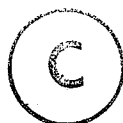


UNIVERSITY OF MANITOBA

THE ROLE OF SPOUSE INVOLVEMENT  
IN THE  
BEHAVIORAL TREATMENT  
OF  
OVERWEIGHT WOMEN

by



John W. Pearce

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the University of Manitoba in partial fulfillment of the requirements  
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# ABSTRACT

A neglected variable in the search for factors that promote long-term weight loss is the influence of significant others. Sixty-eight overweight women were assigned to five treatment conditions: 1) co-operative spouse: spouses attended all therapy sessions with the subjects and were trained in modeling, monitoring, and reinforcement techniques; 2) wives alone: subjects underwent the basic behavioral program by themselves; 3) nonparticipating spouse: spouses were told not to participate in any way in the subjects' behavioral program; 4) alternative treatment: subjects discussed personality dynamics and their relationship to weight loss; and 5) delayed treatment control. There were no significant differences in weight loss among any of the conditions at posttreatment. Of the three behavioral conditions, only the co-operative spouse condition lost significantly more weight than the alternative treatment at the 3-, 6-, and 12-month follow-ups; the nonparticipating spouse condition lost more weight than the alternative treatment at the final follow-up. The co-operative spouse condition lost significantly more weight than the wives alone condition at the 12-month follow-up. Both the co-operative spouse and the nonparticipating spouse conditions maintained their weight losses at the final follow-up, while the wives alone condition regained some weight. The absence of significant differences between the co-operative spouse and the nonparticipating spouse conditions suggests that instructing spouses not to sabotage their wives' efforts may be as effective for long-term maintenance as actively training them to aid their wives. Pretreatment weights were negatively associated with the weight reduction quotient at the 3- and 6-month follow-ups, while

the number of pounds overweight was negatively associated with the weight reduction quotient at the 6-month follow-up. Of the measures of behavior change, spouse support was positively associated with outcome at the 6-month follow-up. It was also found that subjects who consumed a smaller number of calories relative to their prescribed daily level lost the most weight at posttreatment.



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## INTRODUCTION

There is broad consensus that obesity is one of the most prevalent and serious health problems in contemporary North America. It has been estimated that there are between 40 to 80 million obese individuals in the United States alone (Stuart & Davis, 1972). The severity of this problem is documented by evidence suggesting a link between obesity and a variety of physical illnesses, particularly cardiovascular disease (Gotto, Foreyt, & Scott, 1976). In addition to these medical problems, limitations in social and occupational activities are often consequences of obesity.

The last decade has witnessed a great increase in the application of behavioral analysis and modification to obesity. In contrast to the pessimistic and discouraging results of more traditional programs, behavioral treatments seem to have yielded more encouraging results. Several reviews conclude that behavioral programs produce consistent, if modest, weight losses in the short-term (Abramson, 1973, 1977; Stunkard & Mahoney, 1976).

Much of the recent enthusiasm for behavioral approaches has been based on demonstrations of weight loss over short periods of time. A neglected area has been the long-term maintenance of weight loss. The number of long-term evaluations of therapeutic efficacy is still small, and they yield equivocal results. Stunkard and Penick (1979) reviewed nine studies that reported follow-ups of 6 months and longer, and concluded that clinically significant weight losses produced by behavioral treatments are not well maintained. Stunkard and Penick (1979) also reported the results of a 5-year follow-up of an earlier study that

compared a group behavioral treatment with traditional group therapy (Penick, Fillion, Fox & Stunkard, 1971). At the 12-month follow-up, most patients continued to lose weight; during the next five years they began to regain it. Only 3 of 12 behavioral and 4 of 13 traditional treatment patients weighed less than they had at the end of treatment.

More encouraging evidence for the long-term efficacy of the behavioral treatment of obesity is provided by Stuart and Guire (1978), who surveyed 721 women members of Weight Watchers classes some 15 months after they reached their goal weight. One year to 15 months after reaching goal weight, 24.6% were below goal; 28.9% were within 5% of their goal; 17.5% were from 6 to 10% above their goal; and 28.9% were 11% or more above their goal weights. Levitz, Jordan, LeBow, and Coopersmith (1979) reported the long-term follow-up results of a large group of patients who participated in a multi-faceted behavioral weight control program. Of the 154 patients who lost more than 15 pounds during treatment, 54% retained at least a 15 pound weight loss 1 to 5 years later. Mean weight loss of these patients increased from 32.8 pounds at posttreatment to 35.6 pounds at follow-up. Of the 46% who regained weight during follow-up, their mean weight loss retrograded from 23.8 pounds at posttreatment to 0.6 pounds at follow-up. The conspicuous absence of long-term studies and the equivocal results suggest that the long-term maintenance of weight loss is one of the most important problems facing behavior therapy for obesity.

Bandura (1969) has suggested that evaluation of therapeutic outcome should distinguish among the initial induction of behavior change, its generalization to the natural environment, and its mainten-

ance over time. Different variables may govern each of these processes, and maintenance will be ensured only to the degree that specific procedures designed to accomplish this goal are incorporated into the treatment program.

Various strategies have been proposed and evaluated as to their ability to enhance maintenance of weight loss. One strategy suggested by O'Leary and Wilson (1975) is the use of specific booster sessions which provide feedback and reinforcement for the continued use of appropriate eating and exercise behaviors. In an uncontrolled study, Stuart (1967) provided booster sessions "as needed" during follow-up and reported weight losses for eight women ranging from 26 to 47 pounds at a 1-year follow-up. Ashby and Wilson (1977) postulated that the frequency of booster sessions would be associated with improved maintenance, and that a greater degree of continued behaviorally-focused therapist support would enhance maintenance. Results failed to show a significant effect of either booster session content (behavioral versus nonspecific) or session frequency (two week or four week). All groups continued to lose weight during the first three months of follow-up. Subjects in the first replication then showed significant increases in weight over the next 9 months, whereas subjects in the second replication maintained their weight loss. Kingsley and Wilson (1977) assigned overweight women to a group behavioral treatment, to an individual behavioral treatment or to a social-pressure therapy group. At post-treatment, half of each treatment group received additional booster sessions and the remaining half simply reported for weigh-ins at 3, 6, 9, and 12 months. Irrespective of type of treatment, those subjects

attending the booster sessions lost significantly more weight than those in the non-booster conditions at the 3- and 6-month follow-ups. There were no significant differences between the booster and non-booster conditions at the 9- and 12-month follow-ups. Beneke and Paulsen (1979) also found no difference in weight-loss maintenance between booster and non-booster conditions at an 18-month follow-up.

Stuart and Guire (1978) presented results which suggest that attendance at Weight Watchers classes after reaching goal weight may have a facilitative effect on maintenance. Members who did attend class meetings averaged 3.1 pounds above their goal weight at 1 year to 15 months posttreatment, in contrast to the 13.4 pounds above goal registered by those who rarely or never attended classes after reaching goal. Although the use of booster sessions has been strongly advocated (e.g., O'Leary & Wilson, 1975), the research that has appeared has yielded contradictory results, with most of the studies suggesting that this tactic may not be very effective in enhancing weight-loss maintenance.

Hall, Hall, Borden, and Hanson (1975) suggested that a possible factor contributing to the poor maintenance is the subject's dependency upon the therapist. When therapy ends, some subjects may stop applying the behavioral procedures because of loss of encouragement and reinforcement that was provided by the therapist. The gradual reduction of contact with a therapist has been proposed as a possible solution. Hanson, Borden, Hall, and Hall (1976) compared weight-loss maintenance at a 12-month follow-up among groups exposed to different degrees of therapist contact during treatment. The 12-month follow-up revealed

no significant differences among the groups. Brownell, Heckerman, and Westlake (1978) also presented pessimistic conclusions about the usefulness of this strategy. Overweight women were assigned to a behavioral treatment group emphasizing self-management techniques, a group receiving a weight control manual via mail with little professional contact, and a waiting list control group. There was no significant difference in weight loss between the two treatment groups at a 6-month follow-up.

Despite these negative reports, Carter, Rice, and DeJulio (1977) presented more encouraging data. Subjects who had met regularly with a therapist during treatment sessions had regained all the weight they had lost during treatment, and no longer differed from a no treatment control group. Those subjects who progressively had less contact with a therapist during treatment were able to maintain the initial losses.

Treating subjects on an individual basis so that interventions can be personally tailored to each subject's unique problems and needs has also been proposed as a strategy to facilitate long-term weight loss. Anecdotal support for this tactic is provided by Stuart and Davis (1972), who concluded after treating over 200 overweight women that "it was found expedient to individualize specific procedures within the rubric of a general approach to situational management" (p. 95). Kingsley and Wilson (1977) showed that both a group behavior therapy condition and a social-pressure therapy group resulted in successful maintenance of treatment-produced weight loss at a 12-month follow-up. Subjects treated with individual behavior therapy showed substantial relapse at long-term follow-up. The existence of only one controlled

study highlights the need for more research in this area.

After completing a weight loss program, an individual who returns to an environment which is so structured that he or she does not receive support or assistance for efforts to maintain or continue weight loss will probably begin to regain (Stunkard & Mahoney, 1976). Kingsley and Wilson (1977) suggested that continued self-regulatory behavior requires social support; like any other behavior it will extinguish in the absence of appropriate reinforcement. In order to maintain new eating and exercise behaviors, it may be necessary that behavior changes are reinforced and cued by significant others. Many programs have successfully utilized significant others in the natural environment in the treatment of such problems as deviant child behavior (Walder, Cohen, Breiter, Daston, Hirsch, & Leibowitz, 1969) and alcoholism (Hunt & Azrin, 1973).

Stuart and Davis (1972) first advocated that the training of significant others be incorporated in behavioral treatment programs for obesity. They also cited some unpublished data from which they concluded that husbands " ... are not only not contributors to their wives' efforts to lose weight, but they may actually exert a negative influence" (Stuart & Davis, 1972, pp. 19-20). Stuart (cited in Stuart & Davis, 1972) found that 83% of those subjects who could enlist the aid and co-operation of another person in cueing and reinforcing appropriate eating behavior lost 20% or more of their initial body weight and maintained this loss at a 12-month follow-up. Of those subjects who did not have the co-operation of another person, only 31% met with this same degree of success.

Mahoney and Mahoney (1976) included "social support engineering" in a treatment program by involving family members of obese subjects. They calculated a social support score based upon family attendance and therapists' reports of co-operation. The correlation between weight loss and social support was .92 at posttreatment, .33 at a 6-month follow-up, .39 at a 1-year follow-up, and .63 at a 2-year follow-up. This evidence is suggestive, although sample size was small and family involvement was only loosely structured. In a case study (Matson, 1977), the efficacy of self-monitoring of weight and restructuring environmental conditions was compared with using the subject's husband as a social reinforcer. Three pounds of weight were lost in 10 weeks with self-monitoring and environmental restructuring, and 39 pounds in 19 weeks with social reinforcement provided by the husband. Weight loss was maintained after 90 weeks of follow-up.

Saccone and Israel (1978) assigned subjects to groups where reinforcement for weight loss or for change in eating behavior was provided by either the therapist or a significant other. At posttreatment, the group which received reinforcement from a significant other for behavior change demonstrated the greatest weight loss. In a report of maintenance of weight loss at 3- and 12-month follow-ups, Israel and Saccone (1979) demonstrated that subjects who received reinforcement from a significant other for changes in eating behavior maintained greater weight loss than all other groups. Unfortunately the degree of adherence of both subjects and significant others to the program regimen was not assessed.

Zitter and Fremouw (1978) provided evidence which supports

Stuart and Davis' (1972) concerns about the negative influence significant others may have on weight loss. In the partner consequence group, subjects were able to gain money if they lost weight, and extra money if their partner lost weight. Discussion was oriented towards ways that subjects could help control their obese partner's eating and exercise behaviors. Only individual performance was rewarded in the individual consequence group. A 6-month follow-up revealed that the individual consequence group lost significantly more weight than the other group, which had gained 1.5 pounds over its pretreatment weight. Anecdotal observations indicated that partners socially reinforced each other for deviating from newly-learned eating patterns.

Wilson and Brownell (1978) compared the effectiveness of a family member present condition with a family member absent condition. In the family member present condition, the same family member was required to attend each treatment session, was taught the principles of behavior change, instructed to cease criticizing their partner's weight and/or eating behavior and to positively reinforce their partners for improving eating habits. No significant differences were found between the two groups, either at posttreatment or at a 6-month follow-up. The high attrition rate and the absence of an independent assessment of the degree to which family members complied with the behavioral prescriptions confound the interpretation of the results.

