4	5	6	7
25. THERE IS NO SUCCESSFUL METHOD FOR PERMANENT WEIGHT LOSS	1	2	3	4	5	6	7
26. SOCIETAL PRESSURES CAUSE SOME PEOPLE TO GAIN WEIGHT	1	2	3	4	5	6	7
27. PEOPLE HAVE SETPOINTS, OR A CERTAIN WEIGHT THAT THEIR BODIES BELIEVE THEY SHOULD MAINTAIN	1	2	3	4	5	6	7
28. WHENEVER ANYONE EATS THE WRONG FOODS, IT TURNS TO FAT	1	2	3	4	5	6	7
29. A PERSON'S STOMACH SHRINKS WHEN WEIGHT IS LOST	1	2	3	4	5	6	7
30. VITAMINS GIVE YOU ENERGY TO HELP BURN OFF FAT	1	2	3	4	5	6	7
31. FAT CAN BE COMPRESSED	1	2	3	4	5	6	7
32. FAT HAS A LOW MELTING POINT	1	2	3	4	5	6	7
33. YOU CAN PREVENT WEIGHT GAIN BY PREVENTING THE ABSORPTION OF FOOD	1	2	3	4	5	6	7
34. NO MATTER HOW HARD SOME PEOPLE TRY TO DIET, THEY CAN'T LOSE WEIGHT	1	2	3	4	5	6	7
35. CERTAIN COMBINATIONS OF FOOD CAN HELP TO LOSE OR GAIN WEIGHT	1	2	3	4	5	6	7

## APPENDIX B (continued)

In the next part of the questionnaire you will be asked to rate how effective you believe certain weight loss methods are and to check whether or not you have tried them to lose weight. Listed below are some examples. Please notice the scale in this section is different from the scale in the previous section.

### PART II

**INSTRUCTIONS:**

In rating these methods, check the line in front of the method(s) you have tried, leave the others blank. Then, rate how effective you believe each method to be, whether you have tried it or not. Each method of weight loss should have a rating indicating its effectiveness. If, for example, you believe the method of weight loss to be extremely effective, you would circle the 7 on the same line. On the other hand, if you believe the method is not effective, you would circle the 1. If you believe a method to be only somewhat effective you would circle 4. If you believe a method to be more than somewhat effective but not extremely effective, you would circle 5 or 6 -- with 6 being a stronger indicator of effectiveness than 5. Likewise, if you believe a method to be less than somewhat effective, you would choose either 2 or 3 -- with 2 being a weaker indicator of effectiveness than 3.

**EXAMPLE:**

LISTED BELOW ARE SEVERAL METHODS TO LOSE WEIGHT:

1. Please rate the effectiveness of **ALL** the methods, whether you have tried them or not
2. Please indicate if you have ever tried this method to lose weight

CHECK METHODS YOU HAVE TRIED	I BELIEVE THIS METHOD IS:						
	NOT EFFECTIVE		SOMEWHAT EFFECTIVE			EXTREMELY EFFECTIVE	
	1	2	3	4	5	6	7
_____ 1. THE NO-GOOD DIET	1	2	3	4	5	6	7
_____ 2. SHOCK THERAPY	1	2	3	4	5	6	7
_____ 3. CHEWING GUM	1	2	3	4	5	6	7

## APPENDIX B (continued)

LISTED BELOW ARE SEVERAL METHODS TO LOSE WEIGHT:

1. Please rate the effectiveness of **ALL** the methods, whether you have tried them or not
2. Please indicate if you have ever tried this method to lose weight

