THE EFFECT OF INCLUDING A SIGNIFICANT OTHER IN BEHAVIORAL TREATMENT OF OBESITY

OLGA JEAN HEATH

NOTICE

The quality of this microfiche is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us a poor photocopy.

Previously copyrighted materials (journal articles, published tests, etc.) are not filmed.

Reproduction in full or in part of this film is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30. Please read the authorization forms which accompany this thesis.

THIS DISSERTATION
HAS BEEN MICROFILMED
EXACTLY AS RECEIVED

AVIS

La qualité de cette microfiche dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de mauvaise qualité.

Les documents qui font déjà l'objet d'un droit d'auteur (articles de revue, examens publiés, etc.) ne sont pas microfilmés.

La reproduction, même partielle, de ce microfilm est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30. Veuillez prendre connaissance des formules d'autorisation qui accompagnent cette thèse.

LA THÈSE A ÉTÉ
MICROFILMÉE TELLE QUE
NOUS L'AVONS REÇUE

THE EFFECT OF INCLUDING A SIGNIFICANT OTHER IN BEHAVIORAL TREATMENT OF OBESITY

Olga J. Heath, B.A.

A Thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science

Department of Psychology
Memorial University of Newfoundland
August 1979

St. John's Newfoundland

ABSTRACT

The effectiveness of including a Significant Other person was evaluated for group treatment of obesity. The first 22 clients were randomly assigned to two treatment groups, the last eight clients comprised a waiting-list Control group. For the Significant Other treatment group clients attended the eight weekly meetings with their partners who were instructed to participate actively, were trained in reinforcement techniques and advised on ways to assist the weight-reducing partner. The Alone treatment group followed the same program except that their partners did not attend group meetings. The waiting-list clients were offered the treatment program at the six-month follow-up point. The treatment program followed was Stuart's "three-pronged approach" to weight loss. Dependent measures were weight lost, percentage overweight lost and change in skinfold measure. Measures were taken at pre-treatment, at the end of treatment, and at follow-ups six and ten months after the termination of treatment. The treatment groups lost more weight than the Control clients. There was no support for the hypothesis that inclusion of a Significant Other facilitates treatment of obesity. These findings are discussed with reference to observations about group and marital interactions.

ACKNOWLEDGEMENTS

To Dr. David S. Hart, many thanks for patience, encouragement and direction. To the Counselling Centre for their help and generosity in providing facilities and equipment for the study.

Also to Eileen Noel for many hours spent discussing the research.

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

Obesity has become a serious problem for North Americans. At the present time at least one in three Americans is obese (Jeffrey & Katz, 1977). Obesity has been extremely resistant to treatment and as a result the literature has been pessimistic. Stunkard and McLaren-Hume (1959), in a detailed review of the published work completed to that date, show that the various customary approaches have been ineffective. Stuart and Davis (1972) reiterate this negative evaluation of traditional treatment results: "Well-intended professional efforts . . . have produced, with not many exceptions mediocre results" (p. 24).

Behavioral Principles of Weight Control

Current research utilizing behavioral principles in combination with the age-old recognition of excess poundage as the result of a positive caloric balance between intake and expenditure is changing the pessimism surrounding weight loss. Forty-five years ago Newburg and Johnston (1930) came to the conclusion that obesity is "never directly caused by abnormal metabolism but is always due to food habits not adjusted to the metabolic requirement--either the ingestion of more food than is

normally required or the failure to reduce intake in response to a lowered requirement." More recently, Mayer (1968) and Wilson, Farber, Kimbrough, and Wilson (1969) have agreed that virtually all cases of obesity are caused by excessive caloric intake and a deficient level of energy expenditure. This supposition has been integrated into the basic premises upon which behavior therapy for obesity is founded.

The three main assumptions as stated by Hall and Hall (1974) are as follows:

1) That in otherwise healthy individuals, excess body fat results from excess food ingested for the energy requirements of the individuals.

2) Decreases in food ingestion or increases in activity, or both, produce weight loss.

3) Behaviors leading to food ingestion, or those involved in the activity can be modified by correct programming of the environment and the individual. (p. 352)

Hall and Hall's (1974) program for obesity management stems from an operant conditioning learning paradigm. This approach characterizes the major part of recent research in the control of obesity. Intervention based on such principles presupposes that eating and exercise are clearly definable behaviors that are under environmental control. As is any behavior, eating and exercise are related to both cues and consequences in the environment. Self-monitoring of the cues and consequences of the behaviors concerned especially during baseline is critical in order

to determine already existing patterns. Using the information gathered, a program can be specifically constructed to allow for an individual's difficulties and strengths.

Conceptualizing the problem of obesity in terms of inappropriate cues and consequences allows for the treatment of the problem through either or both of the two major avenues. Excessive eating can be seen as a maladaptive behavior which must be decreased. In removing the cues or those stimuli which initiate the overeating (e.g., the sight of tempting food) one lowers the probability of the behavior occurring. By altering the consequences of inappropriate eating, and in particular, removing those maintaining the behavior, one further reduces the liklihood of the behavior occurring.

Exercise, in contrast to overeating, is a behavior which must be increased in frequency in the treatment of obesity. An obese person's environment can be thought of as not providing any cues of sufficient strength to produce the behavior of exercising. One can therefore increase the probability of exercise by altering the environment such that it provides cues for that behavior. One can further increase the probability of exercise being performed by introducing positive consequences or rewards for exercising. These reinforcements can be either self or other controlled.

Components of a Weight Control Program

The specific procedures which are most commonly utilized in an operant approach to weight control are self-monitoring of weight, food intake and energy expenditure; stimulus control, contingency management, and contracting (e.g., Penick, Fillion, Fox, & Stunkard, 1971; Stuart & Davis, 1972; Wollersheim, 1970).

Self-Monitoring. Self-monitoring has long been recognized as a form of treatment in its own right (Kanfer & Karoby, 1972; Kazdin, 1974a, 1974b; Sieck & McFall, 1976). It consists, in the management of obesity, of requiring the client to keep a detailed record of eating and exercise behavior. The client must record the caloric content of what and how much is eaten, where and at what time, as well as who else is present and what is the mood state when consuming the food or drink (Stuart & Davis, 1972). If exercise is also being monitored the client is asked to mark down each time any activity is completed which burns calories. The record includes the time, type and caloric value of the exercise, the amount of time spent, and the speed of the activity as well as who was with the client (Stuart & Davis, 1972). These detailed forms provide "knowledge of the circumstances under which eating [and exercise] occur [which] provides clues to the ways in which it can be controlled, through identification of the current controlling conditions" (Stuart, 1967, p. 359).

Self-monitoring, used most frequently in assessment, is the source of information for formation of the client's individualized behavioral program. The client finds and alters appropriately the cues or lack thereof for the behavior; and those consequences which are maintaining it or failing to do so. The research on self-monitoring as a form of treatment of obesity is presently inconclusive. A study published by Romanoyzk (1973) showed self-monitoring to be as effective as a behavior management group. However, recent work suggests that while it may have a demonstrable initial effect, its positive results are short-lived and it is most effectively used in combination with other behavioral techniques (Bellack, 1976; Jeffrey, 1977; Romanczyk, Tracey, Wilson, & Thorpe, 1973).

Stimulus Control. Perhaps the most widely known and used behavioral technique is stimulus control. This approach is used in weight control to firstly alter the client's environment so that the cues which elicit inappropriate eating are eliminated as much as possible. It is then used to produce cue associations for exercising. The first case is exemplified in the following stimulus control procedures. "Arrange to eat only in one room; . . . . Avoid other activities while eating; . . . . Buy nonfattening food; . . . . Always shop from a list" (Stuart & Davis, 1972, pp. 75-76). A good example of developing a cueing system for exercise is assigning a specific time

of day for exercise. The client is instructed to avoid scheduling times for exercise when he is likely to be diverted from the goal. It is suggested, for example, that every evening after dinner the client go for a 15-minute walk, or that during an hour TV program which the client invariably watches, he jog on the spot during each commercial. The important factor in either case is that the cue or potential cue be recognized and responded to in the appropriate manner. Stimulus control tactics have been used successfully both alone (Stuart, 1967), and more often, in combination with other techniques (e.g., Harris & Hallbauer, 1973).

Contingency Management. The term contingency management will be used to denote the alteration or implementation of contingent reinforcement. In treating obesity, reinforcement contingent on appropriate eating and exercise behaviors is of major importance. An example of contingency management procedures for use in the control of eating behavior is suggesting to the client that for each meal during which eating behavior is controlled a certain amount of money be set aside to buy whatever the client wishes.

In dealing with exercise the therapist suggests, for example, relaxing in a warm bath and listening to music (if that is reinforcing to the client) after a period of exercise. The therapist insures through these procedures that the appropriate behavior is followed as immediately

as possible by a positive consequence.

