The Effects of Protein Sparing Dieting Versus Protein Sparing Dieting with Behavior Modification in the Treatment of Obesity

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ABSTRACT

At present no one method of treating obesity is overwhelmingly superior to another. Some have proven more effective than others in the effecting of long term weight loss but even these could be substantially improved upon. In recent years, behavior modification and protein sparing diets have been used with relative success in helping the obese lose weight.

This study compared the effectiveness of two weight control programs over a period of sixteen weeks with individual patients at a private medical clinic. One program consisted of using short-term behavior modification methods in combination with a protein sparing diet while the other employed only the protein sparing diet. The combined approach was more successful in helping clients lose weight but results were not statistically significant at the .10 level. A high attrition rate was encountered with both groups. Further research is needed in the determination of a more universally beneficial method for obtaining long term weight loss in the treatment of the obese.

PREFACE

I am deeply indebted to several people for the help in the preparation of this thesis. I am appreciative for the guidance of my advisor, Dr. Andrew Smith, who spent many hours of his time in aiding me in designing the thesis and in reading and criticizing the various manuscripts. I am also thankful to Dr. Peter Bishop for his observations and suggestions, especially in the area of the statistical evaluations of the thesis. I would also like to express my gratitude to Dr. Curtis Torno who so graciously allowed me the use of his building, his patients, his experience, and his employees time (i.e., myself), all of which were necessary ingredients in the actual implimentation of the experiment of the thesis. Finally, but most important, I would like to thank my beautiful wife, Cherry, who though with child at the time, spent many hours of labor typing and retyping the several versions of this thesis. To all these persons as well as those who volunteered to participate in the program, I say "Thank you."

M.E.K.

CHAPTER I

INTRODUCTION

The Problem of Obesity

The treatment of obesity has been one of the biggest problems the health professions have had to face in recent years. It is estimated that at least 20% of all Americans are significantly overweight (Stuart, 1971). Another authority has judged that about 1o to 20 million people in this country are on some sort of diet (Hewitt, 1975). Why all this concern about obesity? Probably the most important reason is the adverse effects obesity has on a person's health. Dr. Mark Hewitt in his article "The Many Faces of Obesity: Part I" (1975), points out several problems obesity can cause. First he states that an obese individual is much more likely to suffer from cardiovascular disease than one who is of normal weight. Excess fat in the abdominal wall increases intra-abdominal pressure, which leads to shallow respirations, which leads to hypoxia (not enough oxygen in the circulating blood), and eventually overworks the heart, which can lead to death. Dr. Hewitt also points out that an obese person is three times more likely to suffer from high blood pressure than one who is not. He further states that the obese run a five times greater risk of becoming diabetics than the non-obese; this probably due to an abnormal glucose tolerance in those overweight. Finally, Dr. Hewitt relates an estimate that a person who is 20% overweight or more has a 125%

greater chance of decreasing his/her life expectancy than one who is not. The health hazzards of obesity become obvious when viewed with these facts.

People are concerned about losing weight for more than just health reasons though. This country places a high premium on being thin, and a social stigma is often associated with being obese (Coates and Thoresen, 1978). Those who are slender are considered more attractive by most people, are better able to relate with those of the opposite sex, and are able to gain employment more easily (Hewitt, 1975). An individual improves on the poor image held by others when he/she loses weight and as a result quite probably increases his/her self image.

There are also many personal reasons why a person chooses to lose weight. Perhaps one wishes to please a spouse. Or maybe an athlete wants to increase his/her performance in some sport. Countless other reasons of this nature could be mentioned. The fact is that millions are trying to do so, and many without success.

Causes

The root causes for obesity are controversial and for the most part unknown. It is not our purpose to debate these issues in depth here. Briefly though, there are four reasons traditionally given for corpulency. First, there is the metabolic viewpoint which states that the obese have a slow rate of metabolism and thus burn calories at a slower pace (Hewitt, 1975). Second, obesity is said to be caused by the lack of an appetite control center in the brain of some individuals (Craddock, 1976). Thirdly,

the obese are said to posses an abnormal amount of fat cells in their bodies; this being the result of heredity and development during infancy (Coates and Thoresen, 1978). As one grows older, the number of fat cells do not increase but their size does. Finally, there are personality and behavioral characteristics believed to cause obesity (O'Leary and Wilson, pp. 329-342, 1975). Some research has supported the hypothesis that persons who are depressed easily and use eating as a coping mechanism will become obese (Rubin, 1970). Others emphasis that obesity is often the result of bad eating habits developed over the course of many years (Stuart, 1971). Whatever the root causes of obesity, the mechanical cause is obvious; an obese person simply takes in more calories than he/she uses. These excess calories can only be transformed by the body into fat. Therein lies the crux of the problem in treating obesity. One must reverse this process by decreasing the calories taken in and/or increasing the amount of calories burned by the body. Methods by which an individual may choose to do this will now be discussed. It is not within the scope of this paper to analyse and criticise all the sundry ways for losing weight. However, a brief summary of the major methods of reducing is in order to lend a perspective to the present study.

Physical Techniques of Weight Loss

Two types of weight reducing techniques that employ more or less physical ways for losing weight are diets and diet pills. The different kinds of diets used for reducing purposes are many and varied. The gen-

eral public is subjected to reports of new diets practically every day which guarantee almost instant weight loss. Grapefruit diets, water diets, low carbohydrate diets, lettuce diets, starvation diets, high protein diets, and so on, have all been used with various claims to success. When one really examines these diets though, one finds they all have basically one thing in common; they all restrict the amount of calories consumed by the subject. This is the essence of all effective diets (Craddock, 1976).

Some diets even make claims for "reducing appetites" and "melting away inches." Recently, Dr. Robert Linn (1976) has made such claims with his "Last Chance Diet." Dr. Linn's diet severly restricts the food consumption of the client and requires only the daily intake of eight ounces of "liquid protein." Usually on his program patients only receive about 200 calories a day, all coming from the "liquid protein." The "liquid protein" supposedly restricts the catabolism of vital body organs which are made up of mostly protein. For this reason such diets that utilize this type of procedure are often referred to as "protein sparing" fasts. Dr. Linn also states that the liquid protein helps curb the appetite of the individual. Dr. Linn further reports an 80% long term success ratio since he began using "protein sparing" diets in treating obesity. He also states in his book that his patients usually lose 26 pounds after one month and lose between 16 to 18 pounds per month thereafter until their "ideal..weight" is reached. Dr. Linn's statistics are generalities though and no precise and individual data are given. He also fails to define how long his "long term successes" have been.