In a study designed to evaluate the influence of spouse cooperation on long-term maintenance of weight loss, Brownell, Heckerman, Westlake, Hayes, and Monti (1978) assigned 29 obese men and women to three experimental groups: 1) Co-operative spouse-couples training,



in which spouses attended all meetings with the subjects and were trained in modeling, monitoring, and reinforcement techniques; 2) Co-operative spouse-subject alone, in which subjects attended meetings alone even though their spouses had initially agreed to attend; 3) Non-co-operative spouse, in which subjects attended meetings alone because their spouses refused to participate in the program. At the 3-month and 6-month follow-up assessments, subjects in the spouse training condition lost significantly more weight than subjects in the other two conditions. Weight losses were among the highest so far reported, with subjects in the spouse training condition averaging nearly 30 pounds lost at the 6-month follow-up.

Spouses in the Nonco-operative spouse group were defined as such solely on the basis of their initial refusal to participate in the study. No independent assessments were made of the actual interactions between these spouses and their wives that might have been used to support the validity of this designation. Similarly, spouses in the Co-operative spouse-subject alone condition were defined as co-operative on the basis of their initial agreement to participate in the behavioral program. No assessments were made to determine if these spouses were truly co-operative in the natural environment (i.e., providing positive reinforcement for behavior change, cueing and modeling appropriate behaviors). Further investigations must include assessments of the amount of support spouses actually provide in order to identify the effective components of these obesity treatment programs. Instead of merely assuming that some spouses have no involvement in their wives' weight reduction efforts, future research

should include a group of subjects whose spouses are told to ignore their wives' efforts. A comparison of this group with a group of subjects whose spouses are actively trained to help them lose weight would elucidate the contribution of actual spouse training to outcome. Future between-group designs that evaluate the efficacy of spouse training for long-term maintenance of weight loss should also include nonspecific treatment control groups if causal relationships between specific therapeutic techniques and weight loss are to be demonstrated (Wilson, 1978).

Results from previous studies that have included spouse training suggest that this may be a very promising strategy to promote maintenance of weight loss. The present study was a long-term comparison of a group behavioral program that actively trained husbands to help their wives lose weight with two other group behavioral programs, one in which subjects participated by themselves and no interventions were made with spouses, and one in which spouses were instructed to ignore their wives' weight loss efforts. Assessments of both subjects' behavior changes and the amount of support spouses provided to the subjects in each of these three groups were conducted. Additionally, a nonspecific treatment control group and a delayed treatment control group were included.

The following hypotheses are proposed:

- I. The three behavioral groups will lose significantly more weight than the nonspecific treatment control group and the delayed treatment control group at posttreatment and at the three follow-ups.
- II. The behavioral group in which husbands undergo training will lose

significantly more weight at posttreatment and at the follow-ups than either the behavioral group in which husbands were not included in the training and the one in which husbands were instructed not to participate.

III. There will be a significant positive correlation between the amount of weight loss and the degree of support the subjects receive from their spouses.

## METHOD

Subjects

Sixty-eight women, ranging in age from 20 to 60 years who were selected from 250 respondents to newspaper advertisements announcing a weight control program, were interviewed by the senior therapist and provided with a copy of the Stanford Eating Disorders Clinic Questionnaire (Agras, Ferguson, Greaves, Qualls, Rand, Ruby, Stunkard, Taylor, Werne, & Wright, 1976) (Appendix A) to complete. During this pretreatment interview, each subject was weighed to the nearest quarter-pound after removing shoes, outdoor clothing, and any jewellery. All subjects were weighed on the same physician's beam balance. Heights to the nearest quarter-inch were also recorded.

On the basis of the interview and the assessment questionnaire, respondents were eliminated who (a) were not at least 20 pounds (9.09 kg) and 20% overweight based upon the 1959 Metropolitan Life Insurance Company norms (U.S. Department of Health, Education, and Welfare, 1967); (b) were currently involved in any other organized weight control program or any other form of psychotherapy; (c) were suffering from any obesity-related physical malady such as diabetes, thyroid dysfunction, colitis, or ulcers; (d) were taking any form of medication that would have affected water retention, appetite, or metabolism; (e) were pregnant or planning to become pregnant during the time span covered by the study; (f) were unwilling to commit themselves to a long-term (15 month) program; (g) were unwilling to place a \$50 deposit, entirely refundable contingent upon attendance at nine of the 10 treatment sessions and at the three follow-up assessment sessions;

(h) had husbands who were unwilling to participate in the program. All subjects were required to obtain written permission from a physician stating that they did not suffer from any physical condition that would contraindicate weight loss or participation in the program (Appendix B). Subjects were also required to sign a Consent for Use of Data Form (Appendix C).

Prior to treatment, subjects had a mean weight of 192.75 pounds (87.43 kg), were 41.02% overweight, and had a mean age of 39 years. Nearly a majority of subjects (45.59%) reported having had a weight problem since childhood or early adolescence (0-14 years of age). All subjects reported unsupervised efforts at weight control, and all had participated in an average of 3.79 organized weight reduction programs prior to this study.

#### Therapists

One nonobese male, and one nonobese female, both graduate students in clinical psychology, served as therapists. One therapist had a minimum of two years of experience conducting psychotherapy and had previously conducted behavioral weight reduction programs. The other therapist had just begun her graduate training in clinical psychology, and had no experience in conducting either psychotherapy or the behavioral treatment of obesity.

Therapist manuals described the overall rationale and provided specific, session-by-session instructions regarding the methods used in each treatment condition. Prior to the initiation of treatment, seven 60-minute therapist training sessions were held to ensure uniformity of treatment procedures across the two therapists. Additionally, the two

therapists met for one hour each week during the 10-week treatment phase to provide additional checks on therapist uniformity and to discuss any problems with the program or with the subjects that arose during treatment.

#### Procedure

Subjects were randomly assigned from stratified blocks of percentage overweight to one of five conditions: (1) co-operative spouse ( $n=14$ ); (2) wives alone ( $n=13$ ); (3) nonparticipating spouse ( $n=14$ ); (4) alternative treatment ( $n=13$ ); and (5) delayed treatment control ( $n=14$ ). Treatment consisted of 10 weekly sessions, each approximately 60 minutes in duration. Assessment intervals were held at pretreatment (during the first week of treatment for the four treatment conditions and at the screening interview for the delayed treatment control condition), and posttreatment (the last treatment session); follow-up sessions were conducted 3, 6, and 12 months after the end of the 10-week treatment program. The follow-up assessments were all conducted by the senior therapist. There was no contact between the senior therapist and the subjects during the follow-up phase except during the 3-, 6-, and 12-month weigh-ins.

To test for therapist effects, each of the four treatment conditions were divided into two groups. Each therapist treated one group from each condition.

All subjects were asked to sign a contingency contract (Appendix D) that specified that attendance at nine of the 10 treatment sessions, and at the three follow-ups, would result in the complete refund of a \$50 deposit. Any money that was not refunded was donated to

the Manitoba Heart Fund. It was emphasized that refunds were contingent upon attendance and that they were in no way related to weight loss or habit change.

The same information regarding obesity was provided to all subjects in the four treatment conditions. The idea that weight loss can be obtained only from a negative energy balance resulting from reduced caloric intake, increased caloric expenditure, or a combination of the two was presented.

Subjects in the four treatment conditions were asked to reduce their caloric intake to a level that was obtained by multiplying their pretreatment weight by 7 in order to obtain a rate of loss of 1 - 2 pounds (.45 - .91 kg) per week (LeBow & Perry, 1977). Thus the daily caloric intake for a 200 pound woman was 1,400 calories. It was strongly recommended that no one reduce her daily caloric intake below 1,000 calories. Subjects having difficulty losing weight at the 1,000 caloric limit were told to increase their energy expenditure through physical activity rather than reduce their caloric intake any further. All subjects were given a copy of Nutrient Value of Some Common Foods (Health and Welfare Canada, 1977), which lists the caloric values of most common foods, and a copy of calories expended in common physical activities.

#### Treatment Conditions

Condition 1 - co-operative spouse. Subjects in the co-operative spouse condition were told that obesity is the result of a prolonged positive energy balance resulting from inappropriate eating and exercise behaviors. The goal of the program was to teach new eating and

exercise behaviors that would enable the subjects to lose weight and to keep it off. Permanent behavior changes were emphasized throughout the 10-week treatment phase. The program comprised the sequential presentation of the various treatment techniques commonly incorporated in behavioral self-control programs for obesity (Stuart & Davis, 1972). Techniques included self-monitoring, self-reinforcement, imagery techniques, stimulus control, and behavior management methods (e.g., chaining procedures and substitution of incompatible behaviors).

Self-monitoring procedures included daily monitoring of caloric intake, caloric expenditure, and habit change. These records were reviewed each week with the subjects. Self-reinforcement involved having subjects provide reinforcement to themselves for appropriate habit change. Imagery techniques focused on the negative consequences of obesity. Stimulus control was a major focus of treatment and comprised common strategies such as buying food with a list, or storing problem foods in inaccessible places or in non-see-through containers.

An integral component of this condition was the participation of the subjects' spouses. Spouses attended all treatment sessions and were asked to participate fully to help their obese partner lose weight. Spouses were instructed to reinforce their wives for habit change rather than weight loss. They were told to model and cue appropriate eating and activity behaviors. For example, if subjects were asked to chew and swallow each bite before picking up cutlery, spouses were instructed to do the same while in their wives' presence. Stimulus control techniques were also presented to the spouses, and they were instructed to engage in these behaviors, such as refraining



from offering food to their wives. Spouses were also asked to participate with their wives in the activity component of the program.

Throughout the treatment phase, spouses were asked to be supportive to their wives in their attempts to reduce, and not to nag or criticize their wives' efforts.

Both subjects and spouses were trained in mutual monitoring techniques, i.e. each was to monitor their partner's behavior as well as their own (Appendix E). Four separate daily monitoring forms were prepared for the weekly sessions: (1) subject self-monitoring - e.g. "Did I put all foods away from clear sight?"; (2) subjects' monitoring of spouse behavior - e.g. "Did my husband reinforce my efforts at meeting my short-term goal for this week?"; (3) spouse self-monitoring - e.g. "When I handled food, did I store it in an inaccessible as well as out-of-sight place?"; and (4) spouses' monitoring of subject behavior - e. g. "Did my wife put all foods away from clear sight?". All monitoring records were reviewed and collected each week. Couples were given feedback regarding their habit change. A mutual effort was emphasized.

Each of the treatment sessions followed the same basic format. Each subject was weighed to the nearest quarter-pound after removing shoes and any heavy clothing or jewellery on a physician's beam balance and her weight was recorded. Each subject was weighed privately. Therapists were free to comment on the weight change and provided encouragement. After every member of the group had been weighed, the entire group reassembled and the therapist engaged the group in a discussion of the progress of the group as a whole and that of indivi-

duals. The discussion was then directed to any problems subjects might have had in completing the weekly records. If some members were having particular problems in keeping data, the therapist provided encouragement and attempted to shape record-keeping. A review of the previous week's behavior control lesson was then presented. The therapist not only reiterated the major points of the previous lesson, but asked individuals to describe their efforts at putting the techniques into practice. Difficulties encountered by the subjects in the application of these techniques were discussed with reference to the subjects' personal situation; specific recommendations from the group were solicited to resolve these problems.

Problems were analyzed by the therapist and group members on the basis of information provided by the subjects' reports and monitoring records. Throughout the treatment phase the therapist encouraged and praised group members who made appropriate suggestions. An attempt was made to personalize and individualize the program as much as possible within a group setting.

The therapist then introduced the behavioral control lesson for that week. The therapist explained the technique in detail and the learning principles upon which it was based, and encouraged group discussion and the suggestion of concrete examples of how individuals could apply these suggestions in their particular life situation. Each session concluded with a summary of the week's major assignments and words of encouragement from the therapist. The treatment manual for this condition is contained in Appendix F.

Condition 2 - wives alone. The procedures implemented in this

condition were identical to those used in the co-operative spouse condition. The spouses, however, did not attend any of the treatment sessions and were not contacted by either therapist at any point in the study. The subjects were presented with the same program as that presented to the co-operative spouse condition, except that the material dealing with spouse co-operation was deleted. As well as self-monitoring, subjects were asked to monitor the same specific behaviors of their spouses as the subjects in the co-operative spouse condition were asked to monitor. It was stressed that monitoring of the spouses' behavior should have been as unobtrusive as possible to reduce the reactivity of this procedure. The treatment manual for this condition is contained in Appendix F.