Contingent reinforcement of desired behavior can be achieved through self-reinforcing strategies or other controlled reinforcement systems. Most behavioral approaches to weight control incorporate both strategies of reinforcement (e.g., Jeffrey, Christenson, & Pappas, 1972; Penick et al., 1971; Stuart, 1967), although there are some studies using exclusively self-control procedures (Harris, 1969; Mahoney, 1974). Jeffrey (1974) looked at the comparative effectiveness of external versus self-control procedures in weight loss programs. His findings indicate that while treatment is ongoing both approaches are equally effective. However, the self-control procedures were superior in maintaining the effects of treatment.

Contracting. Contracts are implicit in any therapeutic interaction insofar as certain expectations are held on both sides. However, specific formal contracts are often an integral part of weight control programs (Dinoff, Rickard, & Colwick, 1972; Harris & Hallbauer, 1973; Mann, 1972). The essence of such contracts is some form of recompense either for certain behaviors supposedly leading to weight loss or for the weight loss itself. Contracts are often set up in the form of an initial deposit on the part of the client which is returned contingent upon prearranged behavior (e.g., attending meetings, completing assignments). Contracting has been

used alone fairly successfully (Harris & Bruner, 1971), but it has been found to be most effective as part of a treatment package (Foreyt, 1977; Jeffrey, 1974; Rimm & Masters, 1974).

Package Program

There are numerous studies showing that combinations of the self-control procedures mentioned above are more effective than either single behavioral procedures in isolation or more traditional approaches (e.g., Bellack, 1976; Harris, 1969; Harris & Hallbauer, 1973; Penick et al., 1971; Romanczyk et al., 1973; Wollersheim, 1970).

Stimulus control and contingency management have generally been used as the basis for the comprehensive behavioral weight control programs currently being published and used (e.g., Ferguson, 1975; Jeffrey, 1977; Musante, 1976; Stuart & Davis, 1972). Although the superiority of the package treatments has been generally acknowledged, the losses of approximately 11 lbs. (5 kgs.) generally reported in the literature, are often not "likely to be clinically, medically, or cosmetically significant" (Brownell, Hackerman, Westlake, Hayes & Monti, 1978, p. 323).

Maintenance of Weight Loss

Stuart's paper 'Behavioral Control of Overeating' published in 1967, showed impressive success rates. He

reported 80 percent of patients in treatment lost more than 20 pounds and 30 percent lost more than 40 pounds. No controls were instituted. In this study, Stuart continued booster follow-up sessions for 11 months for his 10 patients, a procedure which may partially account for the high success rates over such a long period of time. Many other studies have shown excellent results using a behavioral approach (e.g., Hansen, Bordon, Hall & Hall, 1976; Harris & Hallbauer, 1973; Levitz & Stunkard, 1974; Musante, 1976; Penick et al., 1971; Romanczyk et al., 1973). However, none of these studies utilize a sufficient follow-up period (Hall & Hall, 1974). Hall and Hall (1974) review 18 studies using behavioral techniques in the management of obesity. They report that 14 of the 18 studies included follow-up.

> In general, those studies with follow-up periods of 12 weeks or shorter . . . find that differences between experimental and control groups remain significant while the few controlled studies including longer follow-up periods have generally found that the originally observed differences between experimental and control groups were no longer significant (Hall & Hall, 1974, p. 359).

The crucial nature of long term follow-up is emphasized in Wilson's (1978) paper on methodological considerations in obesity research. "The significance of this striking deficiency (lack of long term follow-up) is highlighted by the fact that obesity is a clinical disorder that has been characterized by consistently high

relapse rates" (p. 698). Although the need for long term follow-up is reiterated in every paper published on research in obesity, there are few who define numerically what 'long term' entails. Hall and Hall (1974) suggest six months as a minimum. Brightwell and Sloan (1977) establish a criterion of 26 weeks of no contact with therapist as sufficient for categorization as long term follow-up.

It is revealing that of the many studies published, Brightwell and Sloan (1977) could find only 17 which utilized follow-up periods of 26 weeks or longer. As longer follow-up periods were utilized, the success rates for behavioral treatment programs dropped significantly. Several studies reported no difference between control and treatment groups after long follow-ups (e.g., Foreyt & Kennedy, 1971; Harris & Bruner, 1971; Shulman, 1971). This suggests that maintenance of therapeutic effect is a serious problem with the behavioral treatment of obesity. Hall (1973) maintains that the poor follow-up results in behavioral treatment may be due to excessive dependency upon the therapist for management. Hansen et al. (1976) concluded that the subjects whose termination of active treatment constituted a lesser change in external demand characteristics did better at 12 month follow-up than those clients who were in greater contact and received regular encouragement from the therapist.

Inclusion of Significant Other in Treatment

As a result of studies showing relatively poor outcomes, research is currently being concentrated on non-technique variables which may facilitate weight loss. The importance of family involvement in dealing with deviant behavior in children has been clearly illustrated in Patterson's (1967) work. He found that unless parent-child interactions were modified, therapeutic success was severely limited. Stuart and Davis (1972) maintain that the same principle holds true for the management of obesity:

> Any effort to suppress eating behavior which is problematic must first attend to the social interactional exchanges which both produce and maintain it. Failure to attend to social factors may in effect ask the overeater to modify his behavior while the pathogenic shaping influences continue to operate unchecked. (p. 19)

Unpublished data collected by Stuart and Davis (1972) and referred to in Slim Chance in a Fat World suggests that spouses sometimes "not only not contribute to their wives' efforts to lose weight, but they may actually exert a negative influence" (p. 20). Their findings show that:

> (1) Husbands were seven times more likely than their weight reducing wives to initiate food relevant topics of conversation.
> (2) Husbands were almost four times more likely than their wives to proffer food to the spouse.
> (3) Wives were slightly over twice as likely as their husbands to reject food offers, and
> (4) Husbands were over twelve times as likely to offer criticism of their wives' eating behavior than they were to praise it (pp. 18-19).

Garn (1970) also maintains that the "key person in obesity appears to be the mother or mother surrogate . . . who has the keys to the cupboard and can be the pusher . . . of calories" (p. 124). One would therefore predict that therapeutic programs aimed at obesity necessitate taking significant social interactions into account in order to produce long-lasting changes. One avenue for improving the chances of success would be to include the Significant Other in treatment. In this manner both the individuals can be made aware of the consequences of their interactions. The Significant Other is clearly in a better position than is the therapist to deliver social or tangible reinforcements when appropriate. Saccone and Israel (1976) report positive results at four months follow-up indicating Significant Other mediated reinforcement is more effective than therapist mediated reinforcement. Similarly, recognizing the importance of the Significant Others, Jeffrey and Katz (1977) in their program, 'Take It Off And Keep It Off' devote an entire chapter to the importance of obtaining support from family and friends. They too maintain that:

> What others do as well as the way they act toward us, influences our behavior. And this influence can make or break our efforts to change. A supportive social environment . . . makes your efforts to permanently alter eating and exercise habits much easier. On the other hand, if the people around you criticize or undermine your attempts to lose weight,

> trying to change your eating habits can be a very frustrating and difficult experience (p. 139).

Jeffrey and Katz, like Stuart, encountered blatant and at times subtle sabotaging of a spouse's efforts to lose weight.

> . . . spouses of obese clients have admitted they wanted our clients to stay fat, because a weight loss would make them more attractive and more likely to engage in extramarital affairs. In other cases both husband and wife subtly encouraged each other to overeat or mutually sabotaged their efforts to lose weight (p. 63).

Amit, Sutherland, and Weiner (1976) mention much the same phenomenon in Stay Slim for Good. They list specific examples from their clinical experience in which husbands or wives very clearly sabotage the possible successful weight loss of their spouse. Mahoney and Mahoney (1976) involved family members in a weight control program through 'social support engineering'. In this study family involvement was loosely structured, but even so was related to treatment success. Brownell et al. (1978) published a study showing extremely positive results in behavioral weight control through including the spouse in an intensive couples-training program. There were three experimental conditions:

> (1) Co-operative spouse-couples training: subjects attended all meetings with spouses. Spouses were trained in modeling, monitoring, and reinforcement techniques; (2) Co-operative spouse-subject alone; subjects attended

> meetings alone even though their spouses had agreed to become involved in treatment; (3) Non-cooperative spouse; subjects had had spouses refusing to participate in the program, and attended sessions alone (Brownell et al., 1978, p. 423).

The results showed that at the three and six-month follow-ups the spouse training condition had produced significantly greater weight losses than either of the other two groups. The group with co-operative spouse did no better than those with non-cooperative spouse. Brownell et al's. (1978) findings suggest that particularly in long-term follow-up, spouse training may be of help in promoting and maintaining weight loss.

Conclusion

The research shows that behavioral treatment programs for obesity are effective. There is evidence that each component, while having some effect, is not a potent treatment in its own right. Although the effectiveness of behavioral approaches has been amply demonstrated in comparison to no-treatment control groups and traditional treatment approaches, the weight losses are often judged clinically insignificant.

In the search for more positive results, several variables within the program have been manipulated. Given the demonstrated importance of family involvement in other fields (e.g., medical rehabilitation), manipulation of the variable of significant other involvement is an

important area for further research. The present study was undertaken in view of the lack of research in what promises to be a fruitful area.