Other researchers have used methods similiar to Dr. Linn's and have been more definitive in their data (Blackburn, et. al., 1975; Jourdan, et. al, 1974; and Genuth, et. al., 1974). Although favorable results have been achieved, they are not as dramatic as Dr. Linn's. Genuth (1974) and his associates for example found that 60% of 65 highly obese patients, ranging from 79% to 196% overweight, lost at least 40 pounds on a stringent high protein/low calorie diet. Jourdon (1974) and his co-workers using a method similiar to Genuth's obtained comparable results. Both the Jourdon (1974) and Genuth (1974) studies also tested for possible harmful tissue damage caused by the very low caloric intake of their patients and found no serious side effects. One serious problem with the above studies and other studies using protein sparing diets is the lack of follow-up data. At least two researchers (Genuth, 1974; Linn, 1976) indicate that although a protein sparing diet is effective for obtaining rapid weight loss, other methods should be used to aquire proper eating habits in order for clients not to gain their weight back after treatment is over. Although past studies have not revealed any serious physical problem caused by a liquid protein diet, in recent months at least 46 deaths have been associated with it's use (New York Times, 1978). For this reason it could reasonably be expected that informed people would be hesitant about using the "liquid protein" diet and those similiar to it without being under the close supervision of a physician.

An alternative to the "liquid protein" diet is the powder protein diet. The manufacturers of protein powders make the same claim for fast

weight loss and curbing of appetite that "liquid protein" produces, yet a spokesman for the Federal Food and Drug Administration recently stated that no deaths or severe side effects have been reported (January, 1978). On the powder protein diets, a person restricts the amount of food eaten rather stringently, but replaces needed nutrients with protein usually taken in a milk shake form. The process is similiar to that of the liquid protein diets. One the powder protein diets, however, an individual usually consumes more calories than on the liquid protein. More details of the powder protein diet will be discussed in Chapter II.

Linn (1976) suggests that there are three factors which should be possessed by any useful diet; it must above all be healthy, it must reduce the amount of calories a person has been consuming, and it must be bearable so that the client will stay on it. Obviously, there are some diets, such as starvation diets, that are simply unhealthy. Dr. Hewitt (1975), points out that a ketogenic diet, that is, a diet that causes severe body water loss, can cause "weakness, apathy, fatigue, nausea and vomiting, dehydration, postural hypotension, and uricemia." It is therefore recommended that serious dieting be carefully monitored by experienced professionals in order to assure good health as well as weight loss.

One of the more frequently employed methods to bring about weight reduction is drug therapy, usually used in conjunction with an appropriate diet. There are many drugs on the market today and most are very similiar in their chemical formulas and in their modes of action. Most "diet pills" are related to amphitamine and produce central nervous stimulation. It is thought that such drugs act on the satiety center in the hypothalmus and

decrease a person's appetite (Modell, 1960). Some of the anorectic drugs, such as fenfluramine, inhibit fat storage which also increases weight loss (Craddock, 1976). Other anorectic drugs indirectly increase the total daily metabolism by causing an increase in the obese individuals's physical activity, which also aids in weight reduction (Craddock, 1976).

The short-term effectiveness of "diet pills" has been readily demonstrated in many studies (Modell, 1960; Craddock, 1976). What has not been shown as easily is the long term effectiveness of "diet pills"; which in most cases is what weight reducing programs are designed for. In fact, in Dr. Craddock's comprehensive article on anorectic drugs (1976), he states, "It is now generally accepted that for the long term control of obesity, a change in eating habits is essential." It is also dangerous to use "diet pills" for an extended period of time. This is so for several reasons. First and foremost, anorectic drugs are dangerous because most of them have addictive qualities. Addiction to the drugs occur because they produce a euphoria in the individual, which is closely followed by a "reactionary depression" as the effect of the drugs wear off (Craddock, 1976). One then may become physically and psychologically dependent on the drug if used for a long period of time. There are also other side-effects of anorectic drugs. Because they are central nervous system stimulators, such reactions as insomnia, restlessness, depression, nausea, diarrhea, and fatigue often occur with their usage (Modell, 1960). These effects may only be mildly unpleasant to some individuals, but in others they can be intolerable. Finally, a "tolerance" to anorectic drugs can build up in the client after several months of treatment

(Craddock, 1976). This often necessitates an increase in dosage in order to maintain the therapuetic effects of the drugs. Obviously, this is not the most desirable of consequences.

These then are some of the potential adverse effects of "diet pills". It is not surprising from these possibilities that clinicians are extremely careful when using drugs to obtain weight loss. At best "diet pills" are only a temporary means for obtaining weight loss and are never to be used in and of themselves for the long term control of obesity (Craddock, 1976).

There are also several other physical methods to obtain weight loss. Included in this group are such procedures as jaw wiring, starvation, by-pass surgery, and accupuncture. All of these methods have potentially severe consequences and are generally considered last resort techniques for losing weight (Hewitt, 1975).

Of the two physical techniques discussed, dieting and diet pills, dieting would seem to be the more advantageous method for losing weight. Using a protein sparing diet, some of the same benefits anorectic drugs exhibit can be obtained without many of the potential adverse reactions such as drug addiction and tolerance build up. This is especially true for a powder protein diet because of it's relative safety. If the protein sparing diet does curb the appetite, there would seem to be no need for the anorectic drugs, except for possible psychological reasons.

Psychological Techniques of Weight Loss

Psychoanalysis has also been used in the treatment of obesity. A short explanation of the process of analysis is difficult because each therapist utilizes his/her own particular technique. It is probably better, therefore, to examine one particular analyst in order to get a general idea of how some therapists of this orientation view obesity. The eminent psychiatrist and author, Theodore Rubin, feels that obesity is a sickness and should be treated as such. Dr. Rubin uses Freudian psychoanalysis in his treatment of obesity. In his book Forever Thin (1970), he states that the obese person must come to view his "sickness" as a mental state that is incurable, brought about chiefly by a lack of self-esteem. The patient must be made to understand or to acquire insight into his/her "own personal dynamics, characteristics, peculiarities, symbols (especially food symbols), and vulnerable areas." The patient must further endeavor to break the "anxiety/food reaction habit cycle" which is brought about by a "fear of becoming thin." Finally, Rubin claims that "a removal of hidden fears will result in removal of fat and that removal of fat will help reveal and resolve more and more problems." Some analysts also use what is called "ventilation" as a "cure" for obesity. Ventilation is the process by which the patient talks freely about his/her obese condition, thus releasing "disturbing tensions by simple mental catharsis" (Bibsby and Muniz, 1962, p. 100). Releasing the tension helps the patient lose weight. Although many claims have been made for the success of psychoanalysis in treating obesity, little scientific evidence exists to support such claims (O'Leary and Wilson, 1975, p. 36).

Group therapy is another method used by those who treat obesity.

There are several organizations that exist throughout the United States, such as Weight Watchers and Take Off Pounds Sensibly (TOPS), that work to cure obesity. Much could be said about organizations of this nature, but suffice it for now to say that most of them work in a similiar manner as Alcoholics Anonymous. Clients meet together, usually on a weekly basis, where they "weigh in", discuss their successes and failures from the preceeding week, and use the group as support and motivation for losing weight. Stunkard and Levitz (1974) found that for some TOPS was effective, but for most it was less effective than behavior modification techniques. Since other weight reducing groups are similiar to TOPS, it is probable that Stunkard and Levitz's conclusions apply to them as well.