Condition 3 - nonparticipating spouse. The purpose of this condition was to include a group of subjects whose spouses were explicitly told not to participate in their wives' weight reduction efforts, as compared with the co-operative spouse condition where spouses were instructed to help the subjects, and the wives alone condition in which spouses may have spontaneously provided their wives with support.

The 10 treatment sessions were identical to those of the wives alone condition. The spouses of the subjects in this third condition were sent a letter (Appendix G) prior to the initiation of the treatment phase. The letter stressed that the purpose of the program was to teach the women to rely upon themselves as the primary change agents, and that they (spouses) should detach themselves as far as possible from the subjects' weight reduction efforts. It was strongly emphasized to the spouses in this condition that they should not

sabotage their wives' efforts, such as offering high calorie foods or nagging and criticizing their wives but should ignore the various behaviors and techniques they observed their wives using. Each spouse in this condition was then contacted by the senior therapist by telephone a week after the letters had been sent. The therapist reviewed the major points of the letter and answered any questions spouses might have had.

Subjects were instructed to self-monitor and to monitor the behaviors of spouses as in the co-operative spouse and wives alone conditions. The treatment manual for this condition is contained in Appendix F.

Condition 4 - alternative treatment. In this condition the focus of treatment was directed at the hypothetical and underlying causes of overeating. Subjects were told that self-understanding and insight may be necessary for an individual to lose weight. Subjects were not specifically instructed in the application of behavioral principles to lose weight and discussions did not focus on overeating or activity behaviors. The therapist's main task in this condition was to divert attention from current behaviors and to focus on past behaviors.

Treatment sessions followed the same basic format. Each subject was weighed privately on a physician's beam balance and her weight was recorded. After all subjects had been weighed, the therapist commented upon weight change and provided encouragement. An open discussion about personality dynamics and their relationship to weight reduction then followed, with the discussion focusing upon the underlying causes and motivations of overeating. The therapist manual for

the alternative treatment condition is contained in Appendix H.

Condition 5 - delayed treatment control. Subjects in this condition were assessed at pretreatment and then told that they would be offered treatment once the 10-week treatment program had ended, at which time they were again weighed. Since treatment was then provided after this assessment, the data for this condition are excluded from the statistical analyses incorporating the follow-up data.

### Measures

1. Weight. All subjects were weighed on the same physician's beam balance to the nearest quarter-pound prior to each meeting. Weight loss was calculated by subtracting a subject's weight at the time of each assessment from the pretreatment weight. Feinstein's weight

$$\text{reduction quotient} = \frac{\text{pounds lost}}{\text{pounds overweight}} \times \frac{\text{initial weight}}{\text{ideal weight}} \times 100$$

served as the principal measure of treatment efficacy. This measure has been recommended over absolute pounds lost and percentage of body weight lost as it takes into account height, amount overweight, weight reduction goals, and absolute pounds lost (Wilson, 1978). Absolute pounds lost will also be reported to provide some basis of comparability to other studies which have relied solely on this measure.

2. Daily log measures of habit change. From each subject's daily log, a calorie score and a behavior score were calculated each week. The calorie score was composed of two components: (a) Total Calorie Score which was the sum of the number of calories consumed per day; and (b) Relative Calorie Score which was the sum of the number of calories consumed each day relative to the prescribed level for each subject (i.e. number of calories consumed per day minus the prescribed

daily caloric level).

The Subject Behavior Score reflected the degree to which the subject reported adherence to the prescribed behavior regimen. A Spouse Behavior Score was calculated from the Daily Logs of spouse behavior recorded by subjects in the co-operative spouse, wives alone, and nonparticipating spouse conditions.

Subjects in the three behavioral conditions were also required to record the number of calories expended through physical activity (Subject Activity Score).

#### Reliability Measures

1. Weight. To obtain an estimate of the reliability of subjects' weights obtained from the weekly weigh-ins during the treatment phase, each subject was asked to weigh herself privately on the balance beam scale at week two and week eight and to record this weight on paper. After the subject had weighed herself and recorded the weight, she was then weighed by the therapist who recorded the weight. All weights were recorded to the nearest quarter-pound. The following formula was used to compute the reliability of this measure:

$$\frac{\text{Number of agreements}}{\text{Number of agreements} + \text{number of disagreements}} \times 100$$

In order to qualify as an agreement, both weights had to be identical.

2. Subject Behavior Score and Spouse Behavior Score. Additionally, behavior scores were calculated from subjects' and spouses' records of others' behaviors (Subject Rating of Spouse Behavior and Spouse Rating of Subject Behavior). In order to obtain an estimate of the reliability of subjects' self-reports of their behavior, their self-reported behavior scores were correlated with the spouses' reports of

subjects' behavior. Likewise, a reliability estimate of the spouses' self-reports of their behavior was obtained by correlating the spouses' self-reports with the subjects' reports of their husbands' behavior.

## RESULTS

### Pretreatment Analyses

Subject characteristics among the five experimental conditions at pretreatment are displayed in Table 1. A one-way multivariate analysis of variance, displayed in Table 2, revealed no significant differences among the five experimental conditions on the following variables: age, age of earliest onset, weight, number of pounds overweight, and percentage overweight.

### Subject Attrition

Of the original 68 subjects, all had met the attendance requirements at posttreatment, which represented a 0% attrition rate. By the 12-month follow-up, 6 subjects had been lost, which represented a 8.82% attrition rate. The co-operative spouse condition lost one subject due to pregnancy and one to a move out of the city; the wives alone condition lost one to a move; the nonparticipating spouse condition lost two to moves; and the alternative treatment condition lost one due to pregnancy.

### Reliability Measures

1. Weight. The reliability estimate for subjects' weight at week two was 95.6%, and 97.1% at week eight, indicating a high level of agreement between subjects and therapists regarding weigh-ins.
2. Subject Behavior Score and Spouse Behavior Score. The correlation between the Subject Behavior Score and the Spouse Rating of Subject Behavior was significant ( $r = .89$ ,  $p < .01$ ). Additionally, the correlation between the Spouse Behavior Score and the Subject Rating of Spouse Behavior Score was significant ( $r = .90$ ,  $p < .01$ ). Both of these significant correlations indicate that couples displayed a high



Table 1

Subject Characteristics Among the Five Experimental Conditions at Pretreatment

Variable	Condition				
	Co-operative spouse	Wives alone	Nonparticipating spouse	Alternative treatment	Delayed treatment control
Age (years)					
Mean	37	40	38	41	41
S. D.	10	9	11	10	12
Age of Earliest Onset (years)					
Mean	18	20	23	19	18
S. D.	11	6	7	9	6
Weight (pounds)					
Mean	193.16	192.17	189.61	196.48	192.59
S. D.	21.61	29.57	36.96	28.26	41.43
Number of Pounds Overweight					
Mean	58.48	52.14	56.21	56.79	57.75
S. D.	20.68	19.90	25.48	18.89	36.44

Table 1, continued

## Subject Characteristics Among the Five Experimental Conditions at Pretreatment

Variable	Condition				
	Co-operative spouse	Wives alone	Nonparticipating spouse	Alternative treatment	Delayed treatment control
Percentage					
Overweight					
Mean	43.59	37.24	41.05	40.52	42.31
S. D.	17.05	14.11	15.59	11.76	24.69

Note. 1 pound = .4536 kg.

Table 2

Multivariate Analysis of Variance of Subject Characteristics  
of the Experimental Conditions at Pretreatment<sup>a</sup>

Source	<u>MS</u>	Univariate <u>F</u>	<u>p</u>	Step Down <u>F</u>	<u>p</u>
Subjects' Age	.06	.00	.98	.00	.98
Age of Earliest Onset	5.21	.08	.77	.16	.70
Subjects' Weight	102.08	.10	.76	.10	.76
Number of Pounds Overweight	6.00	.01	.92	.93	.34
Percentage Overweight	21.67	.07	.79	.09	.77

<sup>a</sup>Analysis was conducted using the Finn programme MULTIVAR (Finn, 1976).

level of agreement regarding subject and spouse behavior.

#### Correlations among Measures of Weight Change

Absolute pounds lost and percentage of body weight lost were calculated for each subject at posttreatment, in addition to the weight reduction quotient. The correlations between the weight reduction quotient and absolute pounds lost and percentage of body weight lost at posttreatment were both highly significant ( $r = .89$ ,  $p < .0001$  and  $r = .92$ ,  $p < .0001$  respectively). Likewise the correlation between absolute pounds lost and percentage of body weight lost was also significant ( $r = .99$ ,  $p < .0001$ ).

#### Therapist Effects

The posttreatment weight reduction quotients were initially analyzed by a 5(Treatment: co-operative spouse, wives alone, nonparticipating spouse, alternative treatment, and delayed treatment control) x 2(Therapist) analysis of variance. This analysis is displayed in Table 3 and revealed no significant therapist effect and no significant therapist-by-treatment interaction; data were therefore combined across therapists. The resulting one-way analysis of variance, displayed in Table 7, served as the principal analysis of the posttreatment data.

The follow-up data from posttreatment to the 12-month follow-up interval were initially analyzed by a 2(Therapist) x 4(Treatment: co-operative spouse, wives alone, nonparticipating spouse, and alternative treatment) x 4(Assessment Interval: posttreatment, 3-, 6-, and 12-month follow-ups) repeated measures analysis of variance, displayed in Table 4. The delayed treatment control condition was treated at posttreatment, and thus eliminated from the follow-up analysis. This

Table 3

Two-Way Analysis of Variance (Treatment x Therapist) on Weight  
Reduction Quotient Scores at Posttreatment<sup>b</sup>

Source	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Treatment	4	3282.11	9.79	.001
Therapist	1	91.85	.27	.60
Treatment x Therapist	4	67.78	.20	.94
Error	58	335.38		

<sup>b</sup> Analysis was conducted using the SPSS programme ANOVA (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) using Method 2 (Experimental Design approach) (Overall & Spiegel, 1969).

Table 4

Three-Way Repeated Measures Analysis of Variance (Therapist  
x Treatment x Assessment Interval) on Weight Reduction Quo-  
tient Scores from Posttreatment to the 12-Month Follow-up<sup>c</sup>

Source	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Between Subject				
Therapist	1	4.53	0.00	.97
Treatment	3	11367.91	2.99	.04
Therapist x Treatment	3	6.49	0.00	.99
Error (Subject x Therapist x Treatment)	40	3806.73		
Within Subject				
Interval	3	597.64	2.16	.10
Interval x Therapist	3	55.05	.20	.90
Interval X Treatment	9	349.61	1.27	.26
Interval X Therapist x Treatment	9	76.48	.28	.98
Error (Subject x Interval x Therapist x Treatment)	120	276.25		

<sup>c</sup>Analysis was conducted using the BMDP2V programme REPEATED MEASURES  
P2V (Dixon & Brown, 1977) using Method 1 (Regression approach)  
(Overall & Spiegel, 1969).

analysis revealed no significant therapist effect, and no significant therapist-by-treatment, therapist-by-interval, or therapist-by-treatment-by-interval interactions; the data were therefore combined across therapists. The resulting 4(Treatment) x 4(Assessment Interval) repeated measures analysis of variance, displayed in Table 8, served as the principal analysis of the follow-up data.

#### Treatment Weight Loss

Table 5 illustrates the mean weight reduction quotients, the mean number of pounds lost, standard deviations, and  $n$  for all conditions at posttreatment and at the three follow-ups. The percentages of subjects losing between 20 and 29 pounds, 30 and 39 pounds, and 40 pounds or more are displayed in Table 6 (Stunkard & McLaren-Hume, 1959). The weights for each subject at each assessment interval are presented in Appendix I.

#### Posttreatment Analyses

The posttreatment weight reduction quotients obtained from the five treatment conditions were analyzed by a one-way analysis of variance, displayed in Table 7. This analysis showed a significant treatment effect,  $F(4, 63) = 10.43, p < .001$ .