Purpose of the Present Study

Although there is a voluminous amount of literature in the area of behavioral treatment of obesity, there are several obvious deficiencies. A major problem of great concern is the maintenance of weight losses. It has also been pointed out that weight losses in treatment are often not clinically significant. Thus there is room for investigation into factors which might enhance weight losses during treatment and throughout follow-up.

Involvement of the Significant Other in treatment is an obvious step. Not only would the client have a resident 'therapist', trained in appropriate reinforcement strategies, but also a possible source of sabotage could be eliminated simultaneously. The Significant Other as therapist has several obvious advantages. Firstly, the Significant Other is present in most of the crucial situations in which the client requires reinforcement and guidance. A second factor is that the partner will continue to be available long after treatment ceases. Thirdly, they are in a unique position in terms of the subjective value of the verbal reinforcement which they can deliver to the client.

For the above reasons, it was decided to undertake a research project aimed at evaluating in terms of weight loss, percentage weight loss, and skinfold measurement loss, the utility of including the Significant Other in treatment sessions. It was thought that particularly over the follow-up period the clients attending with a partner would be in a more favorable position.

The treatment selected for use in the project was Stuart's (1967) "three-pronged approach" to weight loss. This treatment package was chosen because of its ease of use and record of success in previous research. This treatment approach fit comfortably into eight group sessions. It was decided to have three follow-up sessions, the final one being 10 months after termination of treatment. This period of follow-up satisfied any of the definitions in the literature of long-term follow-up. Because of ethical and practical considerations it was decided to see the control clients at the initial interview and then eight months later at which time they were to be offered treatment.

Although absolute weight loss is not the most desirable of dependent measures, it is the one most frequently used in the literature. It has been argued that this measure is inadequate in that it does not allow for the effects of initial or ideal weight. These factors have been taken into account through the use of the "reduction quotient" (Feinstein, 1959; Mahoney, 1973).

This quotient is obtained by dividing the number of pounds lost by the number of pounds overweight. Without losing the advantages of the reduction quotient, a more meaningful figure can be obtained by multiplying the reduction quotient by 100 and getting a measure of percentage overweight lost (Romanczyk et al., 1973). Thus it was decided to use percentage overweight lost as a concomitant dependent variable. Use of skinfold measure is often suggested as a supplementary or even primary dependent variable as long as care is taken in obtaining the measures (Franzeni & Grimes, 1976; Johnson & Stalonas, 1977; Mayer, 1968).

It is hypothesized that including the significant other in treatment should make no significant difference in the dependent variables over the 8-week treatment period. However, it is predicted that the group which attended with a partner should over the follow-up period do better on the dependent measures than the group which attended alone. It is also hypothesized that both treatment groups will do better over time on all dependent measures than the no-treatment Control group.

METHOD

Subjects

The clients were members of the community who responded to an advertisement placed in a local paper asking for individuals who were "at least forty pounds above ideal weight." Prospective clients were asked to call the university at which time they were given a brief description of the program, told that a 25 dollar deposit was required and if still interested were given an appointment time. The average age of the clients was 37.17 ranging from 14 to 68. The average weight was 201.1 lbs. (90.5 kg.). There were 30 females and 2 males. Clients were told that they could not participate if they were currently seeing a doctor for their weight problem or if there was any medical cause for their obesity. They were told that a medical examination and a physician's permission were required before they could begin treatment. A refundable deposit of 25 dollars was also required. This was to be refunded at the end of treatment if all sessions had been attended or made up in case of illness. Clients were made aware of the amount of time and effort required to complete the course and were encouraged to honestly evaluate their current level of motivation.

Clients were assigned to one of the two treatment groups in order of appearance for appointments (i.e., the first person who arrived was assigned to the Significant Other group, the next to the Alone group and so on up to a maximum of 12 in each group). The Control group was made up of those still on the waiting list who were willing to come in and be weighed with the assurance that they would get treatment at a later date. The waiting list control group was utilized in order to later assess the effect on weight and skinfold measurement which may be expected without treatment. An attention placebo control was considered but later rejected on the grounds of difficulty in achieving a satisfactory placebo treatment (Wilson, 1978) and for ethical reasons, as the investigator was dealing with a group of clinically obese persons in obvious need of treatment. The Alone group served as a form of control for the Significant Other group in that both groups received the same basic treatment package with the only variation being participation or absence of significant other in weekly treatment groups. The control was assigned non-randomly primarily on ethical grounds. It did not seem legitimate to tell clients that there was no space in treatment for them when in fact this was not the case. There is no reason to suspect that there was any difference between groups as all clients called in for appointments within a three-hour period. Initially there were 12

clients in each of the treatment groups and eight in the Control group. There were two drop-outs in each treatment group; one in each within two weeks of the beginning of treatment and one in each at the first follow-up meeting. The no-treatment Control group was not seen at post-treatment or the three month follow-up because it was impossible at that time to offer treatment. It did not seem appropriate or reasonable to ask a group of clinically obese persons to return several times for weigh-ins without offering treatment.

Apparatus

A balance-beam scale (Detecto-Medical) was used to weigh clients each week. At critical intervals a Lange Skinfold Caliper was used to measure the triceps skinfold thickness. The triceps skinfold was used because it is usually the most representative of general skinfold measures and also it is the most convenient to attain in a non-medical group setting (Setzer & Mayer, 1965).

Procedure

When clients reported for the first group meeting they were first weighed, their height was measured and the triceps skinfold thickness was taken. They were asked for their 25 dollar deposit and the permission slip which they had been asked to have their doctor sign (see Appendix

A). At this time clients were introduced to the concept of permanent weight control. The importance of changing habits was stressed. The role of the Significant Other in attending meetings was discussed in the relevant group. Clients were told to expect slow progress with the program, but they were encouraged to see the small losses as the healthiest most long-lasting method of weight loss. The concept of baseline was introduced and clients were asked to keep exact records of eating and exercise on the forms provided (see Appendices B and C) for the next week. They were also asked to fill out personal data forms (see Appendix D) and for the Significant Other group verbal interaction forms were kept (see Appendix E) during the following week. All forms were explained fully with examples.

The second lecture marked the beginning of the treatment phase. Clients were first weighed at this and at each session thereafter. Their weight was not publicly disclosed although they were free to share it if they so chose. Clients were then asked to compute their caloric allowances and subtract 500 from that, thereby calculating the number of calories that should be eaten each day. Each individual then chose the food-exchange diet (Stuart & Davis, 1972) closest to the figure which they had calculated. The food-exchange diet was explained in detail and the importance of memorizing what any particular exchange

consists of was emphasized. Clients were told that they would be required to write a simple test on the food-exchange diets. At this point they were introduced to the manner in which they could earn back their deposit of 25 dollars. A token system was developed in order to facilitate the proper refunding of money for appropriate behavior (e.g., following diet, exercising, etc.). Clients were told at this time that the university was contributing an additional 25 dollars which they could earn over the treatment period. The token system was set up to be maximally flexible but still require some evidence of habit change or at least effort on the part of the client. Each individual could earn a possible total of 250 tokens (each token equals two cents) or five dollars a week. The system was based on Stuart and Davis' (1972) Token Reinforcement Menu which they suggest as a guideline in Slim Chance in a Fat World. A form was constructed for the clients in order to assess on a weekly basis the number of tokens earned (see Appendix F). At this time clients in the Significant Other group were asked to make a contact with their partners stipulating that the client may use the money earned during the program without restriction (see Appendix G). The Significant Other group also signed a contract stating that they would do their best to aid their spouse in their weight loss efforts. Before the group ended for the second week, a sample baseline data sheet

was reviewed for each individual and the group as a whole looked for specific problem areas and suggested possible solutions. The important points concerning exercise and diet were reiterated and the clients were asked to keep track of their progress by filling in daily a blank graph indicating the level of caloric intake and calorie energy expenditure as well as any weight change (see Appendix H). Clients continued to record on this graph and the Tokens Earned Form as weekly assignments throughout treatment.

The third session began with the clients writing the test on the food-exchange diet (see Appendix I). They corrected the test themselves and if they passed the test they were awarded an additional 300 tokens or six dollars. Those who failed any test were permitted to rewrite it at a later date. The clients were then presented with a lecture on the importance of exercise in a weight loss program. Studies were quoted showing the relationship between lack of exercise, obesity and cardiovascular disease. The positive health aspects of exercise were also brought to light and people were encouraged to discuss their feelings about what exercise means to them. The importance of regularity in exercise was stressed.

It was suggested that walking is one of the best forms of exercise available and that everyone should start walking 15 minutes a day, increasing this figure by 10 minutes per week. The group with partners present were

urged to exercise as a pair. The Alone group was pressed to find a buddy for their walks. Clients were told that there would be a test on the number of calories which are expended in various activities.

The fourth meeting began with the test on exercise (see Appendix J) and again these were corrected immediately with the exception of the paragraph which was to be assessed by the instructor. Again, passing the test meant additional 300 points or six dollars for each client.