Until recently, most of the major methods utilized by clinicians for helping the obese lose weight and maintain their normal weight afterwards have had only moderate success. Stunkard (1958) viewed the prospects for success very pessimistically. He said, "Most obese persons will not lose weight and of those who do lose weight, most will regain it." More recently, however, Stunkard (1972) has concluded that behavior modification is the most effective treatment for obesity. Many behavior therapists have had favorable results in helping people lose weight (e.g., Harris, 1969; Bellack, 1976; Janda, 1972; Levitz and Stunkard, 1974; Stuart, 1967; Mann, 1972). Behavior modification employs several methods for obtaining behavior which produces weight loss and each therapist may use these methods to various degrees. Basically though, behaviorists seek to change or modify the act of overeating in several ways. One way this can be accomplished is by a method called stimulus discrimination (Stuart, 1971).

Stimulus discrimination attempts to reduce external stimuli or cues that prompt eating behavior. A few of the tactics used in stimulus discrimination include teaching subjects to eat in only one room of the house, to eat only at specific times, and to never eat while engaged in reading, television viewing, or virtually any other activity. Frequently, they are also taught to shop only for specific nutritional foods and after making a list in advance, and to always shop on a full stomach.

Another method behaviorists use is record keeping (Mahoney, 1974). Clients are instructed to keep detailed records of what they eat, when they eat, what they are doing while they eat, and so on. Also, clients keep records of how many inches of fat they lose in various parts of their body such as the abdomen, the arms and legs, waist, etc. during treatment. These records not only make clients aware of how much food they are eating and how much weight they are losing, but they also aid the therapist in finding out how effective the treatment is and what things might be reinforcing the eating behavior.

Reinforcement of self-controlling behavior is one of the most significant techniques behavior therapists utilize (Bellack, 1976; Jeffrey, 1969). Reinforcement can come from several sources. First, the therapist can give reinforcement in the form of praise and encouragement for proper eating habits and weight loss. Reinforcement can also be given by the client's peers. Self-administered reinforcement is the most ideal means of reinforcing self-controlling behavior because of the ease by which it is administered (Mahoney, 1974). At the beginning of treatment a client may administer self-reinforcement by allowing himself/herself

certain privileges for losing weight. Eventually, however, this reinforcement becomes internalized; that is to say the client will be rewarded by the self-satisfaction he/she gets from becoming thinner. Contingency contracting is another form of giving reinforcement. In contingency contracting the client usually signs a document stating he/she will forfeit some valuable possession if he/she fails to either lose weight or do what the therapist asks. Mann (1972) used this particular method with favorable results. In his program, clients signed a legal document saying they would lose at least two pounds every two weeks until they lost a total of 25 pounds at which time the program would terminate. All but one of the weight clients in Mann's experiment lost 25 pounds. No follow-up was reported, although Mann did use a reversal period to show that contingency contracting was producing the weight loss.

The controlling of the actual behavior of eating, that is the physical act of eating, is yet another technique used by many behaviorists (Harris, 1969). It has been found that most obese persons eat to fast (Stuart, 1972). The body generally starts to feel the effects of food in the stomach after 15 minutes. As a result, the person overeats and becomes over satisfied when much less would have been sufficient to curb the feeling of hunger. Behavior therapists often seek to slow down this fast eating pattern. Clients are instructed to chew slower, taught to be more attentive to the food they are eating, and encouraged to place their utensils down after every bite.

The final technique to be discussed that some behaviorists use is called covert sensitization. Janda and Rimm (1972) used this method and

found encouraging results. Using covert sensitization, Janda and Rimm's clients lost an average of 9.5 pounds after six weeks of treatment and an additional 2.2 pounds at a six week follow-up weight check. This compared favorably to an attention control group which lost a mean of .7 pounds at six weeks and actually gained 2.3 pounds back at a six week follow-up, and a no treatment control group that lost a mean of 4.5 pounds after six weeks and an additional .9 during the follow-up period. Briefly, covert sensitization involves pairing the eating behavior with some unpleasant stimulus. The stimulus can be an actual physical stimulus, such as a repulsive picture or nauseating smell, or it can be a mental process. Through the mental process the client only imagines the unpleasant stimulus while either thinking about eating or actually eating. Although enthusiastic claims have been made about using covert sensitization for causing weight loss, experimental evidence has shown that it is no more beneficial than other behavior techniques (O'Leary and Wilson, 1975).

These then are the basic tools most behaviorists use in treating obesity. Much more could be said about each and there are some techniques which were not mentioned. Most behavior therapists though use the methods discussed in some form or another and may combine these methods with other techniques for losing weight.

There are many other psychological means which clinicians have used and are still using in treating obesity that shall not be dealt with here. Included in this group would be such techniques as hypnosis and biofeedback. There is little evidence to conclude that these are any more effective in causing weight loss than most of the other techniques that

have been discussed. For the most part, as Stunkard (1958) concluded, the various treatments for obesity have failed. It is evident from the research that the prospects of an obese person losing weight and keeping the weight off are less than favorable. Simply giving someone a diet pill or a diet and telling him to follow the instructions will not in most cases produce long term weight loss. What emerges from the literature as the better treatment for obesity is behavior modification (Stunkard, 1972). It is clear that most of the other methods discussed will affect short term weight loss. What is equally clear is that few will achieve a high ratio of long term success.

Statement of the Problem

Although behavior modification techniques have proven to be the most successful in treating obesity, they fall well short of the desired goals. Even the most successful of behavior modification programs rarely achieve anything higher than a 50% long term success ratio. Much more research is needed in order to find a better way of losing weight permanently. As O'Leary and Wilson (1975, p. 341) put it in their book, Behavior Therapy: Application and Outcome, "the most officient and effective method, or combination of methods for treating obesity has yet to be determined." It is to this end that this particular thesis is directed.

Richard Stuart (1967) used a three dimensional approach in treating obesity. In Stuart's program, clients combined behavior modification with an individualized diet program and a specific exercise program. In

this way, Stuart developed self-control in his clients, taught them the importance of maintaining the proper energy balance, and the necessity of changing the nature of foods eaten. Stuart further sought to strengthen appropriate and weaken inappropriate eating patterns. He did this by eliminating, where possible, those cues that caused an increase in eating, by suppressing other cues that increased the number of calories consumed, and by strengthening cues that were associated with proper eating and exercise. In using this combined approach of behavior modification, diet, and exercise, Stuart obtained an 80% success ratio in getting clients to lose 20 pounds and 30% success ratio to lose at least fourty pounds over a one year period. Unfortunately Stuart's program involved only eight subjects, too few subjects to generalize.