At posttreatment, all four treatment conditions showed a weight loss over their pretreatment weights; the delayed treatment control condition had gained .50 pounds. Multiple comparisons were conducted using  $t$  tests. To control for Type I error, the Bonferroni method of splitting alpha was employed. Each individual test was conducted using  $\alpha = .01$ , giving an analysis-wise error rate = .08. No significant differences among the conditions were obtained. There was no significant difference on the weight reduction quotient between the

Table 5

Mean Weight Reduction Quotients (RQs) and Mean Number of Pounds Lost for All  
Experimental Conditions at Posttreatment and at the 3-, 6-, and 12-Month Follow-ups

Condition	Assessment Interval											
	<u>Posttreatment</u>			<u>3-Month Follow-up</u>			<u>6-Month Follow-up</u>			<u>12-Month Follow-up</u>		
	<u>n</u>	RQs	Pounds Lost	<u>n</u>	RQs	Pounds Lost	<u>n</u>	RQs	Pounds Lost	<u>n</u>	RQs	Pounds Lost
Co-operative	14			12			12			12		
Mean		37.61	14.34		51.42	18.04		47.74	16.46		51.18	18.19
S. D.		17.86	6.41		34.16	10.44		37.23	11.21		39.58	11.85
Wives alone	13			12			12			12		
Mean		27.48	9.52		29.26	10.02		22.89	7.54		15.26	4.77
S. D.		17.76	5.41		29.92	9.50		28.29	9.64		36.54	13.16
Nonparticipating spouse	14			12			12			12		
Mean		29.37	11.21		37.95	14.48		30.77	11.29		32.64	12.40
S. D.		20.48	8.85		36.71	13.79		34.05	10.51		19.52	13.07



Table 5, continued

Mean Weight Reduction Quotients (RQs) and Mean Number of Pounds Lost for All  
Experimental Conditions at Posttreatment and at the 3-, 6-, and 12-Month Follow-ups

Condition	Assessment Interval											
	<u>Posttreatment</u>			<u>3-Month Follow-up</u>			<u>6-Month Follow-up</u>			<u>12-Month Follow-up</u>		
	<u>n</u>	RQs	Pounds Lost	<u>n</u>	RQs	Pounds Lost	<u>n</u>	RQs	Pounds Lost	<u>n</u>	RQs	Pounds Lost
Alternative treatment	14			12			12			12		
Mean		12.23	3.58		15.73	5.27		13.59	4.54		1.00	-.71
S. D.		17.52	5.98		36.48	13.41		41.71	15.13		34.12	11.63
Delayed treatment control	14											
Mean		-.94	-.50									
S.D.		14.54	5.25									

Note. 1 pound = .4536 kg.

Table 6

Percentages of Subjects Losing Between 20-29 Pounds,  
30-39 Pounds, and 40 Pounds or More at Posttreatment  
and at the 3-, 6-, and 12-Month Follow-ups

Posttreatment			
Condition	Percentage of Weight Lost		
	20-29 Pounds	30-39 Pounds	Over 40 Pounds
Co-operative spouse	28.57%	0%	0%
Wives alone	0%	0%	0%
Nonparticipating spouse	0%	7.14%	0%
Alternative treatment	0%	0%	0%
Delayed treatment control	0%	0%	0%
3-Month Follow-up			
Co-operative spouse	25.00%	0%	8.33%
Wives alone	8.33%	0%	0%
Nonparticipating spouse	8.33%	8.33%	8.33%
Alternative treatment	8.33%	8.33%	0%

Table 6, continued

Percentages of Subjects Losing Between 20-29 Pounds,  
30-39 Pounds, and 40 Pounds or More at Posttreatment  
and at the 3-, 6-, and 12-Month Follow-ups

6-Month Follow-up			
Co-operative spouse	41.67%	8.33%	0%
Wives alone	16.67%	0%	0%
Nonparticipating spouse	8.33%	8.33%	0%
Alternative treatment	8.33%	0%	8.33%
12-Month Follow-up			
Co-operative spouse	33.33%	16.67%	0%
Wives alone	8.33%	0%	0%
Nonparticipating spouse	0%	8.33%	8.33%
Alternative treatment	0%	0%	0%

Table 7

One-Way Analysis of Variance (Treatment) on Weight  
Reduction Quotient Scores at Posttreatment<sup>d</sup>

Source	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Treatment	4	3280.56	10.43	.001
Error	63	314.52		

<sup>d</sup> Analysis was conducted using the SPSS programme ANOVA (Nie et al., 1975) using Method 2 (Experimental Design approach) (Overall & Spiegel, 1969).

co-operative spouse condition and the alternative treatment condition,  $t(25) = 1.43$ ,  $p < .10$ , or between the co-operative spouse condition and the delayed treatment control condition,  $t(26) = 2.17$ ,  $p < .025$ . The difference between the wives alone condition and the alternative treatment condition was not significant,  $t(24) = .86$ ,  $p > .10$ , as was the difference between the wives alone condition and the delayed treatment control condition,  $t(25) = 1.60$ ,  $p < .10$ . Similarly, the nonparticipating spouse condition did not have a significantly larger weight reduction quotient than either the alternative treatment condition,  $t(25) = .97$ ,  $p > .10$ , or the delayed treatment control condition,  $t(26) = 1.71$ ,  $p < .05$ . Finally, the co-operative spouse condition did not have a significantly larger weight reduction quotient than either the wives alone condition,  $t(25) = .57$ ,  $p > .10$ , or the nonparticipating spouse condition,  $t(26) = .47$ ,  $p > .10$ .

#### Follow-up Analyses

At posttreatment, subjects in the delayed treatment control condition were treated, and therefore eliminated from the analyses of the follow-up data. This procedure left four treatment conditions: co-operative spouse, wives alone, nonparticipating spouse, and alternative treatment. The weight reduction quotients from these four conditions were analyzed by a 4(Treatment) x 4(Assessment Interval: post-treatment, 3-, 6-, and 12-month follow-ups) repeated measures analysis of variance, displayed in Table 8. This analysis showed a significant treatment effect,  $F(3, 44) = 3.28$ ,  $p < .03$ . The main effect for assessment interval approached significance,  $F(3, 132) = 2.32$ ,  $p < .08$ . The treatment-by-interval interaction also failed to reach signifi-

Table 8

Two-Way Repeated Measures Analysis of Variance  
 (Treatment x Assessment Interval) on Weight  
 Reduction Quotient Scores from Posttreatment  
 to the 12-Month Follow-up<sup>e</sup>

Source	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Between Subject				
Treatment	3	11367.91	3.28	.03
Error (Subject x Treatment)	44	3461.21		
Within Subject				
Interval	3	597.63	2.32	.08
Interval x Treatment	9	349.61	1.36	.21
Error (Subject x Interval x Treatment)	132	257.60		

<sup>e</sup>Analysis was conducted using the BMDP2V programme REPEATED MEASURES  
P2V (Dixon & Brown, 1977) using Method 1 (Regression approach)  
 (Overall & Spiegel, 1969).

cance,  $F(9, 132) = 1.36$ ,  $p < .20$ . The weight changes across all assessment intervals are also displayed in Figures 1 and 2.

Multiple comparisons were conducted using  $t$  tests. Due to the problem of not meeting the assumptions of the repeated measures analysis of variance model, individual estimates of variance were used (Lindman, 1974). To control for Type I error, the Bonferroni method of splitting alpha was employed. Each individual test was conducted using  $\alpha = .01$ , giving an experiment-wise error rate = .1821.

Subjects in all treatment conditions continued to lose weight between posttreatment and the 3-month follow-up assessment interval. The co-operative spouse condition had a significantly larger weight reduction quotient than the alternative treatment condition,  $t(22) = 3.35$ ,  $p < .005$ . The co-operative spouse condition did not have a significantly larger weight reduction quotient than either the wives alone condition,  $t(22) = 2.29$ ,  $p < .025$ , or the nonparticipating spouse condition,  $t(22) = 1.26$ ,  $p > .10$ . The weight reduction quotient of the wives alone condition was not significantly larger than that of the alternative treatment condition,  $t(22) = 1.35$ ,  $p < .10$ . Likewise, the weight reduction quotient of the nonparticipating spouse condition was not significantly larger than the weight reduction quotient of the alternative treatment condition,  $t(22) = 2.01$ ,  $p < .05$ .

Subjects in all treatment conditions gained some weight at the 6-month follow-up. The co-operative spouse condition had a significantly larger weight reduction quotient than the alternative treatment condition,  $t(22) = 2.87$ ,  $p < .005$ . The co-operative spouse condition did not have a significantly larger weight reduction quotient than either the wives alone condition,  $t(22) = 2.49$ ,  $p < .025$ , or the non-

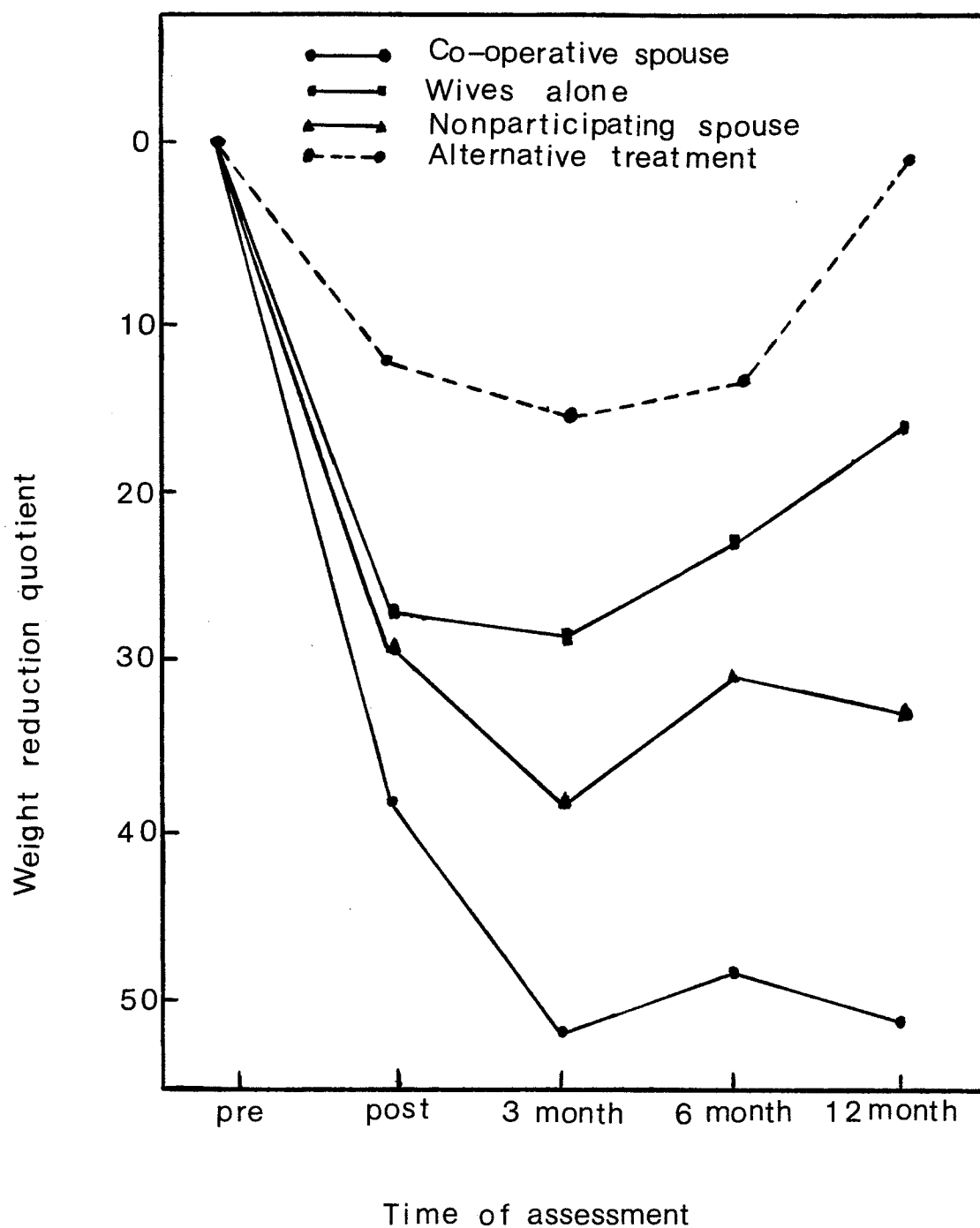


Figure 1. Mean changes in the weight reduction quotient for all experimental conditions at posttreatment and the 3-month, 6-month, and 12-month follow-ups.