The fourth lecture was primarily concerned with situational control of overeating. Clients were introduced to the basic tenets of a behavioral approach. Concepts such as cues and consequences in relation to behavior were explained in detail with examples. It was suggested to the groups that control of eating behavior lies primarily in the environment; i.e., the situations and the people surrounding us. The basic behavioral steps to be used in establishing proper eating habits were presented. Specific cue elimination, strengthening and suppression tactics were introduced along with suggestions about how to alter the consequences of proper and improper eating behavior. Clients were told to make themselves familiar with these procedures as they were to write a test on them (worth 300 points) the following week.

Before leaving there was a discussion of difficulties which had arisen in working with the program and suggestions

for possible solutions.

The fifth session began with writing the test on behavioral strategies. The test on exercise was returned and the tokens awarded. A short lecture was given on the medical aspects of obesity including such topics as atherosclerosis and life expectancy. The rest of the session was spent discussing problems that occurred in utilizing various aspects of controlling eating behavior. A problem solving approach was encouraged.

The remaining three meetings were used in developing problem solving skills through practice with various individual's difficulties and reiterating the importance of lifelong habit change eating and exercise related behavior.

In the final session, the remainder of the deposit was returned along with the 25 dollars which they had earned. Clients were told at this time that they would be contacted sometime in the next three months for the first follow-up meeting at which time they would get together as a group. The importance of being available for follow-up was stressed.

At the final meeting of both groups, the post treatment measures were taken. The weight and skinfold measures were taken in the same manner as all other weekly measures.

A three month follow-up had been planned but very few of the clients were available for weigh-in as most were either away on vacation or getting ready to go. Two of

the clients had moved away and were consequently dropped from the study.

The next follow-up was six months following termination of treatment. At this time the remaining clients were available for weighing although they did not come in at the same time. Each individual was weighed, asked about problems and encouraged to continue efforts to lose weight. At each follow-up session skinfold measurements were taken.

The final follow-up session occurred 10 months after the end of treatment. Again, the remaining clients were weighed and skinfold measurements were taken. At this time clients were asked to evaluate the program and the group with Significant Other present were asked if they thought it had made any difference having their partner along.

The same female therapist conducted all treatment sessions for both groups. She was 23 years of age and had had little experience in conducting weight groups although she did a substantial amount of research and reading in the area. She was supervised by a member of the faculty and the clients were aware of this fact. At the final meeting the therapist received a considerable amount of positive feedback from most clients concerning her abilities as a group leader.

RESULTS

One person in each group failed to attend after the first meeting leaving 11 clients in each of the treatment groups. There were eight clients in the Control group who were willing to return at a later date for treatment. Client attrition over the treatment period was zero, although between the last group meeting and the first follow-up session, two clients, again one from each group moved out of town and were lost to subsequent measurement. The results of these two clients are included in the analysis up until the time they left. For the characteristics of the groups at the beginning of treatment, see Table 1.

In order to compensate for individual differences in sex and height, each client's weight was converted to percentage overweight in the following manner. First each client's ideal weight was computed using U.S. Department of Agriculture's Desirable Weights Table (U.S. Department of Agriculture, 1969, p. 7) which is published by Stuart and Davis' (1972) placing all clients into the medium build category. This method of categorization was used because it is very difficult to be certain in which category to classify a client (U.S. Public Health Service Publication No. 1485 (cited in Foreyt, 1977)). Percentage

TABLE 1

Pre-Treatment Group Characteristics

	ALONE (N = 11)		SIGNIFICANT OTHER (N = 11)		CONTROL (N = 8)	
	Mean	Range	Mean	Range	Mean	Range
AGE	33.6	18-51	36.2	28-49	45.4	26-68
Percent overweight	63.3	38.5-94.2	63.8	21.3-121.4	63.5	45.5-89.7
lb. (kg) overweight	76.1 (36.0)	47 (21.4)-115 (52.3)	79.1 (40.0)	35.5 (16.1)-143 (65.0)	76.9 (35.0)	51 (23.2)-122 (55.5)
Skinfold measure (mm)	37.6	28-46	37.2	20-48	40.1	30.48
Pre-treatment weight lb. (kg)	204.3 (92.9)	169 (76.8)-242 (110)	205.2 (93.3)	153 (69.5)-287 (130.5)	196.9 (89.5)	163 (71.4)-258 (117.3)

overweight was then computed by dividing the difference between a client's ideal weight and pre-treatment weight by the ideal weight and multiplying by 100 (Romancyzk et al., 1973).

The clinical significance of the weight problems which these clients exhibited is indicated by the mean number of pounds overweight for all clients across groups--78.5 pounds (35.7kg.). The mean percentage overweight was 63.5 percent, also reflecting the seriousness of the obesity in these cases. Skinfold measure revealed a mean of 40.3mm for females and 26.5mm for males. For the general age group involved (30-50 years) the minimum triceps skinfold thickness indicating obesity is 23 for males and 30 for females. A one-way analysis of variance revealed no significant differences between the three groups prior to treatment on number of pounds overweight, percentage overweight, or triceps skinfold measurement ($F < 1$; $df = 2/27$). (In each case see Table 3).

Treatment Results

All analyses were straight one-way analyses of variance. When significant F's were found the Duncan Multiple Range Test was used to determine where the significance lay.

Post-Treatment

During the baseline phase of treatment the clients in the Significant Other group were asked to code verbal interactions with partner concerning food. With two exceptions these forms were returned blank. Each client reported that there was no verbal interaction whatsoever concerning food or food-related behavior.

The mean number of pounds lost, percentage overweight and mullimeters in skinfold measurement lost are summarized for all groups in Table 2 for the post-treatment and at six and ten-month follow-up evaluations. The Control group was included only in pre-treatment and follow-up I evaluations. Data were not available on the Control group clients at post-treatment and they were offered treatment following the six-month evaluation. A one-way analysis of variance of percentage overweight lost revealed no significant difference between the Alone and Significant Other group ($F < 1$; $df = 1/20$) (see Table 4). Nor were there any significant differences between the two groups on pounds lost ($F < 1$; $df = 1/20$) (see Table 4) or millemeters lost on triceps skinfold measure ($F = 1.30$; $df = 1/20$) (see Table 4).

Follow-up I

The first follow-up assessment took place six months after the termination of treatment. Two clients were

TABLE 2

Changes in Weight, Percent Overweight and Skinfold Measure for Subjects Instructed Alone, With a Significant Other, and in the Control Condition

POST-TREATMENT				FOLLOW-UP I				FOLLOW-UP 2			
N	Weight loss lbs. (kg)	Overweight lost (%)	Skinfold measure lost (mm)	N	Weight loss lbs. (kg)	Overweight lost (%)	Skinfold measure lost (mm)	N	Weight loss lbs. (kg)	Overweight lost (%)	Skinfold measure lost (mm)
11	10.18 (4.63)	13.15	10.2	10	10.75 (4.89)	16.49	12.1	10	7.58 (3.45)	12.35	8.8
11	8.95 (4.07)	13.72	7.3	10	5.55 (2.52)	8.99	6.9	10	4.45 (2.02)	8.52	7.9
—	—	—	—	8	-4.25	-7.35	3.75	—	—	—	—

TABLE 3

Analysis of Variance on Pre-Treatment Measures for Groups Treated Alone, with Significant Other or Untreated

POUNDS OVERWEIGHT

Source	SS	df	MS	F
Between	27.21	2	13.61	0.01 ns
Within	27893.04	27	1033.08	
Total	27920.25	29		

PERCENTAGE OVERWEIGHT

Source	SS	df	MS	F
Bewteen	-74.90	2	-37.45	-0.06 ns
Within	17477.23	27	647.30	
Total	17402.23	29		

SKINFOLD MEASURE

Source	SS	df	MS	F
Between	44.41	2	22.21	0.55 ns
Within	1095.06	27	40.56	
Total	1139.47	29		

TABLE 4

Analysis of Variance on Post-Treatment Measures for Alone and Significant Other Group

POUNDS LOST

Source	SS	df	MS	F
Between	8.28	1	8.28	0.42 ns
Within	395.37	20	19.77	
Total	403.65	21		

PERCENT OVERWEIGHT LOST

Source	SS	df	MS	F
Between	1.80	1	1.80	0.03 ns
Within	1425.69	20	71.28	
Total	1427.49	21		

SKINFOLD MEASURE IN MILLIMETRES LOST

Source	SS	df	MS	F
Between	46.50	1	46.54	1.30 ns
Within	715.82	20	35.79	
Total	762.32	21		

dropped from the study at this point as both left town. One of these clients had been doing very well during treatment (17 lbs. (7.73 kg.) lost) and the other had been losing small but consistent amounts of weight (total 4 lbs. (1.82 kg.)). The Control group was included in this evaluation and were subsequently given treatment. Several clients in the Control group had been undertaking efforts to lose weight in the interim (eight months) either on their own or with organized groups such as Weight Watchers. There were significant differences between the three groups on pounds lost ($F = 4.17$; $df = 2/25$; $p < .05$) (see Table 5) and millimeters lost on triceps skinfold measurement ($F = 3.77$; $df = 2/25$; $p < .05$) (see Table 5). The results with percentage overweight lost do not reach significance at the .05 level ($F = 3.14$; $df = 2/25$; $p < 0.10$) (see Table 5). Newman-Keuls method of multiple comparison, corrected for unequal Ns (Bancroft, 1968) was used to make paired comparisons for all dependent measures. The dependent measure of pounds lost showed a significant difference between the Alone and Control group at the $p < 0.01$ level ($Q = 17.38$; $df = 25$) and between the Significant Other and Control group at the $p < 0.05$ level ($Q = 11.95$; $df = 25$) although there were no significant differences between the Alone and Significant Other group ($Q = 1.50$; $df = 25$). The loss of millimeters on triceps skinfold measurement revealed a significant difference between the Alone group and the Control ($Q = 4.15$;