It was decided that a program similiar to Stuart's would be used for this thesis. With the recent claims of protein sparing diets, it was further decided to combine a high protein diet with behavior modification and see if effective weight loss could be obtained. Possibly by using a protein sparing diet with a program similiar to Stuart's, something that had not been tried before, a better means of treating obesity might be discovered.

Some of the reasons for using the high protein diet were the purported benefits that have already been discussed, such as the curbing of appetite and the shrinking of fat cells. Another reason for it's use was the obvious ability of the diet to cause quick weight loss due to the restriction in calories. This quick weight loss coupled with loss of inches made self-reinforcement much easier. A final reason for using

this specific diet was the fact that while on this diet, clients would be taking vitamins and minerals and eating one well balanced meal a day, thus making the diet healthy and nutritional. With these advantages, the diet alone should facilatate rapid weight loss.

At this point a summary statement for the rationale in using a combined approach for weight reduction is in order. Research has pointed to behavior modification as the most promising of weight reduction methods. Yet even behavior modification is not overwhelmingly effective. The purpose, therefore, of this thesis was to study the effects of behavior modification when used in conjunction with exercise and a stringent high protein, low carbohydrate diet for the purpose of losing weight. It was predicted that the addition of behavior modification to this diet program would increase the chances that weight loss would be maintained over a longer period of time. The null hypothesis was that there would be no difference in the amount of weight lost between two groups of clients after 16 weeks; one group receiving a protein sparing diet and the other group receiving the same diet plus behavior modification.

CHAPTER II

METHODOLOGY

Subjects

The present study was conducted at a private medical clinic in Pasadena, Texas. All subjects were volunteers who wished to lose a minimum of twenty pounds. All subjects were also patients of one of the physicians at the clinic, and all obtained consent from their doctor before starting the weight reduction program. In addition to this, subjects filled out a brief personal information and history form, a copy of which appears in Appendix A. Finally, before the study began, all participants signed a written consent form stating the purpose of the study and assuring them of their complete anonymity in participating. A copy of this form can be found in Appendix B.

Design

The experiment used a pretest-posttest (once repeated) comparison group design (Campbell and Stanley, 1966). Beginning weights represent a pretest value, post-treatment weights represent the posttest once repeated value.

The study had a single purpose: To determine the effects of behavior modification supports versus no supports in a protein sparing diet. For

this reason, two groups were used. One group received a protein sparing diet with behavior modification (group A), and the other received only a protein sparing diet (group B). In order to control for the possible confounding variable of percentage overweight, it was decided that each group should contain the same proportion of subjects with various degrees of overweightness. Percentage overweight was determined by a standard insurance height and weight chart.

Behavior modification requires not only extensive record keeping for the client but also for the therapist. The therapist must also map the strategy to be used for each client and this takes considerable time outside the treatment sessions. For these reasons and because there was only one therapist, the experimenter, it was necessary to limit the number of subjects placed in group A. This was the rationale for matching groups proportionaly rather than one to one. To accomplish this, the 29 subjects who volunteered for the experiment were all catagorized by their percentage overweight. There were four catagories, those less than 15% overweight of which there were five subjects; those 15% to 25% overweight with 12 subjects belonging to this group; those 25% to 35% overweight with eight belonging in it; and finally, those who were over 35% overweight with only four subjects belonging in this catagory. Next, each subject was placed into either an experimental group (group A) or a comparison group (group B). Subjects were placed in one or the other group by placing the names of every subject in each catagory in a hat and drawing out one-fourth of the names for group A. (This was done for three catagories but could not be done for the group who were less

than 15% overweight since it contained five subjects. For this group, two names were drawn and placed in group A.) Group A, therefore, consisted of eight subjects and group B contained 21.

Subjects in both groups knew they were part of an experiment to determine the effectiveness of certain weight reducing methods. They also knew that there were two seperate groups, but they did not know the difference between the groups, nor which was expected to lose more weight. Also, since there was only one experimenter who also served as the therapist, the experimenter knew all the details of the study and who belonged in each group. This could have caused some experimenter bias which will be discussed in Chapter IV. We shall now go into the specifics of treatments administered to the two groups, a schematic diagram of which follows on page 20.

Treatments

The Diet

As has been previously stated, both groups were put on a protein sparing diet. This diet was essentially the same for members of each group. The diet consisted of taking a powder protein milk shake which was sold to the clients under the trade name "Slender Now." Subjects also took vitamins to supplement their diet. Both the protein diet and the vitamins were given according to the procedure as recommended by the manufacturers of "Slender Now." The diet was given to each client in the following manner. For the first three days after beginning the program,

TABLE A: SCHEMATIC DESIGN OF TREATMENT FOR GROUPS A AND B

TIME	Beginning of Experiment	1st Session	2nd Session	3rd Session	4th Session
WHO	All Subjects	A (experimental)	A	A	A
WHAT WAS DONE	Clients weighed, filled out personal history form and consent form. Placed into one of two groups in random manner.	Subjects weighed, given details of diet, daily progress sheet. 45 minutes.	Subjects weighed, grading of eating behavior instigated. Praise given for weight loss. 20 minutes	Subjects weighed, told to write down all they ate, stimulus discrimination technique given. Exercise encouraged. 20 minutes.	Subjects weighed, rewarding of proper eating behavior encouraged. 20 minutes.
WHO		B (comparison)	B	B	B
WHAT WAS DONE		Subjects weighed, given details of diet, daily progress sheet. 45 minutes.	Subjects weighed, praise given for weight loss. Nutrition and exercise encouraged. 20 minutes.	Subjects weighed, praise given for weight loss. Nutrition discussed. 20 minutes.	Subjects weighed, praise given for weight loss. Nutrition discussed. 20 minutes.

TIME	8 weeks after 1st session	16 weeks
WHO	All Subjects	All Subjects
WHAT WAS DONE	All subjects weighed and told experiment was over. Information on protein diet gathered.	Follow-up. Weight taken.

subjects were instructed to take the protein milk shake twice a day, one for breakfast and one for either lunch or supper. Subjects were further told to eat one large chef's salad for the meal that they did not take the milk shake. Subjects also took two vitamin tablets three times a day, one containing the daily requirements of all the essential vitamins, the other containing lecithin, kelp, cidar vinegar, and vitamin B^6. There is no proven scientific evidence for the lecithin and cidar vinegar, but since the "Slender Now" company recommended it, it was given.

The protein milk shake was made in the following manner. The clients were given detailed written instructions on how to fix the shake. A copy of the instructions appear in Appendix C. The shake was made by blending several ingredients together. These ingredients included two tablespoons of soy bean powder protein, eight ounces of either low fat skim milk or fruit juice, one teaspoon of honey or artificial sweetner, and crushed ice if desired. The soy protein contained all the essential amino acids plus some additional minerals and vitamins such as calcium, iron, iodine, and magnesium. Other flavors or extracts could be used in order to improve the taste. A tablespoon of polyunsaturated fatty acids, again manufactured by the "Slender Now" company was added to one milk shake a day. The fatty acids were used to keep the clients gall bladder functioning properly and to aid in digestion.