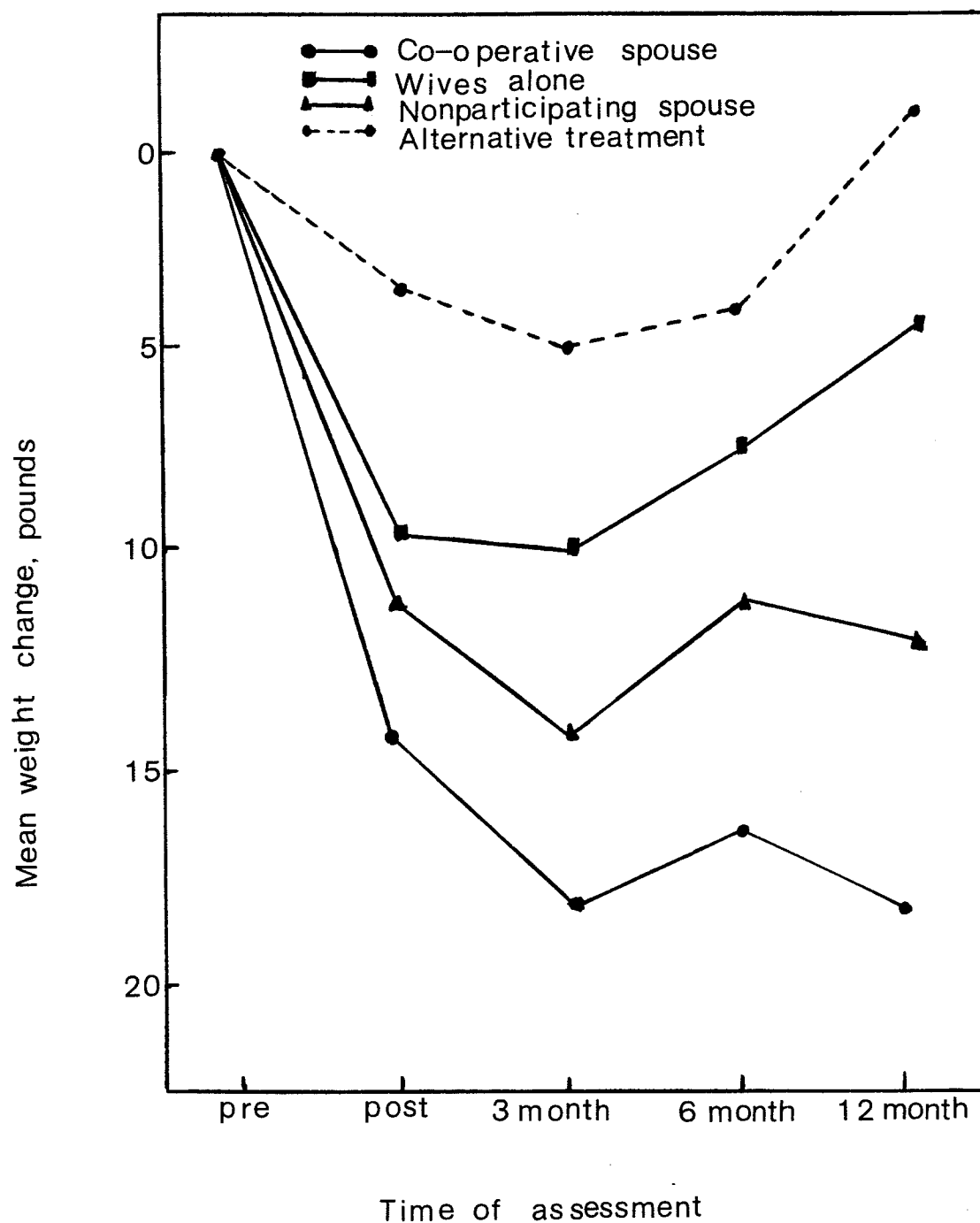


Figure 2. Mean changes in body weight for all experimental conditions at posttreatment and the 3-month, 6-month, and 12-month follow-ups.

participating spouse condition,  $t(22) = 1.58$ ,  $p < .01$ . There was no significant difference between the wives alone condition and the alternative treatment condition,  $t(22) = .87$ ,  $p > .10$ , or between the nonparticipating spouse condition and the alternative treatment condition,  $t(22) = 1.50$ ,  $p < .10$ .

By the 12-month follow-up, the co-operative spouse condition had lost the weight it had regained at the 6-month follow-up. The wives alone condition regained some more weight, while the nonparticipating spouse condition lost some of the weight it had regained at the 6-month follow-up. The alternative treatment condition had regained nearly all of the weight it had lost at posttreatment. The co-operative spouse condition had a significantly greater weight reduction quotient than the alternative treatment condition,  $t(22) = 4.59$ ,  $p < .0005$ , and the wives alone condition,  $t(22) = 3.21$ ,  $p < .005$ . The weight reduction quotient of the co-operative spouse condition was not significantly larger than that of the nonparticipating spouse condition,  $t(22) = 1.64$ ,  $p < .10$ . There was no significant difference between the wives alone condition and the alternative treatment condition,  $t(22) = 1.34$ ,  $p < .10$ . The nonparticipating spouse condition had a significantly larger weight reduction quotient than the alternative treatment condition,  $t(22) = 2.84$ ,  $p < .005$ .

These results reveal that the co-operative spouse condition lost significantly more weight than the alternative treatment condition at the three follow-ups, and that the nonparticipating spouse condition lost significantly more weight than the alternative treatment condition at the 12-month follow-up. There were no other significant differences between the three behavioral conditions and the alternative



treatment condition and the delayed treatment control condition at posttreatment and at the three follow-ups. These results partially support Hypothesis I. The co-operative spouse condition lost significantly more weight than the wives alone condition at the 12-month follow-up, partially supporting Hypothesis II. There were no other significant differences, however, among the three behavioral conditions at posttreatment or at the three follow-ups.

The delayed treatment control condition was offered treatment after the treatment program for the other four conditions had terminated; this condition was therefore excluded from the follow-up analyses. Three of the original 14 subjects declined treatment, while two others prematurely terminated from treatment. Four subjects attended sessions with their spouses and treatment identical to that used in the co-operative spouse condition was provided. The other five subjects elected to attend treatment by themselves, and procedures identical to the wives alone condition were instituted. Due to scheduling conflicts, subjects were treated individually. After a 10-week treatment phase, the mean weight reduction quotient was 22.71 (SD = 21.03) and mean number of pounds lost was 6.94 pounds (SD = 5.17). An 8-month follow-up revealed that these losses were maintained, with a mean weight reduction quotient of 22.96 (SD = 30.94) and mean number of pounds lost was 6.52 pounds (SD = 9.72). At both the end of treatment and at the 8-month follow-up, the four subjects who attended sessions with their spouses had the greatest weight losses, ranging from 10 to 19.75 pounds at the follow-up, as compared with the weight loss of subjects who attended treatment without spouses,  $t(7) = 2.83$ ,  $p < .05$ . The

weights for each subject are included in Appendix I.

#### Program Adherence - Behavior Scores and Calorie Scores

The means and standard deviations of the behavior and calorie scores for the three behavioral conditions at posttreatment are displayed in Table 9. A multivariate analysis of variance revealed that the co-operative spouse condition had a significantly higher Spouse Behavior Score than either the wives alone condition or the nonparticipating spouse condition. This analysis is displayed in Table 10. There was no significant difference between the wives alone condition and the nonparticipating spouse condition on the Spouse Behavior Score. The three groups did not differ on any of the other variables: Relative Calorie Score, Subject Behavior Score, and Subject Activity Score.

The correlational data between subject variables, indices of behavior change, and the two measures of weight change (weight reduction quotient and absolute pounds lost) at posttreatment and at the three follow-ups are displayed in Table 11. At posttreatment, only the Relative Calorie Score was significantly correlated with absolute pounds lost ( $r = .38$ ,  $p < .01$ ). At the 3-month follow-up, the correlation between pretreatment weight and the weight reduction quotient was significant ( $r = -.31$ ,  $p < .05$ ). At the 6-month follow-up, the pretreatment weight was associated with the weight reduction quotient ( $r = -.33$ ,  $p < .05$ ), and the number of pounds overweight was also significantly correlated with the weight reduction quotient ( $r = -.29$ ,  $p < .05$ ). Additionally, the Spouse Behavior Score was significantly associated with absolute pounds lost ( $r = .29$ ,  $p < .05$ ). At the 12-month follow-up, there were no significant correlations. These

Table 9  
Behavioral Characteristics of the Co-operative Spouse,  
Wives Alone, and Nonparticipating Spouse Conditions at  
Posttreatment

Variable	Condition		
	Co-operative spouse	Wives alone	Nonparticipating spouse
Relative Calorie			
Score			
Mean	10425.52	8132.31	12298.39
S. D.	12992.89	10865.68	13646.68
Subject Behavior			
Score			
Mean	607.14	574.62	659.43
S. D.	110.13	119.88	101.30
Spouse Behavior			
Score			
Mean	461.07	201.77	203.00
S. D.	120.76	162.48	96.40
Subject Activity			
Score			
Mean	8586.79	7388.31	7908.29
S. D.	4036.43	6182.43	6963.91

Table 10  
Multivariate Analysis of Variance of Behavioral  
Characteristics of the Co-operative Spouse,  
Wives Alone, and Nonparticipating Spouse  
Conditions at Posttreatment<sup>f</sup>

Source	<u>MS</u>	Univariate <u>F</u>	<u>p</u>	Step Down <u>F</u>	<u>p</u>
Relative Calorie Score	163122.30	.00	.98	.00	.98
Subject Behavior Score	1208.65	.10	.76	.17	.68
Spouse Behavior Score	616850.60	37.37	.0001	53.28	.0001
Subject Activity Score	7954415.40	.23	.63	.23	.63

<sup>f</sup> Analysis was conducted using the Finn programme MULTIVAR (Finn, 1976).

Table 11  
Correlational Data for Weight Reduction Quotients (RQs), Pounds Lost, Indices of  
Behavior Change, and Subject Variables at Posttreatment and at the 3-, 6-, and  
12-Month Follow-ups<sup>g</sup>

Variables	Assessment Interval							
	<u>Posttreatment</u>		<u>3-Month Follow-up</u>		<u>6-Month Follow-up</u>		<u>12-Month Follow-up</u>	
	RQs	Pounds Lost	RQs	Pounds Lost	RQs	Pounds Lost	RQs	Pounds Lost
Age	-.03	-.17	.09	-.08	.18	.03	.20	.08
Age of Earliest Onset	-.08	-.04	-.10	-.17	-.05	-.11	-.06	-.11
Pretreatment Weight (pounds)	-.23	.12	-.31*	-.17	-.33*	-.25	-.22	-.05
Number of Pounds Overweight	-.21	.21	-.23	-.01	-.29*	-.12	-.19	.02
Percentage Overweight	-.09	.25	-.10	.14	-.17	.02	-.11	.10
Relative Calorie Score	-.07	.38**	-.06	.18	-.12	.07	-.19	-.01
Total Calorie Score	-.06	-.06	-.07	-.08	-.13	-.14	-.05	-.03

Table 11, continued

Correlational Data for Weight Reduction Quotients (RQs), Pounds Lost, Indices of Behavior Change, and Subject Variables at Posttreatment and at the 3-, 6-, and 12-Month Follow-ups<sup>g</sup>

Variables	Assessment Interval							
	<u>Posttreatment</u>		<u>3-Month Follow-up</u>		<u>6-Month Follow-up</u>		<u>12-Month Follow-up</u>	
	RQs	Pounds Lost	RQs	Pounds Lost	RQs	Pounds Lost	RQs	Pounds Lost
Subject Activity Score	-.16	-.18	-.14	-.16	-.13	-.16	-.14	-.15
Subject Behavior Score	.06	.17	.10	.20	0	.10	.12	.19
Spouse Behavior Score	.20	.17	.22	.23	.23	.29*	.23	.26
Subject Rating of Spouse Behavior	.03	-.06	-.05	.06	-.14	-.02	-.01	.11
Spouse Rating of Subject Behavior	.15	0	.17	.19	.16	.19	.30	.34

\*  $p < .05$

\*\*  $p < .01$

<sup>g</sup> Analysis was conducted using the SPSS programme PEARSON CORR (Nie et al., 1975).



results provide only weak and partial support to Hypothesis III that there would be a significant positive correlation between treatment outcome and the degree of support subjects received from their spouses.