TABLE 5

Analysis of Variance on Follow-Up I Measures for Alone, Significant Other and Control Groups

POUNDS LOST

Source	SS	df	MS	F	P
Between	1021.28	2	510.64	4.17	<.05
Within	3064.18	25	122.57		
Total	4085.46	27			

PERCENT OVERWEIGHT LOST

Source	SS	df	MS	F	P
Between	2581.10	2	1290.55	3.14	<.10
Within	10264.12	25	410.56		
Total	12845.22	25			

SKINFOLD IN MILLIMETERS LOST

Source	SS	df	MS	F	P
Between	324.11	2	162.06	3.77	<.05
Within	1075.30	25	43.01		
Total	1399.41	27			

df = 25; $p < .05$) but no significant difference between either the Significant Other group and the Control ($Q = 1.83$; df = 25), or the Alone and Significant Other groups ($Q = 2.32$; df = 25). The percentage of overweight loss did not produce significant results with the exception of the comparison between the Alone and Control groups ($Q = 23.81$; df = 25; p .05) using the Newman-Keuls test.

Follow-up II

All clients in the Alone and Significant Other groups included in follow-up I were available for the ten-month evaluation. The Control group was undergoing treatment at this time. Generally clients were seen individually and were asked to verbally evaluate the program. The Significant Other group was also questioned about the effects of having their partners attend treatment sessions.

The results showed no significant differences between groups on any of the three dependent measures of pounds lost ($F = 1$; df = 1/18) (see Table 6), percentage overweight lost ($F = 1$; df = 1/18) (see Table 6) or millimeters lost on triceps skinfold measurement ($F = 1$; df = 1/18) (see Table 6). Table 7 presents the number of clients in each group who lost more than 10, 20, 30 or 40 percent of amount overweight.

The number of assignments completed by the Significant Other and Alone group was quite different. Out of a total

TABLE 6

Analysis of Variance on Follow-Up II Measures for Alone and Significant Other Groups

POUNDS LOST

Source	SS	df	MS	F
Between	48.84	1	48.84	0.3 ns
Within	2860.85	18	158.94	
Total	2909.69	19		

PERCENT OVERWEIGHT LOST

Source	SS	df	MS	F
Between	73.35	1	73.35	0.18 ns
Within	7152.94	18	397.39	
Total	7226.29	19		

SKINFOLD MEASURE IN MILLIMETERS LOST

Source	SS	df	MS	F
Between	48.05	1	48.05	0.56 ns
Within	1538.9	18	85.49	
Total	1586.95	19		

TABLE 7

Number of Clients Across Time Achieving Weight Losses of 10, 20, 30 or 40 Percent of Overweight

	CONTROL				SIGNIFICANT OTHER				ALONE			
	10%	20%	30%	40%	10%	20%	30%	40%	10%	20%	30%	40%
Post-Treatment	-	-	-	-	5	0	2	0	6	2	0	0
Follow-up I	1	0	0	0	2	0	2	0	1	2	0	2
Follow-up II	-	-	-	-	1	1	1	0	1	1	0	2

possible of 60 assignments the Alone group completed 59 while the Significant Other group completed only 28.

Although the total number of meetings missed is not outstandingly high in either case (Alone, 4 out of 60; Significant Other, 9 out of 60) it is interesting to note that in the Alone group only three clients missed any meetings at all and in the Significant Other group only three clients did not miss any meetings.

Tables 8, 9, and 10 present all the individual data for each group. The massive amount of within group variability is striking across evaluation periods.

TABLE 8

Individual Data for Control Group

S	PRE-TREATMENT			POST-TREATMENT				FOLLOW-UP I			FOLLOW-UP II		
	Weight lbs (kgs)	Skinfold	% overwt.	lbs (kgs)	lbs (kgs) lost	Skinfold (mm) lost	% overwt. lost	lbs (kgs) lost	Skinfold (mm) lost	% overwt. lost	lbs (kgs) lost	Skinfold (mm) lost	% overwt lost
1	190.50 (86.59)	35	65.70	75.50 (34.32)	—	—	—	-9 (-4.09)	0	-11.90	—	—	—
2	258 (117.27)	45	89.70	122 (55.45)	—	—	—	4 (1.82)	+1	3.20	—	—	—
3	191 (186.82)	30	56.60	69 (31.36)	—	—	—	9.50 (4.32)	0	13.80	—	—	—
4	200.50 (91.14)	38	74.40	85.50 (38.86)	—	—	—	-10	2	-11.70	—	—	—
5	163 (174.09)	40	45.50	51 (23.18)	—	—	—	-6 (-2.73)	5	-11.80	—	—	—
6	186 (84.55)	40	57.60	68 (30.91)	—	—	—	-9 (-4.09)	10	-13.20	—	—	—
7	164 (74.55)	45	46.40	52 (23.64)	—	—	—	-15 (-6.82)	9	-28.80	—	—	—
8	221.50 (100.68)	48	71.70	92.50 (42.05)	—	—	—	-1.50 (.68)	5	1.60	—	—	—

TABLE 9

Individual Data for Alone Group

S	PRE-TREATMENT				POST-TREATMENT			FOLLOW-UP I			FOLLOW-UP II		
	Weight lbs (kgs)	Skinfold	% Overwt.	(lbs (kgs)	lbs (kgs) lost	Skinfold (mm) lost	% overwt. lost	lbs (kgs) lost	Skinfold (mm) lost	% overwt. lost	lbs (kgs) lost	Skinfold (mm) lost	% overwt. lost
1	189 (85.91)	45	39	53 (24.09)	7 (3.18)	19	13.70	28.25 (12.84)	24	55.40	28.25 (12.84)	28	55.40
2	197 (89.55	46	71.30	82 (37.27)	12.50 (5.68)	12	15.20	23 (10.45)	20	28.00	22.00 (10)	-11	27
3	169 (76.82)	30	43.20	51 (23.18)	13 (5.91)	16	11.50	28.50 (12.95)	19	55.90	24.00 (10.91)	18	47.10
4	164 (74.55)	38	50.50	55 (25)	3 (1.36)	4	5.70	- .50 (+ .23)	4	- .91	-9.50 (-4.32)	8	-17.30
5	242 (110)	35	87.60	113 (51.36)	17 (7.73)	11	24.00	24 (10.91)	12	21.20	20.50 (9.32)	1	18.10
6	189 (85.91)	43	60.10	71 (32.27)	10 (4.55)	15	14.10	-1 (+.45)	8	-1.40	-3.00 (-1.36)	13	-4.20
7	169 (76.82)	38	38.50	47 (21.36)	9.50 (4.32)	9	17.30	-2.50 (1.14)	11	-5.30	1.50 (0.68)	7	3.20
8	237 (107.73)	38	94.20	115 (52.27)	12 (5.45)	0	11.40	11.25 (5.11)	8	9.80	11.00 (5)	6	9.70
9	222 (100.91)	33	47.00	71 (32.27)	9 (4.09)	9	7.80	11.50 (5.23)	15	16.20	6.00 (2.73)	25	8.50
10	237 (107.73)	28	79.50	105 (47.73)	9.50 (4.32)	13	20.20	-15 (+6.82)	0	-14.30	-25.00 (-11.30)	-7	-24
11	232 (105.45)	40	85.60	107 (48.64)	4 (1.82)	4	3.70	—	—	—	—	—	—

TABLE 10

Individual Data for Significant Other Group

S	PRE-TREATMENT				POST-TREATMENT			FOLLOW-UP I			FOLLOW-UP II		
	Weight lbs (kgs)	Skinfold	% Overwt.	lbs (kgs)	lbs (kgs) lost	Skinfold (mm) lost	% overwt. lost	lbs (kgs) lost	Skinfold (mm) lost	% overwt. lost	lbs (kgs) lost	Skinfold (mm) lost	% overwt. lost
1	170 (77.27)	36	47.80	55 (25)	4 (1.82)	4	7.30	4.50 (2.05)	2	8.20	12.50 (5.68)	9	22.70
2	202.50 (92.05)	20	21.30	35.50 (16.14)	12 (5.45)	4	33.80	-13 (-5.91)	0	+36.60	-0.50 (-0.23)	0	-1.40
3	153 (69.55)	37	36.60	41 (18.64)	6 (2.73)	19	14.60	16 (7.27)	23	39	14.50 (6.59)	23	35.40
4	157.50 (71.59)	33	33.40	39.50 (17.95)	12.50 (5.68)	3	31.60	13.50 (6.14)	3	34.20	4.50 (2.05)	+3	11.40
5	207 (94.09)	41	52.20	71 (32.27)	9 (4.09)	7	12.70	6 (2.73)	11	8.50	2 (0.91)	13	2.80
6	228 (103.64)	38	93.20	110 (50)	7 (3.18)	2	6.40	5.50 (2 50)	8	5	4.25 (1.93)	4	3.90
7	245 (111.36)	38	100.10	123 (55.91)	+.50 (+.23)	0	+0.40	7 (3.18)	8	5.70	-3 (-1.36)	8	-2.40
8	170 (77.27)	35	36	45 (20.45)	5 (2.27)	5	11.10	5 (2.27)	3	11.10	2.50 (1.14)	3	5.60
9	189 (85.91)	45	60.2	71 (32.27)	9.50 (4.32)	10	13.40	10 (4.55)	11	14.10	1 (0.45)	7	2.20
10	248 (112.73)	38	121.40	136 (61.82)	11.50 (5.23)	8	8.50	1 (0.45)	0	0.70	6.75 (3.07)	15	5.00
11	287 (130.45)	48	99.30	143 (65)	17 (7.73)	18	11.90	—	—	—	—	—	—