Patients in both groups continued to take the protein milk shake and vitamins twice a day, but after the first three days they could eat one normal meal a day. The meal could be eaten either at lunch or at supper. Clients were instructed to make the meal sensible, that is to limit their

intake of food to two vegetables, a salad, and up to a pound of broiled or roasted meat. Fluids were curtailed somewhat the first three days, but not afterwards. The only stipulation about fluids was that they were not to be drunk within an hour and a half after the protein shake. Restricting liquids prevented dilution of the protein. Each milk shake contained approximately 200 calories, depending on the added ingredients. If the client ate a sensible meal, he/she probably got 500 calories per meal. Thus, any client following this diet severely restricted his/her caloric intake, most getting around 900 calories a day. With this great reduction in calories, a person should have lost weight if the diet was followed closely. The total cost on this particular diet was about $32 a month plus the amount it cost for one meal a day. Thus, clients probably saved money on the program by buying less food than they normally would have.

Experimental Group Procedures

Group A was composed of eight clients, all of which were seen individually for the first four weeks of treatment and all expressed a desire to lose at least 20 pounds. On the initial treatment session, clients were weighed and given the details of the protein sparing diet which involved instructing them on how to take the protein milk shake, explaining the theoretical reasons for its use, and answering any questions they might have had. Clients were also told to start keeping a weekly progress sheet on their weight and on how many inches they were losing. A copy of this progress sheet can be found in Appendix D. The first session took approximately 45 minutes for each client.

On the second visit more specific behavior modification techniques were instigated. Clients were told to start grading themselves on how well they were staying on the diet. Grading was done by actually having each subject grade himself/herself with an A, B, C, D, or F after each meal or shake and at the end of the day. Subjects were to use their own judgment on whether they deserved a grade of A for staying on the diet perfectly, a grade of B if they cheated a little, and so on. Grades were written down on a piece of paper and turned in to the experimenter. the next week. Also during the second session subjects were weighed, with praise an encouragement given to each of them if they had lost weight. Those who did not lose any weight were simply told to stay on the diet stringently and give it time to work. The second session took about twenty minutes for each client.

During the third week's visit, clients' grades were reviewed with them. Clients were told to keep giving themselves daily grades, but in addition they were instructed to actually write down everything they ate in the course of a day. Any problems or questions were also ironed out. Subjects were lectured on stimulus discrimination techniques during this session and a list of these techniques was given to them. A copy of the list can be found in Appendix E. The stimulus discrimination techniques involved an attempt at eliminating certain cues, suppressing other cues, and strengthening desired ones. In cue elimination, subjects were told to eat in only one room of the house, to do nothing while eating but eat, to made available proper foods only, to shop while on a full stomach and only from a pre-determined list, and to clear the dishes directly from

the table. With cue suppression, clients were instructed to have company over to eat, to prepare and serve only small quantities, to eat slowly, to save one item from the meal to eat later, and, if high calorie foods were to be eaten, they must have required some sort of preparation. In aiding subjects to chew slowly, they were given such tips as swallowing the food already in their mouth before adding more and eating with utensils only. Finally, in cue strengthening, clients kept food and weight charts, allowed extra money for proper foods, and experimented with attractive preparations of diet foods. The above techniques are part of a program designed by Stuart (1971). Also during this third session, subjects were counseled concerning a program of daily exercise in order to burn more calories. Finally, subjects were weighed again and praise was given for any weight loss that had occured. This session also took about twenty minutes.

On the fourth and final treatment session, clients' daily sheets were reviewed and they were asked how the various stimulus descrimination techniques were going. Clients were told to continue using these techniques to enhance weight loss and to continue exercising. Clients were further instructed to discontinue with their grading. Instead, they were now told to start rewarding themselves with material things for weight loss. Material things could include certain privileges they allowed themselves (as long as they were not eating privileges) and certain items they may have wanted to buy for themselves for sometime, especially things like new clothes which relate directly to their weight loss. Again weights were taken and praise given to those who lost weight.

Subjects were told to continue on the diet for five more weeks at which time a final weight would be recorded and the experiment would be over.

Comparison Group Procedures

Those in the comparison group, group B, were treated somewhat differently than those in group A. Subjects in this group did not receive some of the behavior modification techniques those in group A did. There were 21 subjects in group B, all of which desired to lose at least 20 pounds. Each member of this group was seen individually once a week for the first four weeks, the same as the experimental group. The first treatment session for group B was essentially the same as that for group A. Clients were weighed and given the instruction on how to take the protein sparing diet. Any questions they might have had were answered and the rationale for the protein diet was explained. Clients were given the same daily progress sheets subjects in group A received. The initial session took about 45 minutes per client.

On the subsequent visits for the next three weeks, clients were weighed and praise and encouragement were given for weight loss. Each week questions were answered about the diet and how it was going. Also each week the necessity of maintaining the proper caloric intake/output balance for losing weight was discussed and exercise was encouraged. Each session took about 20 minutes to complete. At the fourth week treatment session, clients were weighed and told to stay on the diet for five more weeks. At the end of these five weeks, they were to return to the office for a final weight check and told that the experiment would

be over at that time.

One can see from this design that both groups to some degree received behavior modification. Although group A received more obvious forms of behavior modification, there were some behavior modification techniques involved in group B also. Such methods as self-monitoring and reinforcement were associated with group B. On the other hand, they did not use the stimulus discrimination suggestions those in group A received, or the more directed effort at self-monitoring and self-reinforcement, that is, the self-grading of eating behavior and the writing down of all foods eaten. Each client received about an hour and 45 minutes of treatment over a four week period for both groups. For group B this amount of time was of no consequence, but for group A, less than two hours of total treatment is an extremely small amount of time as compared with other behavioral treatments of obesity. There were several reasons for limiting the time with each client. The experimenter (1) wanted to ascertain whether or not some of the behavioral techniques used in the past could be as effective with less time involvement by the therapist; (2) since there was only one therapist, the experimenter, there were obvious temporal restrictions which could not be avoided. (With 29 clients much more than 20 minutes a week per client would have simply been too time consuming.)

Follow-up Data Collection

Eight weeks after the apparent conclusion of the experiment, clients

from both groups were called on the telephone and asked to come in for a follow-up weight check. None of the clients knew about this follow-up beforehand.

During the follow-up weight check, clients were also asked to answer some brief questions about the diet itself. These questions were asked in order to ascertain whether or not the protein sparing diet produced the effects for which it was designed. Clients were asked if they felt the diet curbed their appetite, if they felt healthy on the diet, whether they were ever sick while on this diet, and whether or not they suffered from any adverse side effects while on this program. Those clients who did not finish the eight weeks of treatment were phoned and asked the same questions those who finished were asked. The drop-outs were also asked why they did not finish the eight week treatment.