## DISCUSSION

The present findings provide partial support for the first hypothesis that the three behavioral treatments would produce significantly greater weight losses than the alternative treatment and the delayed treatment control conditions at posttreatment and at the three follow-ups. There were no differences between the behavioral treatment conditions and the delayed treatment control and the alternative treatment conditions at posttreatment. Of the three behavioral conditions, only the co-operative spouse condition lost significantly more weight than the alternative treatment condition at all three follow-ups; the nonparticipating spouse condition lost significantly more weight than the alternative treatment condition at the 12-month follow-up. The results provide only weak and partial support for the second hypothesis that the co-operative spouse condition would show significantly greater maintenance of treatment-produced weight loss than the other two behavioral conditions at posttreatment and at the three follow-ups. This hypothesis was only confirmed at the 12-month follow-up when the co-operative spouse condition lost significantly more weight than the wives alone condition. Finally, the third hypothesis that treatment outcome would be positively correlated with the degree of spouse support received only weak and partial support.

Many studies have failed to discover subject variables which predict weight loss (Brownell et al., 1978; Levitz et al., 1979). In the present study, the pretreatment weights were negatively associated with the weight reduction quotients at the 3- and 6-month follow-ups. Also, the number of pounds overweight was negatively associated with the weight reduction quotient at the 6-month follow-up. These results,

although certainly not consistent, suggest that heavier subjects may lose less weight than lighter ones; Stuart and Guire (1978) found the same pattern. Murray (1975) tabulated correlations between initial weight and weight loss and found a tendency for those with the highest initial weight to lose the most weight. This contrary finding is certainly perplexing and deserves further study. There was no association between weight loss and the age of the subject or age of the onset of obesity. Brownell et al. (1978) and Jeffery et al. (1978) also found that juvenile onset obese subjects did not differ from adult onset subjects in the ability to lose weight, while Stuart and Guire (1978) found no association between age and outcome. Thus the question of why some subjects succeed and others do not remains unanswered in the present study. Some promising data is furnished by Stuart and Guire (1978), who found that maintainers were more likely to accept a narrow definition of acceptable weight, were more likely to perceive themselves as competent to maintain their changes, were more likely to continue to utilize treatment-taught skills, and were more likely to effect important lifestyle changes. Future research should include these variables in the search for predictors of long-term weight loss maintenance.

Inconsistent with the results of previous investigations (Kingsley & Wilson, 1977; Stunkard & Mahoney, 1976), the behavioral treatments did not produce significantly greater initial weight losses than the comparison treatment method and the delayed treatment control condition. The wives alone condition did not achieve a significantly larger weight reduction quotient than the alternative treatment at the three follow-ups. At the 12-month follow-up, the

wives alone condition, which incorporated the usual behavioral principles and techniques which are commonly applied to the problem of obesity, had regained half of the weight it had lost at posttreatment. These results are similar to the ones presented by Stunkard and Penick (1979), who found that both behavioral and more traditional treatments began to regain as the follow-up interval increased. That this pattern of relapse for subjects who participated in a standard behavioral weight control program emerged in the present study strengthens the conclusion that weight losses generated by standard behavioral treatments are not well maintained (Stunkard & Penick, 1979). The absence of significant differences between the wives alone condition and the alternative treatment, consistent with the results of Kingsley and Wilson (1977), also underscores the retention of non-specific control groups in future treatment outcome studies.

The superiority of the co-operative spouse condition over the alternative treatment did emerge at the three follow-ups, suggesting that spouse involvement may be a potent facilitative factor in long-term weight control. Additionally, while all other treatment conditions regained some weight by the 6-month follow-up, only the co-operative spouse condition was able to lose all of it by the 12-month follow-up. At the 12-month follow-up, the nonparticipating spouse condition weighed less than it did at posttreatment and had a significantly larger weight reduction quotient than the alternative treatment condition. The data suggest that training spouses to actively aid their wives' weight loss efforts, and telling spouses not to punish, criticize, or tease their wives may both be effective strategies to generate long-term weight maintainance. The standard behavioral

treatment, in which spouses were not contacted (wives alone), did not produce long-term maintenance.

Although the co-operative spouse condition and the nonparticipating spouse condition had lost some more weight from posttreatment to the 12-month follow-up, these changes across time were not statistically significant. This pattern suggests that spouses were most influential in the maintenance of weight loss rather than the continuance of weight loss, and that different variables may govern these two processes. Only continued follow-up will reveal whether these conditions will be able to maintain this weight loss.

In addition to demonstrating maintenance of weight loss at a 12-month follow-up, the co-operative spouse condition produced a weight loss which is substantially greater than the average 11 pound loss reported in other behavioral programs (Jeffery, Wing, & Stunkard, 1978). The weight reduction quotients obtained in the present study cannot be compared to those obtained by Brownell et al. (1978) as the truncated version (pounds lost/pounds over ideal weight  $\times$  100) was used by Brownell et al. (1978). At a 6-month follow-up, Brownell et al. (1978) reported a mean of 29.6 pounds lost for their co-operative spouse condition, in comparison with the mean of 16.46 pounds lost for the same condition in the present study. The superiority of Brownell et al.'s (1978) results may be due to the provision of weight control manuals to their subjects and the inclusion of monthly weigh-ins during the 6-month follow-up phase; neither strategy was implemented in the present study. There is some data which suggest that both strategies may have a facilitative effect on the maintenance of weight loss during the first 6 months of follow-up (Kingsley & Wilson,

1977; Pezzot-Pearce, 1980). The mean loss of 18.19 pounds at the 12-month follow-up by the co-operative spouse condition, however, is among the largest so far reported for long-term weight loss. As in most treatment studies, there was large variability in outcome (Stunkard & Mahoney, 1976).

There were no significant differences between the co-operative spouse condition and the nonparticipating spouse condition at post-treatment or at any of the follow-ups. Active training of spouses did not significantly enhance long-term weight loss maintenance in comparison with a condition whose spouses were instructed not to sabotage their wives' efforts, even though spouses in the co-operative spouse condition did provide more support to their wives than spouses in the nonparticipating spouse condition (as manifested by the significantly higher Spouse Behavior score obtained by the former condition). The active training of spouses was, however, associated with superior maintenance at the 12-month follow-up in comparison with the condition in which subjects participated in the basic behavioral program and in which no interventions were made with the spouses (wives alone). Spouse training was multifaceted and consisted of many elements: mutual monitoring, contracting for habit change, modeling for appropriate eating behavior, and training in stimulus control strategies, in addition to instructing spouses not to sabotage their wives' programs. At present, there is no way of knowing which of these specific intervention, subsumed under the global term "spouse support", was responsible for the superior maintenance of the co-operative spouse condition over the wives alone condition. A component analysis would be useful in order to determine the active and

inert components of spouse training. Thus, while this study was able to show that spouse training can generate superior long-term maintenance of weight loss in comparison with a group in which there is no contact with spouses, the question of how it accomplishes this remains unanswered.

This conclusion becomes more apparent when the correlations between behavior change and weight loss are examined. The hypothesis that weight loss would be significantly associated with the facilitative behavior of spouses was only confirmed at the 6-month follow-up. Brownell et al. (1978) also found no significant correlations between outcome and spouse training. There are two possible explanations for these results. They may reflect a basic inaccuracy in these records, especially as monitoring of spouse behavior might have been a very reactive procedure. Second, these measures, obtained by totalling reports on all of the prescribed behaviors in which spouses were to engage, might have been too global and included inert components as well as the active ones, thereby resulting in lower correlations.

Measures of the behavior change of the subjects (Subject Behavior Score) were also obtained. This score was not associated with weight loss at any of the follow-ups. This is consistent with the results of other studies, and may reflect a basic inaccuracy in recording. Brownell et al. (1978) failed to obtain significant correlations between subjects' self-reports of their behavior and weight loss. Jeffery et al. (1978) analyzed the daily eating behavior records kept by 31 subjects and found that none of the nine measures of behavior were correlated with weight loss. Bellack, Rozensky, and Schwartz (1974) also failed to obtain significant correlations between weight loss

and self-reports of behavior change. Stalonas, Johnson, and Christ (1978) collected the daily monitoring records from 44 subjects and correlated 10 categories of behavior change with weight change. Nine of the 10 behavior scores and the overall total score failed to correlate significantly with weight loss. There are several studies which do demonstrate a significant correlation between weight loss and behavior change. Öst and Götestam (1976) did find a correlation between weight loss and a combined score of food choice and exercise. The behavior measures were not clearly defined and no reliability estimates were provided. Wollersheim (1970) and Hagen (1974) found significant correlations between weight loss and behavior change, assessed by an Eating Patterns Questionnaire. Mahoney (1974b) reported a significant correlation between weight loss and behavior change derived from an Eating Habits Booklet. These three studies relied upon a single self-report by subjects whose answers might have been biased by their knowledge of their relative success or failure in treatment (Brownell & Stunkard, 1978).

No significant correlations emerged between physical activity, total number of calories consumed, and relative number of calories consumed and weight loss. There was one exception: the relative number of calories was significantly associated with absolute pounds lost at posttreatment, suggesting that subjects who consumed a smaller number of calories relative to their prescribed daily level lost the most weight. Jeffery and Wing (1979) also found that self-reported calorie intake yielded substantial correlations with weight reduction. As with the monitoring of behavior changes, the accuracy of self-monitored calorie levels must be questioned. The failure of self-re-



ported energy expenditure to correlate with weight loss, corroborated by Vincent (1976) and Jeffery and Wing (1979), is probably attributable to inaccuracy on the part of subjects to estimate caloric expenditure. Accurate measurement of caloric expenditure in exercise requires an assessment of both duration and intensity and many of the subjects reported difficulty monitoring these variables. The absence of these correlations certainly suggests the need for future research to identify those specific factors that generate long-term weight loss.

## LITERATURE REVIEW

Introduction

There is broad consensus that obesity is one of the most prevalent and serious health problems in contemporary North America. It has been estimated that there are between 40 and 80 million obese individuals in the United States alone (Stuart & Davis, 1972). The severity of this problem is documented by evidence suggesting a link between obesity and a variety of physical illnesses, particularly cardiovascular disease (Gotto, Foreyt, & Scott, 1976). In addition to these medical problems, limitations in social and occupational activities are often consequences of obesity.

In response to the prevalence and gravity of this problem, a great variety of therapeutic interventions have been devised. Strategies include hypnosis, appetite-suppressants, individual and group psychotherapy, surgery, and a wide variety of diets. Stunkard (1958) summarized the results of these treatment approaches in his classic statement: "Most obese people will not stay in treatment for obesity. Of those who stay in treatment most will not lose weight and of those who do lose weight, most will regain it" (p. 79). In a more recent evaluation, Glennon (1966) concluded that "a review of the published long-term results of the treatment of obesity tends to support (the) proposal that at present it is incurable" (p. 2). The same pessimistic prognosis was presented by Chlouverakis (1975).

The last decade has witnessed a great increase in the application of behavioral methods to the problem of obesity. In contrast to the pessimistic and discouraging results of more traditional programs,

behavioral treatments seem to have yielded more encouraging results. Several reviews conclude that behavioral programs produce consistent, if modest, weight losses in the short-term (Abramson, 1973, 1977; Stunkard & Mahoney, 1976). Stunkard and Mahoney (1976) concluded that "in an unprecedentedly short time ... behavioral techniques have been shown to be superior to all other treatment modalities for managing mild to moderate obesity" (p. 54).

Much of this research is concerned with the effects of complex self-control procedures, initially introduced by Ferster, Nurnberger, and Levitt (1962) and Stuart (1967). Typical procedures include self-monitoring, self-reinforcement, self-punishment, and stimulus control techniques. Balch and Ross (1974) used the program outlined by Stuart and Davis (1972) and found that subjects who completed treatment lost significantly more weight than individuals who did not complete treatment or the controls. Jeffrey (1974) compared complex self-control with therapist-controlled reinforcement. At posttreatment, both groups had lost equal amounts of weight, but 6 weeks later the complex self-control group had lost significantly more weight than the group which received therapist-controlled reinforcement. Other studies have shown that the behavioral approach is more effective than nutritional counselling, a commercial weight loss program, attention-placebo treatments and no treatment (Levitz & Stunkard, 1974; Wollersheim, 1970). Other studies (Abrahms & Allen, 1974; Ferguson, 1976; Musante, 1976) have also yielded positive outcomes for complex self-control procedures. In a review of the current literature, Abramson (1977) stated: "In the light of the generally disappointing

results obtained with the traditional treatments for obesity, it is not premature to conclude that self-control is the most effective treatment for obesity currently available" (p. 360).

Despite this progress, there still remain several issues which destroy any complacency. The consistency in weight loss must be balanced by the fact that treatment often results in a high degree of intersubject variability at outcome. For instance, subjects typically lose 2 to 8 pounds, but some individuals lose as much as 17 pounds (Harris & Bruner, 1971).