DISCUSSION

The present findings do not support the hypothesis that including a Significant Other in treatment will increase weight loss in a behavioral weight reduction program. These results are consistent with one study (Wilson and Brownell, 1978) which included family members in a weight control group. The present results differ from another study (Brownell et al., 1978) quite radically. That study revealed substantially greater weight losses for a group with cooperative partners who received 'couples training' than for either a group with cooperative spouse or a group with non-cooperative spouse. The explanation for the apparent contradiction in treatment results is most likely related to the relative emphasis placed on partner involvement and the degree of potential influence of the Significant Other involved.

The Wilson and Brownell (1978) study did not specify that the family member involved need be closely connected with the client's eating patterns. As a result, there were, for example, sisters-in-law as Significant Others which might have reduced, in some cases at least, the potential influence which the partner may have exercised. The point is made that, in most cases, a spouse, where one is present, exerts a greater potential influence on eating

and exercise behavior than any more peripheral family member (Brownell et al., 1978). As well, the partner in the Wilson and Brownell (1978) study was an uninvolved spectator in the group. The partner in that study merely attended the group meetings making no contribution and were not integrated in any way into the treatment process.

The Brownell et al. (1978) study required that the spouse be the partner, and that they attend and participate actively in each group. They assured involvement in the program through several means. Firstly, they insisted on mutual monitoring of relevant behaviors (i.e., eating patterns, exercise habits). As well, spouses were encouraged to model appropriate eating behavior and to help the subject to use stimulus control tactics. Sabotage pitfalls were elucidated and couples were instructed to avoid these situations (i.e., inappropriate eating in presence of weight-reducing spouse).

The present study falls somewhere between the two above experiments in terms of degree of involvement of Significant Other in treatment. In all cases in the present study Significant Other was the spouse. The Significant Other attended all treatment sessions and was involved in a non-structured fashion. The spouse was cautioned about sabotaging the weight-reducing partner and specific suggestions about how to avoid this were given. The spouse was not instructed in mutual monitoring and there were no

specific instructions on how the Significant Other should model the appropriate eating response. Perhaps the most cogent dissimilarity between the successful Brownell et al. (1978) study and the present one was the degree and specificity of Significant Other involvement.

There is also some possibility that there is a population difference. This is suggested by the fact that the Significant Other group handed in blank forms when required to keep track of the verbal interactions involving eating between them and their respective partners (see Verbal Interaction forms, Appendix E). When questioned in private about the lack of interactions noted, the response was invariably that there was little verbal interaction about anything. It seemed, in fact, that the couples spoke very little to each other. There was one notable exception both in the amount of verbal interaction occurring, and that noted on the forms. In general, this couple did better than average, producing a weight loss in the weight reducing partner of 14.5 lbs. or 35.4% of overweight. It is perhaps significant that this couple were not native to Newfoundland.

Another factor which may have influenced the outcome is group cohesiveness. The group cohesiveness in the Alone group may have compensated for the possible lack of support from Significant Others. This is probably a major factor in accounting for follow-up results. During the follow-up period there was spontaneous contact between Alone group

members but not between Significant Other group members. A critical factor in producing this difference of cohesiveness may have been the number of people attending each group. A total of eleven individuals attended the Alone group while the Significant Other group was double that figure. It was the therapist's observation that the Alone group was much more cohesive. This was evidenced in the fact that they telephoned each other more frequently between group meetings as well as the fact that they generally attended follow-up meetings as a group. The Significant Other group in contrast, barely got to know each other's names and attended follow-up meetings as couples rather than as a group.

As expected, there were no differences between Alone and Significant Other groups over the treatment period.

The prediction that the Significant Other group should over the follow-up period continue to lose weight while the Alone group should cease to lose weight was not supported by the results. This outcome is most likely explained by the continued cohesiveness in the Alone group coupled with evidence that the Alone group contributed more to treatment in terms of assignments completed and attendance at meetings. The Alone group was probably showing the benefit at least through the initial follow-up period. Although the figures are not significant and one must take

the tremendous individual variation into account, one notes that the Alone group continues to lose on all dependent measures at follow-up I while the Significant Other group has actually gained on all dependent measures.

The second follow-up shows a deterioration in both groups on most dependent measures. This reflects the usual tendency often quoted in the literature (e.g., Hall and Hall, 1974) for treatment of effects in obesity management to wear off within the first year following intervention. It was thought that inclusions of the Significant Other would inhibit this tendency by producing a "therapist" in the environment. This did not occur. There are several possible reasons for this.

One is that the spouse training was not intensive enough, as Brownell et al's. (1978) very positive results with 'couples-training' would suggest might be the case.

Another possibility is, as mentioned earlier, the population may be different in terms of amount and type of communication between partners. As mentioned, from one of the forms distributed it appears that there is very little verbal interaction ongoing between husband and wife. If this is the case, then it is impossible to alter patterns of interaction which simply do not exist. It may be that the treatment program and the suggestions directed to the partner are inappropriate or simply not applicable. That is, if there is no verbal interaction then perhaps we

should be concentrating on building up the communication before attempting couple treatment of a specialized problem. It is a possibility that certain individuals with marital difficulties eat in order to reduce tension or friction. This may mean that one partner's eating may be functional for a couple and telling them to stop it with no further intervention in the marriage may ultimately backfire.

Another possible contributing factor is the motivation level of the partners to be resident "therapists." Although all Significant Others said they were cooperative there was no measure taken of desire, motivation or ability to take on the role of therapist. There is a possibility that the Alone group in its cohesiveness and its member's common desire to lose weight was more likely to produce willing and able therapists. Perhaps a closer screening of potential couples for the treatment program would have produced better group results. A fruitful area for couple screening might be marital interaction as measured by the Locke-Wallace Marital Adjustment Scale (1957), or the Marital Activities Inventory (Weiss, Hops & Patterson, 1973). Serious marital problems may very well affect the effectiveness of any intervention involving the couple.

The individual data shows that some couples and individuals did very well while others did extremely poorly (see Tables 8-10). For example, in the first follow-up period there were four people who lost over 20 lbs. and

five people who actually had gained weight in the treatment groups. This great amount of variation in both treatment groups suggests that additional screening might be the answer to better results. In the search for better screening techniques there has been much research into the defining characteristics of the successful candidate. To date nothing conclusive has shown up with the exception of very broad parameters such as sex and age of onset (Abramson, 1973). It is difficult to hypothesize why the variation within groups occurs in this particular study but one sees evidence of differences in motivation and degree of commitment to the problem in both program attendance and adherence. There was a large degree of variation between individuals in the number of assignments completed and the number of meetings missed which might reflect some underlying difference which may be accounting for the lack of conformity in results within groups.

The hypothesis that both treatment groups would present significantly larger weight losses than the Control group, was upheld. This finding has been replicated numerous times (e.g., Harris, 1969; Stuart, 1971). However, the results for skinfold measure loss and the percent overweight lost were only significant for the comparison between the Alone and Control groups. This can be accounted for by the generally poorer performance of the Significant Other group across time. An important difference between

the present study and most others is that because the clients were clinically obese, the control group was not restricted from seeking other forms of help. In fact, five of the eight control clients had at some point during the control period gone to a local self-help group such as TOPS or Weight Watchers. Interestingly they still failed to lose as much weight as the treatment groups. The probable reason for this is the specificity of a behavioral program as well as the deposit which was required. The deposit served to ensure continued attendance in the program. Several of those control clients who went to other forms of obesity management did not remain there for more than four or five weeks.

The deposit also served to reduce attrition which is often a critical problem in obesity research. Unfortunately, in the present study the deposit and the extra money earned was returned following treatment rather than post follow-up. This created a difficulty in motivating clients to return for follow-up appointments.

There are several areas of possible research generated by the present study. One extremely interesting area would be a local study of the type, quantity and quality of marital interaction and a comparison of the norms for Newfoundland with those of the United States.

Another area related to the above would be to compare a group using a buddy-system approach with a group

of married couples to see which system produces greater weight loss.

The fundamental question of motivation and ability of a Significant Other to take on the role of resident therapist might also be a subject for future study.