CHAPTER III

RESULTS

Weight Loss at Eight and Sixteen Weeks

The experiment was composed of two groups, A and B as previously described. Group A (experimental group) was composed of eight subjects who began treatment with a mean percentage overweight of 24.7% per subject, ranging from a low of 12% to a high of 52% overweight (see Table B). There were seven females and one male in group A and all except the male had tried dieting before. Several of these had used diet pills in the past and most had tried specific diets. Group B (comparison group) was composed of 21 subjects who began treatment at a mean percentage overweight of 24.1%, ranging from a low of 13% to a high of 40% overweight. There were 17 female subjects and four males in this group. All subjects in group B, with one exception, had tried dieting before and many had used diet pills. All subjects in both groups were adults.

A high drop out rate was encountered with both groups. In group A, four of the eight volunteers quit treatment before eight weeks were up and, in group B ten out of 21 dropped out before completing treatment. All subjects in both groups who dropped out were females. The probability of only females dropping out when computed using a binomial expansion equation is .011. There was little difference in the mean percentage overweight of those who dropped out in group B, 24.4% compared with

23.9% overweight of those who finished treatment. In group A, however, there was a difference between the mean percentage overweight of those who dropped out to those who finished treatment. Those completing treatment averaged 32.2% overweight as compared with 17.2% overweight of those who did not finish treatment. The t-score for this difference is 2.04 with six degrees of freedom. This figure is significant at the .10 level and could be a possible confounding variable. This possibility will be discussed more in Chapter IV. The difference between mean percentage overweight in group A is somewhat inflated, however, by one subject who was 52% overweight in the finishing group of group A. Excluding this figure, the other three of this finishing group averaged 25.9% overweight which is still higher than the 17.2% of those who did not finish treatment.

Hypothesis Testing

Because final weights were not recorded on those who did not finish treatment for both groups, the reported statistics below apply only to those who did finish the eight week treatment period. In group B the mean amount of weight lost after eight weeks was 13.86 pounds and only 9.5 pounds when the follow-up study was done eight weeks later. In terms of percentage overweight, subjects in group B lost a mean of 5.1% from their beginning weights after the eight week treatment, and at 16 weeks had lost only 4.6% from their initial weight. Subjects thus gained an average of 4.36 pounds or .5% during the eight week period after treat-

ment. Subjects in group A averaged 15.87 pounds of weight loss after the eight weeks of treatment and 21.0 pounds on the follow-up eight weeks later. Subjects in group A thus lost an average of 7.3% from their beginning weights at eight weeks, and at 16 weeks had lost 8.7%. Subjects, therefore, lost an additional 5.1 pounds or 1.4% on the average during the eight weeks after treatment. These results of weight loss for both groups are summarized in Table C.

The difference in the amount of weight lost between members of groups A and B after 16 weeks was a mean amount of 11.5 pounds per person, people in group A having lost the more weight. The difference in the percentage of weight lost in relation to the amount the subject was overweight between the two groups was 4.1%, again with group A losing a bigger percentage of weight. Results of comparisons between the two groups are summarized in Table D.

Because of the design of the study and because of the unusually high attrition rate, a t-score could not be utilized with the average weight loss between groups A and B. For this reason a least squares regression line was constructed (Parsons, 1974). In this study it was assumed that a relationship existed between the beginning weights of the subjects and the weights of the subjects 16 weeks after treatment. Based on this assumption, a regression line was constructed using the beginning and finishing percentage overweight of both groups. After having estimated the expected finishing value for each subject (y') from the regression line, each subject's y' was subtracted from the actual finishing weight (y), thus a difference score for each subject was derived. After com-

puting the difference score for each subject, a mean difference score for each group was found in order to test for a significant difference from the actual weights and expected weights. A mean difference score of +.94 was found for group B and a mean difference score of -2.40 for group A. These figures mean that subjects in group B actually gained an average of .94% from what was expected of them from the regression data and subjects in group A lost an average of 2.40% more than their expected weight loss. A standard t-score was then computed from the above data to ascertain if the difference between the two groups was statistically significant (Plutchik, 1974). The t-score was found to be 1.39 with 13 degrees of freedom. This figure was not significant at the .10 level.

Questions From Groups A and B of Those Finishing Treatment

In addition to the main objective of this thesis, information concerning the protein sparing diet was also gathered. Four basic questions were asked of those who finished the eight week treatment. These questions were asked at the eight week weight check and included asking them were they ever sick on the diet, did they feel better on this diet than others they had tried, did the protein milk shakes curb their appetite, and did they experience any side effects that they knew of. Everyone in group A and in group B answered "No" to the question of whether or not they were sick on the diet. Also, every subject answered "No" to the question about experiencing any side effects. All four subjects in

group A and seven of eleven in group B reported feeling better on the diet than others they had been on. The other five group B subjects said they felt about the same on this diet as they had on others they had tried. Finally, three of the subjects in group A reported that the protein milk shake curbed their appetite while ten of the subjects in group B reported that they were not hungry on this diet. Results of these questions are summarized in Table E.

Questions From Groups A and B of Those Not Finishing Treatment

Those who did not finish the eight week treatment were called and asked why they did not finish the program, were there any side effects they knew of, did they feel hungry on the protein milk shakes, did they feel better on this diet than others they had tried, and finally, they were asked had they been concerned about recent reports of the harmful effects of "liquid protein". Of those assigned to group A, two quit after one week of treatment because they "got tired" of the diet, one quit after three weeks because she "heard it was not good for you", and one quit because she got pregnant. Of those who quit treatment in group B, four quit because of various sickness (two said it made them nauseated, one said it gave her a headache, and one said the diet made her dizzy), one quit because she heard it was "bad", another stopped because it made her "nervous not eating", and finally, one quit because she felt she was not losing enough weight. Three of the group B subjects could not be reached. Of those in group A, three said they did not feel hungry on

this diet and seven in the comparison group said they were not hungry on this program. These results are summarized in Table F.