Another limitation that confronts the clinician is the dubious clinical significance of weight losses for many people who participate in behavioral treatment programs. In general, most studies report variations of  $\pm 10$  pounds at posttreatment (Franks & Wilson, 1975). Manno and Marston (1972) reported that both positive covert reinforcement and negative covert sensitization groups lost significantly more weight than a control group. The reported 4 or 5 pounds weight loss that occurred in the behavioral groups is, however, clinically insignificant.

One plausible reason for these small losses is the relatively short duration of treatment sessions. The goal of most programs is to produce small but consistent losses of 1 to 2 pounds per week, until the weight goal is met, which in most studies would exceed the relatively brief duration of the program. This problem highlights the need for effective maintenance strategies. The long-term durability of weight loss is also important from a medical standpoint, as weight fluctuations have been suggested to be associated with the accumulation

of cholesterol plaques in the cardiovascular system (Mayer, 1968). Despite the critical importance of long-term maintenance, the relative scarcity of follow-up studies is one of the most important defects in obesity research.

Thus, much of the recent enthusiasm for behavioral approaches has been based on demonstrations of weight loss over short periods of time. This optimism diminishes when one considers that long-term studies of the therapeutic efficacy of behavioral programs for obesity are just beginning to appear and often yield equivocal results (Stuart & Guire, 1978; Stunkard & Penick, 1979). Additionally, there have been relatively few attempts at identifying and applying the specific variables which facilitate the maintenance of weight loss. The strategies that have been proposed include the use of "booster" sessions, fading of therapist contact, individual versus group counselling, and the involvement of significant others in the treatment program.

#### Long-term Studies

Stuart (1967) instituted one of the earliest clinical programs that incorporated behavioral techniques and principles with a long-term follow-up. Components of the program included stimulus control, self-monitoring, self-reinforcement, and covert sensitization; this program served as the prototype for later programs (e.g., Romanczyk, Tracey, Wilson, & Thorpe, 1973; Bellack, 1976). Stuart treated eight overweight women and obtained dramatic weight losses at a 1-year follow-up, with weight losses ranging from 26 to 47 pounds. The successful maintenance of these weight losses may be plausibly

attributed to the provision of booster sessions "as needed" during the 1-year follow-up. No definitive conclusions about the efficacy of these behavioral procedures can be drawn. Although subjects were treated individually, Stuart did not use a single-subject design, such as a multiple baseline or reversal design, that might have demonstrated the relationship between treatment and weight change. Another alternative would have been to use a between-group design wherein the weight loss of the behavioral group would have been compared with the weight loss of a no-treatment control group and a nonspecific therapy group (Gormally, Buese-Moscatti, Clyman, & Forbes, 1977).

Harris and Bruner (1971) compared weight losses of 26 females and 6 male subjects who participated in one of three groups: a group in which subjects were paid portions of a cash deposit contingent upon weight loss; a self-control group; and an attention-placebo group. After 12 weeks of treatment, analysis revealed that the contract group had lost a significantly larger proportion of weight than the self-control group. No comparisons were made between the attention-placebo group and the behavioral groups. At a 7-month follow-up, the two behavioral groups did not differ significantly from the attention-placebo group. The posttreatment differences between the two behavioral groups had also disappeared.

Foreyt and Kennedy (1971) reported successful results in a conditioning program that paired smells of favourite foods with very noxious odours. Twelve subjects in this group lost an average of 13.3 pounds over 9 weeks of treatment. The weight loss of the group was statistically superior to that of a TOPS (Take Off Pounds Sensibly)

group both at posttreatment and at a 9-month follow-up.

Penick et al. (1971) compared supportive group therapy with a behavior modification group based on Stuart's program (1967). Both of these treatments produced continued weight loss at 6-month and 12-month follow-ups. Statistical analyses of the follow-up data were not reported, and it appears that differences between the two groups were minimal. At the 12-month follow-up, the continuing weight loss applied equally to the behavioral (8 of 13 patients) and traditional (9 of 15 patients) treatment groups. A 5-year follow-up (Stunkard & Penick, 1979) revealed that the majority of subjects had regained; only 3 of 12 behavioral and 4 of 13 traditional treatment patients weighed less than they had at posttreatment.

Stuart (1971) presented data which revealed a mean weight loss of 35 pounds at a 6-month follow-up for three subjects who participated in a program emphasizing stimulus control, self-monitoring, exercise, and nutritional counselling. The exact relationship between these procedures and outcome is unclear due to the absence of the appropriate controls.

In a single-subject design (Hall, 1972), 10 obese women monitored their weights for 2 weeks, then monitored both weight and food intake for an additional 2 weeks. The women were then randomly assigned to one of two conditions: in the first condition, subjects were taught self-control procedures for 5 weeks, and then underwent an experimenter-controlled reinforcement program for another 5 weeks. The order of treatments was reversed for the second group of women. Data revealed that both groups lost weight and that these losses tended to be greater

than those occurring in either a pretreatment baseline period or in periods of weight monitoring plus food monitoring. The weight losses occurring in the experimenter-controlled reinforcement group were superior to those in the self-control group. Hall (1973) contacted her subjects 2 years after the termination of treatment. Although there was a significant difference between pretreatment weight and post-treatment weight, the 2-year follow-up revealed no significant difference between the pretreatment weight and the 2-year follow-up weight. This study does not indicate a long-lasting effect resulting from a behaviorally-based treatment program.

Jeffrey, Christensen, and Pappas (1972) also presented some discouraging data concerning long-term maintenance. Four individuals participated in a program that included self-monitoring, contingency contracting, and social reinforcement. Although a mean weight loss of 24 pounds was reported at posttreatment, a 6-month follow-up revealed one relapse and one partial relapse.

Despite this generally negative picture, some research has been reported which demonstrated that behavioral programs can produce weight losses which are maintained over time. One of the most frequently cited is a report by Levitz and Stunkard (1974). The authors compared four groups on weight loss measures at posttreatment and at a 12-month follow-up. The treatment conditions consisted of the following: (1) behavior modification groups run by psychiatric residents and one graduate student in clinical psychology. The procedures were based upon those described in Stuart and Davis (1972); (2) behavior modification groups led by non-professionals (TOPS



chapter leaders); (3) nutrition training groups also led by TOPS chapter leaders; and, (4) control groups, in which the usual TOPS program was conducted. At posttreatment, the groups in which behavior modification was introduced by a professional lost more weight than the other three groups. The behavior modification group led by a non-professional lost significantly more weight than the control group; the difference between the behavior modification group and the nutrition training group was not significant, although the results favoured the group that was instructed in behavior modification. Encouraging results for long-term efficacy of behavioral methods were obtained at a 12-month follow-up. Subjects in the behavior modification groups led by professionals not only maintained their weight loss for one year, but even increased it slightly. The final mean weight loss of 5.8 pounds was significantly greater than that obtained by any of the other conditions. The subjects' weight in the behavior modification program led by non-professionals returned to its pretreatment level, although it was significantly lower than that of the nutrition training program and the control group, which gained 4.0 and 2.8 pounds respectively. This study clearly demonstrates that behavior therapy produced significantly greater weight reduction at long-term follow-up, although the mean weight loss of 5.8 pounds is not clinically significant.

Mahoney (1974a) also presented results which suggested that weight losses produced in a behavioral program can be maintained at a 1-year follow-up. Mahoney randomly assigned 49 subjects to one of four conditions: (1) self-reward for weight loss; (2) self-reward for

improved eating habits (habit change); (3) self-monitoring; and, (4) delayed treatment control group. Of the three treatment groups, only those subjects who self-rewarded for habit change lost a significant amount of weight during the treatment period according to all three dependent measures (weight reduction quotient, weight lost and percentage bodyweight lost). Subjects in the self-reward for weight loss group achieved significant reduction on two of the three dependent measures, while those in the self-monitoring group showed no reduction on any of the measures at posttreatment. Significant weight reductions from pretreatment to follow-up were displayed only by subjects who self-rewarded habit change. A 1-year follow-up indicated marked superiority in maintenance on the part of this group. In the self-reward for habit change group, 70% of the subjects maintained or improved their program losses, as compared to 40% and 37.5% of the subjects in the self-reward for weight loss and self-monitoring groups respectively.

The studies reviewed above have focused on changing eating behavior and reducing caloric intake to produce weight loss. Many authors have stressed the importance of exercise in weight reduction programs (e.g., Jeffrey & Katz, 1977; Stuart & Davis, 1972; Stunkard & Mahoney, 1976). Despite its many advocates, very few studies have incorporated exercise as an integral part of a behavioral program. Harris and Hallbauer (1973) conducted a study which is a prominent exception. Fifty subjects were randomly assigned to one of three conditions: a self-control group which incorporated a contract; another self-control group which was identical to the first group and

which also contained exercise as a part of the program; and a control group in which subjects reported for weekly weigh-ins and pseudo-counselling. The treatment sessions were 12 weeks in duration. Posttreatment assessment revealed no significant differences among the three groups, although participants in all three groups lost weight. A 7-month follow-up indicated that those subjects who participated in the self-control plus exercise group lost significantly more weight than subjects in either the self-control group or the control group. Subjects, however, were followed up at 7 months after the initiation of treatment. As Franks and Wilson (1975) point out, follow-up is more properly calculated from posttreatment to the final evaluation. In the Harris and Hallbauer (1973) study, this follow-up period was 4 months, which does not constitute a "long-term" follow-up. The results are suggestive of the critical role exercise can play in the long-term maintenance of weight loss.

Stalonas et al. (1978) investigated the long-term effect of exercise on weight loss. The roles of exercise and self-managed contingency components were compared after 10 weeks of treatment and at a 3-month and 1-year follow-up. Significant weight losses were observed for all groups at program termination and the 3-month follow-up, with only those exposed to exercise and/or contingency management maintaining weight loss after one year. There were no significant main or interaction effects of exercise or contingency management at posttreatment or the 3-month follow-up. The influence of exercise at the 1-year follow-up approached significance.

Reports have been published which indicate that complex self-

control procedures may promote long-term weight loss maintenance (e.g., Levitz & Stunkard, 1974). Hall, Hall, Hanson, & Borden (1974) compared a complex self-management package (stimulus control, self-monitoring, and self-punishment) with a simple bite-reduction strategy, relaxation training, and with a no treatment control group. At the end of 10 weeks of treatment, the two behavioral procedures differed significantly from both control conditions, but they did not differ from each other. The same pattern emerged at a 3-month follow-up. A 6-month follow-up revealed that the four groups no longer differed significantly from one another. This failure of self-management techniques to enhance maintenance of weight loss does not support the results obtained by Levitz and Stunkard (1974).

The self-control procedures described above have been based upon the early work of Stuart (1967, 1971; Stuart & Davis, 1972). McReynolds, Lutz, Paulsen, and Kohrs (1976) and McReynolds and Paulsen (1976) compared this commonly-used, multifaceted program with a self-control procedure based almost exclusively on the principle and techniques of stimulus control. Forty-three overweight women were randomly assigned to these two groups. At posttreatment, there were no significant differences between the two groups; at the 3-month and 6-month follow-ups, the stimulus control group had lost significantly more weight than the complex self-control group. During the 18-month follow-up, the stimulus control subjects were able to maintain these superior results (Beneke, Paulsen, McReynolds, Lutz, & Kohrs, 1978). Unfortunately, no control groups were included, thus preventing clear interpretation of these results.

Another study evaluated the relative long-term effectiveness of three different self-control treatment packages (Litrownik, 1976). These packages included a nonspecific general self-control group which was labelled "willpower"; a behavioral self-control group which utilized self-monitoring, stimulus control, and self-reward; and a group which was instructed in developing a self-relaxation skill. Additionally, there was a delayed-treatment control group. Results at posttreatment indicated that all three treatment groups lost significantly more weight than the control group, but there were no differences among the treatment groups. All treatment groups maintained and improved upon their losses at a 6-month follow-up.

Hall, Hall, DeBoer, and O'Kulitch (1977) assigned 74 obese TOPS members to one of five conditions: no treatment control, insight psychotherapy, self-management training plus external reinforcement, self-management training only, or external reinforcement only. At posttreatment, data analyses revealed that these three latter groups lost significantly more weight than the psychotherapy and control conditions, although they did not differ from each other. At the 3- and 6-month follow-ups, the four treatment groups did not differ significantly from one another.