CHECK METHODS YOU HAVE TRIED	I BELIEVE THIS METHOD IS:						
	NOT EFFECTIVE	SOMEWAT EFFECTIVE		EXTREMELY EFFECTIVE			
	1	2	3	4	5	6	7
_____ 1. REDUCED CALORIE DRINKS (FOR EXAMPLE: LIQUID PROTEIN, CAMBRIDGE DIET)	1	2	3	4	5	6	7
_____ 2. MASSAGE, MASSAGERS, OR ROLLER MACHINES	1	2	3	4	5	6	7
_____ 3. SAUNA SUITS	1	2	3	4	5	6	7
_____ 4. VITAMINS	1	2	3	4	5	6	7
_____ 5. EXERCISE	1	2	3	4	5	6	7
_____ 6. CELLULITE CREAMS, SKIN CREAMS	1	2	3	4	5	6	7
_____ 7. SAUNAS, HOT TUBS	1	2	3	4	5	6	7
_____ 8. DIETS THAT ALTER THE RECOMMENDED BALANCE OF FATS, PROTEINS AND CARBOHYDRATES (FOR EXAMPLE: DR. ATKINS, DRINKING MAN DIET, SCARSDALE DIET, PRITIKIN DIET)	1	2	3	4	5	6	7
_____ 9. SPOT REDUCING EXERCISES	1	2	3	4	5	6	7
_____ 10. THYROID PILLS	1	2	3	4	5	6	7
_____ 11. MUSCLE STIMULATORS (PASSIVE EXERCISE MACHINES)	1	2	3	4	5	6	7
_____ 12. FASTING	1	2	3	4	5	6	7
_____ 13. EXERCISE VIDEOS	1	2	3	4	5	6	7
_____ 14. PSYCHOTHERAPY	1	2	3	4	5	6	7
_____ 15. COMBINATION FOOD DIETS (FOR EXAMPLE: BEVERLY HILLS DIET, FIT FOR LIFE DIET)	1	2	3	4	5	6	7
_____ 16. ENEMAS	1	2	3	4	5	6	7
_____ 17. GRAPEFRUIT PILLS	1	2	3	4	5	6	7

APPENDIX B (continued)

CHECK METHODS YOU HAVE TRIED	I BELIEVE THIS METHOD IS:						
	NOT EFFECTIVE		SOMEWHAT EFFECTIVE			EXTREMELY EFFECTIVE	
	1	2	3	4	5	6	7
_____ 18. LIMITED PORTION DIETS	1	2	3	4	5	6	7
_____ 19. HYPNOSIS	1	2	3	4	5	6	7
_____ 20. WEIGHT REDUCTION DIET GROUPS (FOR EXAMPLE: WEIGHT WATCHERS, DIET CENTER, NUTRISYSTEMS)	1	2	3	4	5	6	7
_____ 21. LIPOSUCTION (SUCTIONING OF FAT DEPOSITS)	1	2	3	4	5	6	7
_____ 22. GROUP SUPPORT (FOR EXAMPLE: OVEREATERS ANONYMOUS, TOPS)	1	2	3	4	5	6	7
_____ 23. HUMAN CHORIONIC GONADOTROPIN (HCG) INJECTIONS	1	2	3	4	5	6	7
_____ 24. VOMITING	1	2	3	4	5	6	7
_____ 25. GASTRIC (JEJUNOILEAL) BYPASS	1	2	3	4	5	6	7
_____ 26. BEHAVIOR MODIFICATION	1	2	3	4	5	6	7
_____ 27. DIET PILLS	1	2	3	4	5	6	7
_____ 28. JAW WIRING	1	2	3	4	5	6	7
_____ 29. LAXATIVES	1	2	3	4	5	6	7
_____ 30. BODY WRAPS	1	2	3	4	5	6	7
_____ 31. DIURETICS (WATER PILLS)	1	2	3	4	5	6	7
_____ 32. GASTRIC BUBBLE	1	2	3	4	5	6	7
_____ 33. STOMACH STAPLING	1	2	3	4	5	6	7

SOCIAL SECURITY NUMBER \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

AGE \_\_\_\_\_ GENDER \_\_\_ M \_\_\_ F WEIGHT \_\_\_\_\_ POUNDS.

DID YOU EVER FEEL OVERWEIGHT? \_\_\_ YES \_\_\_ NO  
IF YES, HOW OLD WERE YOU WHEN YOU FIRST FELT OVERWEIGHT? \_\_\_\_\_

DO YOU NOW BELIEVE YOU ARE OVERWEIGHT? \_\_\_ YES \_\_\_ NO  
IF YES, HOW MANY POUNDS OVERWEIGHT DO YOU THINK YOU ARE? \_\_\_\_\_

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