TABLE B: INITIAL WEIGHTS OF ALL SUBJECTS

		Subject	Starting Weight	Starting % Overweight
Finished Treatment	Group A	1-f	152 lbs.	24 %
		2-f	228 lbs.	52 %
		3-f	169 lbs.	30 %
		4-m	231 lbs.	23 %
		MEAN	195 lbs.	32.2%
	Group B	1-m	227 lbs.	27 %
		2-m	230 lbs.	16 %
		3-f	176 lbs.	31 %
		4-m	220 lbs.	22 %
		5-f	194 lbs.	37 %
		6-m	174 lbs.	20 %
		7-f	168 lbs.	21 %
		8-f	178 lbs.	20 %
		9-f	156 lbs.	15 %
		10-f	147 lbs.	14 %
		11-f	258 lbs.	40 %
		MEAN	193.1 lbs.	23.9%

		Subject	Starting Weight	Starting % Overweight
Did Not Finish Treatment	Group A	5-f	140 lbs.	18 %
		6-f	138 lbs.	14 %
		7-f	132 lbs.	12 %
		8-f	172 lbs.	25 %
		MEAN	145.5 lbs.	17.25%
	Group B	12-f	146 lbs.	13 %
		13-f	186 lbs.	28 %
		14-f	164 lbs.	30 %
		15-f	176 lbs.	31 %
		16-f	155 lbs.	19 %
		17-f	180 lbs.	32 %
		18-f	147 lbs.	13 %
		19-f	152 lbs.	18 %
		20-f	204 lbs.	38 %
		21-f	182 lbs.	22 %
		MEAN	169.2 lbs.	24.4%

TABLE C: ACTUAL AND EXPECTED WEIGHT LOSS OF CLIENTS COMPLETING TREATMENT

Group A

Client	Beginning % overweight	Beginning wt in lbs.	% overweight 8 weeks	% overweight 8 week follow-up (y)	Predicted % overweight--8 week follow-up (y')	Difference y - y'
1-f	24 %	(152 lbs)	21.4% (142.5 lbs)	22 % (147 lbs)	18.5%	+3.5
2-f	52 %	(228 lbs)	45.5% (211 lbs)	44 % (204 lbs)	43.7%	- .7
3-f	30 %	(169 lbs)	19 % (155 lbs)	17 % (139 lbs)	23.9%	-6.9
4-m	23 %	(231 lbs)	12.2% (208 lbs)	12 % (206 lbs)	17.6%	-5.6
MEANS	32.2%	(195 lbs)	24.9% (179.1 lbs)	23.5% (174 lbs)	25.9%	-2.40
Group B						
1-m	27 %	(227 lbs)	25.4% (213 lbs)	27 % (226 lbs)	21.8%	+5.2
2-m	16 %	(230 lbs)	9.9% (214.5 lbs)	10 % (216 lbs)	11.3%	-1.3
3-f	31 %	(176 lbs)	26.3% (164 lbs)	26 % (162 lbs)	24.8%	+1.2
4-m	22 %	(220 lbs)	10.2% (196 lbs)	10 % (193 lbs)	15.7%	-5.7
5-f	37 %	(194 lbs)	35.2% (187 lbs)	36 % (191 lbs)	30.2%	+5.8
6-m	20 %	(174 lbs)	15.4% (160 lbs)	16 % (166 lbs)	14.9%	+1.1
7-f	21 %	(168 lbs)	19.2% (159.5 lbs)	20 % (166 lbs)	15.8%	+4.2
8-f	20 %	(178 lbs)	17.6% (169 lbs)	18 % (173 lbs)	14.9%	+3.2
9-f	15 %	(156 lbs)	9.6% (141 lbs)	10 % (146.5 lbs)	10.3%	-0.3
10-f	14 %	(147 lbs)	8.7% (134 lbs)	9 % (138.5 lbs)	9.5%	+0.5
11-f	40 %	(258 lbs)	29.3% (237 lbs)	30 % (243 lbs)	32.9%	-2.9
MEANS	23.9%	(193.1 lbs)	18.8% (179.4 lbs)	19.3% (183.6 lbs)	18.4%	+0.94

TABLE D: SUMMARIES ON GROUPS A AND B OF THOSE WHO FINISHED TREATMENT

	Mean weight lost--8 weeks	Mean weight lost--16 weeks
Group A	7.3% (15.87 lbs.)	8.7% (21.0 lbs.)
Group B	5.1% (13.86 lbs.)	4.6% (9.5 lbs.)
Difference of two groups (A-B)	2.2% (2.0 lbs.)	4.1% (11.5 lbs.)

TABLE E: QUESTIONS FROM GROUPS A AND B OF THOSE WHO FINISHED TREATMENT

	Curbed your appetite?	Made you sick?	Felt better?	Side effects?
Group A	3-yes / 1-no	4-no	3-yes / 1-no	4-no
Group B	10-yes / 1-no	11-no	7-yes / 4-no	11-no

TABLE F: QUESTIONS FROM GROUPS A AND B OF THOSE WHO DID NOT FINISH TREATMENT

	Curbed appetite?	Felt better?	Side effects?	Concerned about protein reports?	Why stopped treatment?
Group A	3-yes 1-no	1-yes 3-no	4-no	4-no	2-Tired of dieting. 1-Heard it was "bad". 1-Pregnancy.
Group B	7-yes 3-no answer	3-yes 4-no 3-no answer	5-yes 2-no 3-no answer	3-yes 4-no 3-no answer	4-Got sick. 1-Heard it was "bad". 1-Got nervous not eating. 1-Not losing enough weight. 3-No answer

CHAPTER IV

DISCUSSION

Because of the lack of proof for statistical significance, the null hypothesis cannot be rejected in this experiment. None the less, there still remains a substantial difference between the amount of weight lost between the subjects in each group, with the experimental group (group A) losing an average of 11.5 pounds more after 16 weeks since beginning of treatment than the comparison group (group B). The question then is what caused the difference that was found.

There are several possibilities to the above question. First and foremost, the differences in treatment could be the cause of more weight loss by group A. If the experimental design was perfect and if all conditions were adequately controlled, then the different treatment could be justifiably considered as the cause of better results. The experimental design was not perfect in this experiment though. First of all, the possibility of experimenter bias entering into the picture was great. It was not feasible to use one experimenter and two therapists which would have been preferable. Since the experimenter and the therapist were the same, it was hard to control for this variable. The small number of subjects in the study could also have been the cause for some difference between the two groups. This, of course, was one possible reason that significance was not obtained. From a statistical standpoint, the fewer subjects an experiment has, the bigger the difference the results must be

between a control and an experimental group for significance to be found. A larger study may have proved advantageous.

There is also another very important variable that could have influenced results. Although an attempt was made to control for the difference in percent overweight between the two groups, this in actuality did not occur. Because a high attrition rate was encountered and because in group A the heavier individuals finished treatment and the lighter ones did not, group A's mean percentage overweight of those who finished treatment was considerably heavier, 32.2% as compared to 23.9% of those who finished in group B. This figure was significant at the .10 level as stated in Chapter III. It is quite possible that subjects in group A lost more weight because they had more weight to lose.

Another possible confounding variable was the fact that there was no control over the interaction between subjects in both groups. Subjects in the experimental group could have found out about the different treatment they were getting and hence motivated to lose more weight. There was also no control over what happened during the eight week follow-up period. It is not known if there were attempts by subjects to actively continue to lose weight. Any number of other methods could have been used by subjects in both groups to continue to lose weight. This question could have been asked at the follow-up weight check but it was not. Because of this and because of the nature of the design, these questions cannot be answered.