The present study is limited in the conclusions which can be made. It can only be said that in this case the involvement of the Significant Other in the group treatment of clinically obese clients appears to be no more effective than the treatment of similar clients in a group by themselves.

BIBLIOGRAPHY

Abramson, E.E. A review of behavioral approaches to weight control. Behavior Research and Therapy, 1973, 11, 547-556.

Amit, Z., Sutherland, E.A. and Weiner, A. Stay Slim for Good. Fitzhenry and Whiteside, Toronto, Ontario, 1976.

Ashby, W.A. and Wilson, G.T. Behavior therapy for obesity: Booster sessions and long-term maintenance of weight loss. Behavioral Research and Therapy, 1977, 15, 451-464.

Bancroft, T.A. Topics in intermediate statistical methods. Ames, Iowa: The Iowa State University Press, 1968.

Bellack, A.S., Schwartz, J. and Rozensky, R.H. The contribution of external control to self-control in a weight reduction program. Journal of Behavior Therapy and Experimental Psychiatry, 1974, 5, 245-249.

Bellack, A.S. A comparison of self-reinforcement and self-monitoring in a weight reduction program. Behavior Therapy, 1976, 7, 68-75.

Brightwell, D.R. and Sloan, C.L. Long-term results of behavior therapy for obesity. Behavior Therapy, 1977, 8, 898-905.

Brownell, K.D., Heckerman, C.L., Westlake, R.J., Hayes, S.C. and Monti, P.M. The effect of couples training and partner cooperativeness in the behavioral treatment of obesity. Behavior Research and Therapy, 1978, 16, 323-333.

Dinoff, M., Richard, H.C. and Colwick, J. Weight reduction through successive contracts. American Journal of Ortho-Psychiatry, 1972, 43, 110-113.

Feinstein, A.R. The measurement of success in weight reduction: An analysis of methods and a new index. Journal of Chronic Diseases, 1959, 10, 439-456.

Ferguson, James M. Learning to Eat: Behavior Modification for Weight Control. Bull Publishing Company, Palo Alto, California, 1975.

Foreyt, J.P. (Ed.), Behavioral Treatments of Obesity. New York: Pergamon Press Ltd., 1977.

Foreyt, J.P. and Kennedy, W.A. Treatment of overweight by aversion therapy. Behavior Research and Therapy, 1971, 9, 29-34.

Franzine, L.R. and Grimes, W.B. Skinfold measures as the criterion of change in weight control studies. Behaviour Therapy, 1975, 7, 256-260.

Hagan, R.L. Group therapy versus bibliotherapy in weight reduction. Behaviour Therapy, 1974, 5, 222-234.

Harris, M.B. Self-directed program for weight control: A pilot study. Journal of Abnormal Psychology, 1969, 74, 263-270.

Harris, M.S. and Bruner, C.G. A comparison of self-control and a contract procedure for weight control. Behaviour Research and Therapy, 1971, 9, 347-354.

Jeffrey, D.B. A comparison of the effects of external control and self-control on modification and maintenance of weight. Journal of Abnormal Psychology, 1974, 83, 409-410.

Jeffrey, D.B., Christensen, E.R. and Pappas, J.P. Developing a behavioural program and therapist manual for the treatment of obesity. Journal of the American College Health Association, 1973, 21, 455-459.

Jeffrey, D.B. and Katz, R.C. Take It Off and Keep It Off: A Behavioural Program for Weight Loss and Healthy Living, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1977.

Johnson, W.G. and Stalonas, P. Measuring skinfold thickness--A cautionary note. Addictive Behaviours, 1977, 2, 105-108.

Kanfer, F.H. and Karoly, P. Self-control: A behaviouristic excursion into the lion's den. Behaviour Therapy, 1972, 3, 398-416.

Kazdin, A.E. Reactive self-monitoring: The effects of response desirability, goal setting and feedback. Journal of Consulting and Clinical Psychology, 1974, 42, 704-716 (a).

Kazdin, A.E. Self-monitoring and behaviour change. In M.J. Mahoney and C.E. Thoresen (Eds.), Self-Control: Power to the Person, Monterey, C.A.: Brooks Cole, 1974 (b).

Kingsley, R.G. and Wilson, G.T. Behaviour therapy for obesity. A comparative investigation of long-term efficacy. Journal of Consulting and Clinical Psychology, 1977, 45, 288-298.

Locke, H.J. and Wallace, K.M. Short marital adjustment and prediction tests: Their reliability and validity. Marriage and Family Living, 1957, 21, 251-55.

Mahoney, M.J. Self-reward and self-monitoring techniques for weight control. Behaviour Therapy, 1974, 5, 48-57.

Mahoney, M.J. and Mahoney, K. Treatment of obesity: A clinical exploration. In B.J. Williams, S. Martin and J.P. Foreyt (Eds.), Behavioural Approaches to Dietary Management. New York: Brunner/Mazel, 1976.

Mann, R.A. The behaviour-therapeutic use of contingency contracting to control an adult behaviour problem: Weight control. Journal of Applied Behaviour Analysis, 1972, 5, 99-109.

Patterson, G.R., Hawkins, N., McNeal, S., and Phelps, R. Reprogramming the social environment. Journal Child Psychology and Psychiatry, 1967, 8, 181-196.

Rimm, D.C. and Masters, J.C. Behaviour Therapy: Techniques and Empirical Findings. Academic Press, Inc., New York, New York, 1974.

Romanczyk, R.G. Self-monitoring in the treatment of obesity: Parameters of reactivity. Behaviour Therapy, 1974, 5, 531-540.

Saccone, A. and Israel, A. Effects of experimenter versus significant other-controlled reinforcement and choice of target behaviour on weight loss. Behaviour Therapy, 1978, 9, 271-278.

Seltzer, C.C. & Mayer, J. A simple criterion of obesity. Postgraduate Medicine, 38, A101-A107, 1965.

Shulman, J.M. The behavioural control of overeating. Unpublished Master's Thesis, University of Montana, 1971.

Sieck, W.A. and McFall, R.M. Some determinants of self-monitoring effects. Journal of Consulting and Clinical Psychology, 1976, 44, 6, 958-965.

Stunkard, A. and McLaren-Hume, M. The results of treatment of obesity. Archives of Internal Medicine, 1959, 103, 79-85.

U.S. Department of Agriculture. Food and your health. Publication 547, Washington, D.C., 1969.

Weiss, R.L., Hops, H. and Patterson, G.R. A framework for conceptualizing marital conflict, a technology for altering it, some data for evaluating it. In F.W. Clark and L.A. Hamerlynck (Eds.), Critical issues in research and practice: Proceedings of the Fourth Banff International Conference on Behavior Modification. Champaign, Illinois: Research Press, 1973.

Wilson, G.T. Methodological considerations in treatment outcome research on obesity. Journal of Consulting and Clinical Psychology, 1978, 46, (4), 687-702.

Wilson, G.T. and Brownell, K.D. Behaviour therapy for obesity: Including family members in the treatment process. Behaviour Therapy, 1978, Vol. 9, 943-945.

Wilson, N.L., Farber, S.M., Kimbrough, L.D. and Wilson, R.H.L. Development and perpetuation of obesity: An overview. In Wilson, N.L. (Ed.), Obesity, Philadelphia: F.A. Davis, 1969.

Wollersleim, Janet P. Effectiveness of group therapy based upon learning principles in the treatment of overweight women. Journal of Abnormal Psychology, 1970, 76, 462-474.

APPENDIX A

PHYSICIAN PERMISSION AND CLEARANCE FORM

Dr. _____

_____ has decided to undertake a weight reduction program which will consist basically of a reduction of calorie intake (500 cal/day below present intake to a minimum of 1200 calories, depending upon initial weight) utilizing a food exchange program. This type of program has been chosen because of its flexibility, nutritional soundness, its facility in accommodating lowered calorie content (Stuart & Davis, Slim Chance in a Fat World, 1972). The program also insists upon a moderate increase in the client's exercise patterns. Walking is generally suggested as a form of gentle but acceptable exertion. No violent forms of exercise will be advised. In order to facilitate decreasing amounts of food eaten and increasing participation in exercise, a variety of behavioral self-control measures will be instituted.

I would appreciate your assessing _____'s health and assure us that there are no medical reasons why he/she should not commence this program. Please sign this paper in attestation of the above fact.

_____

Date: _____

Thank you for your cooperation.

(Ms) Olga Heath

This program is being conducted at Memorial University under the supervision of Dr. D. Hart of the Psychology Department.

Should you wish to get in touch with me for further details, please feel free to call me either at home 579-4931 or at the University.

APPENDIX B

DAILY EATING RECORD FORM

Date _____

Daily Eating Record Form

Time	Food	How much in calories	Where	Who is with you	How do you feel

APPENDIX C

DAILY EXERCISE RECORD FORM

Date _____

Daily Exercise Record Form

Record here anything which would expend calories (housework, walking, etc.)	Amount of time you spent doing it	Speed of movement slow, moderate, quick	Caloric value of exercise	Who were you with?