Finally there is a possibility that better results could have been achieved if more intensified behavior modification methods would have

been employed. The very short behavior modification programs, only an hour and 45 minutes with each client, is unique. Most programs using behavior modification spend from 10 to 20 hours of actual client contact in treating obesity (O'Leary and Wilson, 1975; Karen, 1974). As stated in Chapter II, one of the purposes of this study was to ascertain if a relatively short behavior modification program, when accompanied by a protein sparing diet, could produce better results than have been achieved in the past. It would now seem that more time than was spent with each client would have been preferable. (It should be noted, however, that the subjects in group A that dropped out of treatment were not as heavy as those who finished. A possible cause of this might have been that those who were less overweight did not feel as great an urgency to stay with the treatment as those who were more obese. It could be that behavior modification is better suited for the very obese.) Possibly more research using the same concept as that of this thesis, but with a more extensive behavior modification program would achieve more optimum results.

At this point something should be said about how to evaluate research concerning the treatment of obesity. Coates and Thoresen (1978) point out the inadequacies of many studies they encountered in this area. For a study to be truly valuable, Coates and Thoresen say it should contain individual data. That is, individual weights as well as group statistics such as means, etc. should be given. They also say that something should be said about how overweight subjects are. Further more, follow-up data is an absolute necessity in research concerning obesity. One cannot

adequately evaluate a weight reduction program unless follow-up data is available according to Coates and Thoresen. Finally, efforts should be made to contain a control or comparison group when research is being done in this area. These criteria were all met in this study. For a better evaluation, however, a more long term follow-up would be appropriate. In Chapter I it was pointed out that the true test of a program in the treating of obesity is it's ability to not only cause weight loss but to keep the weight off. Some researchers feel that even one to two year follow-up studies are inadequate (Craddock, 1976; Stuart, 1972). It would be interesting to weigh those who finished treatment in this study in two years.

One of the obvious problems which occured with this experiment was the high attrition rate. This, however, is not unique. With many, if not most diet programs, a large percentage of persons who start treatment never finish. It is still odd, though, that almost half of the volunteer subjects did not finish the eight week treatment period, even after signing a statement saying they would. As has already been stated, all those who dropped out were women, but then there were only five men in this study. The probability of this occurence, however, is very low (.011). The reason for only female dropouts can only be speculation from the available data. Of those that dropped out, five experienced some side effects which caused them to quit. No one that finished treatment reported any advorse side effects. This can explain why these five did not finish treatment. The fact that the news reports of deaths linked with "liquid protein" came during the experiment probably also contributed

to the high attrition rate, even though only three reported being concerned about this.

Although not a primary purpose of this study, the properties of the protein sparing diet were also tested for, the results of which were given in Chapter III. Since no placebo group was used, one must interpret these results with the idea that some of the values given the protein sparing diet may have been caused by a placebo effect. It would seem, however, that at the very least, a protein sparing diet does affect to some degree the curbing of appetite. Twenty-three out of 26 who answered the question of whether or not the diet curbed their appetite answered that it did. This is probably more than could be attributed to a placebo effect. Other properties of the protein sparing diet were not as readily seen as was shown in Chapter III.

Finally, one might ask if any new light has been shed on the problem of obesity with this experiment. The answer to this question is hard to ascertain. Obviously the experimental method of combining a protein sparing diet with behavior modification as prescribed in this study is not in itself sufficient to continue its use for others. This is so because significant difference was not shown between the two groups and although there was more weight lost by group A, and although three of the four subjects continued to lose weight after the initial eight weeks of treatment, only one of those lost a significant amount during the follow-up period (16 pounds). No one in either group lost the desired amount of weight in 16 weeks time. Still it would seem that the behavior modification procedure did effect better results than simply using a protein

sparing diet by itself. As stated previously in this chapter, the amount of time spent with each client was very small when compared with most behavior modification treatments (an hour and 45 minutes total). It is possible that if more time would have been used in treatment, emphasising behavior modification techniques, better results would have been attained. Only further research can answer this question. A better treatment for obesity is hence still needed.

APPENDIX A

PERSONAL INFORMATION AND CONSENT FORM

Name_____ Sex_____

Phone_____ Age_____

Address_____ Present Weight_____

Height_____

1. How much weight do you wish to lose?_____

2. Briefly what ways have you tried to lose weight in the past?

3. Have any of these ways ever worked and if so how much did you lose?

4. Are you presently taking any medication?_____ If so, list those you routinely take and what they are for.

5. Do you now suffer from any heart, kidney, or liver disease or any other condition that this weight program will effect adversly?

6. Do you consciously know anyone participating in this study other than yourself?_____ If yes, are they related to you?

7. Are you willing to stay on the described diet for at least eight weeks or until you lose the desired weight, which ever comes first?

APPENDIX B

PERSONAL CONSENT FORM

The purpose for the weight reducing program I am participating in is to gain insight into various methods utilized for losing weight. I understand that the results obtained will be used for a Master Thesis at the University of Houston at Clear Lake City. I further understand that confidentiality will be kept on all records, that results obtained will be reported in an anonymous manner, and that no one will have access to any personal records except the experimenter (i.e., M. E. Kirkwood).

Sign _____ Date _____

APPENDIX C

HOW TO PREPARE PROTEIN MILK SHAKE

Ingredients: Slender Now Formula I powder, 8 ounces of non-fat milk, artificial sweetner or honey to taste, 1 teaspoon of desired extract (banana, vanilla, etc.), ice (4 or 5 cubes), and 1 tablespoon of Formula 2 (polyunsaturated fatty acids) in one shake per day.

To mix: Measure all the ingredients into a blender with recommended amount of the powder.* Blend 1 to 2 minutes at high speed. Pour into a tall glass.

*Quantity of Formula I to be used. If your weight is--

	1st day	2nd day	3rd day	thereafter
140 lbs. or less	2	2	2	1 1/2
140-180 lbs.	2	2	2	2
180-220 lbs.	2	2	2	2 1/2
220 lbs. or more	3	3	3	3

(in level tablespoons)

APPENDIX D

PROGRESS SHEET

	Weight in Pounds	(measure in inches) Upper Arms	Abdomen	Hips	Thighs
Beginning					
7th day					
14th day					
21st day					
28th day					
35th day					
42nd day					
49th day					
56th day					

APPENDIX E

INSTRUCTIONS IN BEHAVIOR MODIFICATION TO EXPERIMENTAL GROUP A

Cue elimination

1. Eat in only one room of the house.
2. Do nothing while eating.
3. Make available only proper foods by shopping from a list and shopping on a full stomach.
4. Clear dishes from table directly into the garbage.

Cue suppression

1. Have friends over to eat.
2. Prepare and serve only small quantities.
3. Make high caloric foods time consuming to prepare.

TIPS: Swallow food in your mouth before taking another bite and always eat with your utensils, never with your hands.

Cue strengthening

1. Keep food and weight chart.
2. Allow extra money for proper foods.
3. Experiment with attractive methods of preparing diet foods.

This program is a modification of Stuart's (1971).

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