APPENDIX D

PERSONAL DATE SHEET

Name _____ Age____ Date of Birth _____

Address _____ Sex _____

_____ Phone # _____

Marital Status _____

What is your occupation? _____

Your spouse's/parent's occupation? _____

Have you tried diets before? _____

Approximately how many? _____

Initial weight _____ lbs. Ideal weight _____

_____ kgs. % overweight _____

Initial skinfold measurement right arm _____ mm

Deposit $25.00 received _____

APPENDIX E

VERBAL EXCHANGES ABOUT FOOD AND EATING

Day	Morning	Afternoon	Evening
MONDAY			
TUESDAY			
WEDNESDAY			
THURSDAY			
FRIDAY			
SATURDAY			
SUNDAY			
TOTAL			

Instructions: Record each time your partner makes any remarks about your eating behavior. Mark it with a "+" if the comment was a positive one (i.e., I'm really proud of you when you resist eating cake) or with a "-" if it was a negative comment (i.e., you shouldn't eat that cake, you know what it will do to you). Circle the sign (+ or -) if you did NOT do what you thought your spouse wanted you to do (i.e., Your husband tells you he is proud of you when you don't eat cake - 5 minutes later you go to the kitchen and eat a piece of cake - you would mark this instance as follows ⊕).

APPENDIX F

WEEKLY TOKENS EARNED FORM

Tokens earned by _____

Date _____

Eating and exercise must be kept track of DAILY. Mark with a check if completed successfully.

Eating	Exercise	Weight
7 days - all meals + 100 3 consecutive meals +12 1 meal +3	Exercise done DAILY + 50/week	-1 pound = +100 every extra pound +10
1 ___ ___ ___ 2 ___ ___ ___ 3 ___ ___ ___ 4 ___ ___ ___ 5 ___ ___ ___ 6 ___ ___ ___ 7 ___ ___ ___	1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____	-1 lb. ____ extra ____

APPENDIX G

PROGRAM CONTRACT

If I complete this eight-week weight loss program and get back my twenty-five dollar deposit and if I earn the twenty-five dollar bonus available to me through sticking to the program and losing weight, I will use the fifty dollars to buy myself something I really want. My partner agrees that this is a good idea and he/she will allow this use of the deposit. Listed below in order of preference are these items which I may choose to buy for myself.

1. _____

2. _____

3. _____

4. _____

5. _____

Date _____

Signed _____

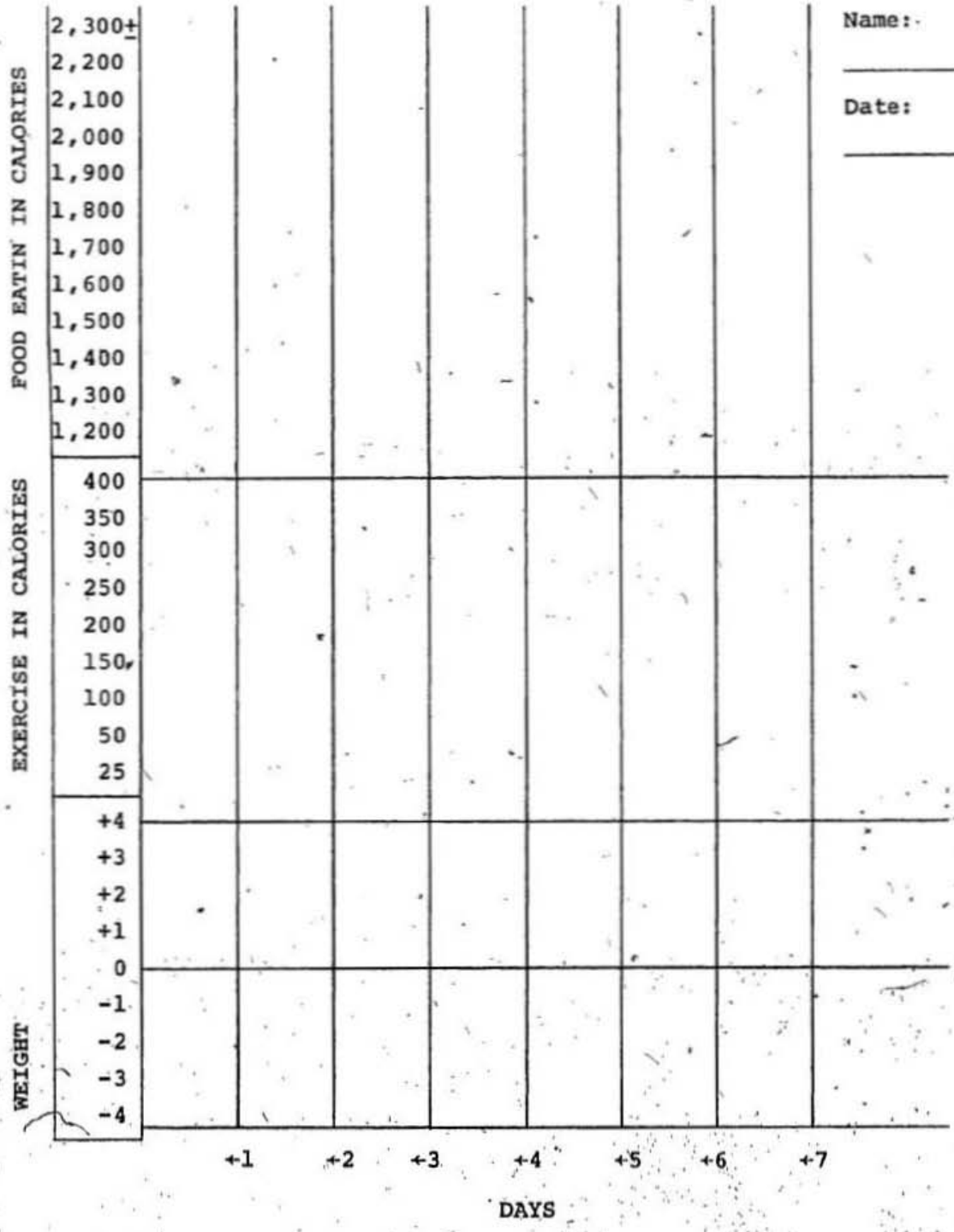
Partner's signature _____

APPENDIX H

WEEKLY RECORD

Name: _____

Date: _____


FOOD EATIN IN CALORIES
2,300+
2,200
2,100
2,000
1,900
1,800
1,700
1,600
1,500
1,400
1,300
1,200
EXERCISE IN CALORIES
400
350
300
250
200
150
100
50
25
WEIGHT
+4
+3
+2
+1
0
-1
-2
-3
-4
+1
+2
+3
+4
+5
+6
+7
DAYS

APPENDIX I

TEST ON EXERCISE

1. If you spent 20 minutes dancing a fast step, how many calories will you have expended? _____

2. If you were to play golf for 2 hours, how many calories would you expend? _____

3. How many calories would you have to work off in order to lose one pound? _____

4. You job on the spot for 5 minutes each day while watching television. How many calories are you expending a week? _____

5. You are riding your stationary bicycle for 5 minutes a day at a moderate speed. How many calories per week is this worth? _____

6. You swim 30 yards/minute for 90 minutes every day. How many calories are you burning up in a week? _____

7. You climb the stairs in your home 10 times a day each time taking you 2 minutes. How many calories are you expending a week? _____

8. Write a paragraph (short) on why exercise is important.

APPENDIX J

TEST ON FOOD EXCHANGES

On which list will you find each of the following foods?

1. Eggs _____
2. Peanut Butter _____
3. Yogurt _____
4. Cooked cereal _____
5. Raisins _____
6. Tomatoes _____
7. Mushrooms _____
8. Sauerkraut _____
9. Syrup _____
10. Macaroni noodles _____
11. Corn on the cob _____
12. Angel food cake _____
13. Frankfurter _____
14. Mayonnaise _____
15. Bacon _____
16. Wine _____

17. If you choose 3 oz. of veal for dinner, how many meat exchanges have you used? _____

18. If you make a salad using 1/2 cup of tuna + 1 oz. of cheddar cheese, how many meat exchanges have you used? _____

19. Give the amounts of the following foods that equal 1 milk exchange:

    Buttermilk - made from 2% milk) _____

Plain yogurt (2% milk) _____

Ice milk _____

Cottage cheese _____

20. Give the amounts of the following fruits equal to 1 exchange:

Apple juice _____

Strawberries _____

Tomato juice _____

Banana _____

Applesauce _____

Cantaloupe _____

21. If 1 teaspoon of oil was used in a salad dressing, how many miscellaneous exchanges would be recorded?

_____

22. If 3 oz. of dry wine were drunk with a meal, how many exchanges would you note? _____ miscellaneous

23. 1 jigger of rye with water equals how many miscellaneous exchanges? (1 jigger = 1 1/2 oz.). _____

24. Breakfast: 1 cup tomato juice (8 oz.), 1 oz. broiled ham, 2 pieces toast with margarine (1 teaspoon) + honey (1 tablespoon) + a cup of black coffee. Use a check mark to mark exchanges you would use.

Meat	Cereal	Milk	Vegetable	Fruit	Misc.
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___