Levitz et al. (1979) reported the results of a large group of patients who participated in a multi-faceted behavioral weight control program. Of 154 patients who lost more than 15 pounds during treatment, 54% retained at least a 15 pound weight loss 1 to 5 years later. Mean weight loss of these patients increased from 32.8 pounds at posttreatment to 35.6 pounds at follow-up. Of the 46% who regained weight

during the follow-up, their mean weight loss retrograded from 23.8 pounds at posttreatment to 0.6 pounds at follow-up. Stuart and Guire (1978) surveyed 721 women members of Weight Watchers classes some 15 months after they reached their goal weights. One year to 15 months after reaching goal weight, 24.6% were below goal; 28.9% were within 5% of their goal; 17.5% were from 6 to 10% above their goal; and 28.5% were 11% or more above their goal weights. Jeffery, Wing and Stunkard (1978) and Jeffery, Vender, and Wing (1978) presented a 1-year follow-up of the first 108 subjects to complete a behavioral weight reduction program. Subjects lost an average of 12.8 pounds at post-treatment, but only an additional .7 pounds during the 1-year follow-up. Thus subjects were able to maintain their losses but unable to continue losing more weight once treatment had ended.

In addition to these conflicting findings, methodological problems limit the conclusions drawn from these studies. Nonspecific treatment control groups are necessary if a difference between groups is to be attributed to a specific treatment effect rather than to nonspecific influences, such as therapist attention (Wilson, 1978). Another reason for including nonspecific groups is that some studies have demonstrated that such treatments have resulted in significant weight loss. Kingsley and Wilson (1977) demonstrated that a social pressure control group modelled after one of Wollersheim's (1970) control groups was associated with weight loss; this effect was particularly evident at a 1-year follow-up. The inclusion of nonspecific control groups is necessary given these inconsistent results in outcome studies.

The inclusion of such groups does not allow for evaluation of a treatment method unconfounded by expectations of behavior change and the demand characteristics of the therapeutic setting. One solution to this problem is the use of countertherapeutic (e.g., Diament & Wilson, 1975) or nondemand instructions.

Additionally, systematic replication of research may be hindered by the fact that the specificity and control of relevant elements of the treatment package varies greatly from one study to another (Wilson, 1978).

One of the most common short-comings is that studies seldom attempt to verify that subjects have changed their behaviors (such as eating and exercise behaviors) (Franks and Wilson, 1975; Mahoney, 1975; Wilson, 1978). Behavioral changes have typically been inferred, quite inappropriately, from successful treatment outcome. Failure to empirically demonstrate that subjects have changed their behaviors weakens the validity of statements attributing weight loss to these behavior changes (Brownell & Stunkard, 1978). The inclusion of assessment of subjects' behavioral changes has become more critical since the appearance of several reports which all showed that weight change was not significantly associated with behavior change (Brownell et al. 1978; Bellack et al. 1974; Jeffery, Wing, & Stunkard, 1978; Jeffery, Vender, & Wing, 1978; Stalonas et al., 1978).

The inconsistent results may also be a consequence of the choice of dependent variables. A variety of measures have been used, including pounds lost, percentage of body weight lost, change in percentage overweight, and rate of loss. It appears that there is no

single dependent measure that does not have certain limitations and biases. For instance, the most direct indicator of weight change, pounds lost, has the disadvantage of not taking initial weight into consideration. The heavier a person, the more weight there is that can be lost, thus biasing the measure in favour of heavier subjects. The percentage of body weight lost (pounds lost/initial weight) is biased in favour of lighter subjects, as a 15 pound loss for a 150 pound person results in a higher percentage than for a 200 pound person with the same weight loss. The weight reduction quotient was proposed by Feinstein (1959) and recommended by Jeffery (1975) and Wilson (1978). This index is equal to pounds lost divided by pounds overweight times initial weight divided by ideal weight times 100. The advantage of this measure is that it controls for variations in height, weight, and degree of obesity. The weakness of this measure is that it incorporates a measure of ideal weight, which in turn is based on the Metropolitan Life Insurance Company Tables. There are several problems with these norms: they may not be representative of the overall (nonpolicyholding) population; they provide no objective way to assess body frame; and there are no guidelines as to what weight within the given weight range to select.

If obesity is considered to be the excessive accumulation of body fat (Mayer, 1968) as opposed to mere overweight, all of the above criteria are inappropriate. The proper goal for a treatment program, then, is the reduction of body fat (Franzini & Grimes, 1976; LeBow, 1977) which is commonly assessed by skinfold measurements. The use of skinfold measurements merits further discussion because it is not



without its problems. The reliability of skinfold measurements is questionable. Womersley and Durin (1973) found significant variability with different observers. Secondly, the validity of measuring fat by skinfold calipers presupposes a correlation of skinfold thicknesses with actual body fat (LeBow, 1977). Direct evidence of body fat, obtained from chemical analysis through autopsy is rare, so definitive criteria with which skinfold measurements can be correlated are unavailable.

In summary, the conflicting data and methodological weaknesses certainly vitiate any conclusions about the long-term efficacy of behavioral programs for obesity. The strongest statement that seems warranted is that the longer the follow-up, the less likely weight losses will be maintained.

#### Variables in the Long-Term Maintenance of Weight Loss

Unlike the studies that were previously reviewed, the research reports that will be considered in this section of the literature review were explicitly designed to facilitate long-term maintenance. As Bandura (1969) cogently pointed out, different variables may mediate the initial behavior change, its generalization to the natural environment, and its maintenance over time. Maintenance can be ensured only to the degree to which specific procedures designed to accomplish this goal are built into the treatment program. Some researchers are attempting to isolate and identify those variables which facilitate long-term weight loss.

Booster Sessions. O'Leary and Wilson (1975) were among the first advocates of including booster sessions in behavioral treatment

programs to facilitate maintenance of weight loss changes. These sessions would provide reinforcement and feedback to the subject concerning his or her progress. This strategy has been used with apparent success in the treatment of alcoholics. For example, Vogler, Lunde, Johnson, and Martin (1970) and Vogler, Lunde, and Martin (1971) provided booster sessions for a group of alcoholics treated with electric aversion conditioning. It was found that posttreatment abstinence was significantly increased by these booster sessions.

Hall et al. (1975) gave overweight adults a 12-week course in self-management training and subsequently divided subjects into three 12-week follow-up conditions: Booster (continued contact plus monitoring); monitoring only; and no-contact. The monitoring-only group received exactly the same instructions as the booster group but had no contact with their therapists except to mail their food and weight monitor sheets to them. Analyses at the end of the 12-month follow-up period revealed that the monitoring-only group had lost significantly more weight than the no-contact controls, and that the booster group did not differ significantly from the other two groups. The data are confounded as 7 of the 13 subjects in the booster group saw a therapist during the follow-up different from the one with whom they had initiated treatment. For these individuals, transfer to a new therapist was clearly deleterious: 3 subjects terminated prematurely and 2 gained weight during follow-up. The authors suggested that this relapse was due to either the loss of reinforcement from their therapists, or to the misperception of the subjects that the transfer of therapists was a form of punishment. When only

those booster subjects who continued with the same therapists were considered, it was revealed that not only did these subjects continue to lose weight or show no change, but that they had lost significantly more weight than those in the control group. This pattern suggests that those subjects who continue to receive sporadic reinforcement from their therapists will maintain their weight losses.

Ashby and Wilson (1977) evaluated different strategies for enhancing the weight loss achieved in a group behavioral treatment program. They postulated that the more frequent booster sessions would result in improved maintenance, and that a greater degree of continued behaviorally-focused therapist support would enhance maintenance. Seventy-five overweight women were trained in a self-management program similar to the one proposed by Stuart and Davis (1972). At posttreatment, subjects were randomly assigned to one of five maintenance groups: two groups which were continuations of the behavioral program which met every 2 or 4 weeks; two groups which provided unstructured group support and did not include continued behavioral training which met every 2 or 4 weeks; and a control group which had no therapist contact except at weigh-ins. Maintenance contact at 2- or 4-week intervals occurred for 4 months after treatment had ended, and sessions were gradually faded out during the next 4 months. For the last 4 months of the 1-year follow-up period, there were no booster sessions. At the 12-month follow-up interval there were no significant differences among any of the five maintenance strategies. The results of this study did not support the contention that the frequency and type of booster session would affect long-term maintenance.

Kingsley and Wilson (1977) also conducted a comparative investigation of the long-term therapeutic efficacy of booster sessions. Overweight women were randomly assigned to a group behavioral treatment program based upon Stuart and Davis (1972), to an individual behavioral treatment program, or to a social-pressure therapy group. Following an 8-week treatment phase, half of each treatment group received four additional booster sessions and the remaining half simply reported for the scheduled weigh ins at 3, 6, 9, and 12 months. At the 3- and 6-month follow-ups, those subjects participating in the booster sessions lost significantly more weight than those in the non-booster sessions. But at the 9- and 12-month follow-ups, there were no significant differences in the amount of weight loss between the booster and non-booster groups, regardless of the type of therapeutic intervention. The results suggest that the long-term facilitative influence of booster sessions is limited.

Beneke and Paulsen (1979) trained eight home economists in the use of a behavioral weight loss program which emphasized stimulus control. They treated 148 obese women for 20 weeks, and then assigned subjects to one of two posttreatment maintenance conditions, which differed in the amount of group contact over an 18-month follow-up period. One group met monthly during follow-up, while the other met only at the end of the third, sixth, and twelfth month of follow-up. Subjects in both conditions then met at the end of the eighteenth month. There were no significant differences in weight maintenance between the two groups.

Stuart and Guire (1978) presented results which suggest that

attendance at Weight Watchers classes after reaching goal weight may have a facilitative effect on maintenance. Members who attended class meetings averaged 3.1 pounds above their goal weight in contrast to the 13.4 pounds above goal registered by those who rarely or never attended class after reaching goal.

Although the use of booster sessions to maintain weight loss has been widely advocated (O'Leary & Wilson, 1975), very few studies have focused on this tactic. The research that has appeared yields contradictory results, although several studies suggest that this strategy may not be very effective in maintaining weight loss.

Fading of Therapist Contact. Hall et al. (1975) suggested that one possible factor contributing to the long-term deterioration of post-treatment effects is the subject's dependency upon the therapist. When the therapeutic contact ends, some subjects may stop applying the behavioral procedures because of the loss of encouragement and support initially provided by the therapist. One solution is to reduce active contact with the therapist during the course of treatment.

One means of reducing therapist contact is to substitute written materials in the place of personal contact with a therapist. Hagen (1974) found that the use of a training manual was as effective as a training manual plus therapist contact, or contact with a therapist with no training manual at posttreatment and at a 4-week follow-up. All three groups lost significantly more weight at both assessment intervals than a no-treatment group. The study is weakened by the omission of a nonspecific treatment control group and a very brief follow-up period.

Hanson et al. (1976) reported an evaluation of the long-term effectiveness of reducing contact with a therapist while taking into account some of the criticisms of the Hagen study. Five groups were included in this study: a no treatment control group, a nonspecific treatment control group, a group which was taught conventional self-management procedures, and two groups which were instructed with the aid of a programmed text, one of which met for 10 weekly sessions with a therapist, and another which met with a therapist for three sessions spread over the 10-week treatment phase. At posttreatment, both groups which were taught with the programmed text, and the self-control group, had a significantly greater weight loss than the control conditions; these three treatment conditions did not differ from one another. At the 10-week follow-up, post hoc comparisons for the percentage of body weight lost indicated that only the group using the programmed text with low therapist contact was superior to the nonspecific treatment control group. Finally, a 12-month follow-up revealed no significant differences among the groups. Reduction in the amount of contact a subject has with a therapist may be a successful strategy to initially maintain weight loss, but it does not seem to be effective as the posttreatment interval increases.

Fernan (1973) found that reducing the minimal contact still further cut sharply into the weight losses. Marston, Marston, and Ross (1977) investigated the efficacy of a correspondence course that outlined behavioral principles and techniques to 210 subjects. The mean weight loss for those completing the course was comparable (i.e., 1 pound per week per subject) to those in other studies involving

intensive client-therapist contact. The mean weight loss was also maintained at a 6-month follow-up. No control, nonspecific treatment control or personal contact groups were included in the design, thereby precluding any definitive statement about the efficacy of this particular intervention.

Brownell, Heckerman, and Westlake (1978) randomly assigned obese females to one of three experimental conditions: a "standard" behavioral treatment group emphasizing self-management techniques; a group receiving a weight control manual via mail with little professional contact; and a waiting list control condition. Posttreatment analyses revealed that both treatment groups lost significantly more weight than the control group and that the standard behavioral group lost significantly more than the minimal contact group. At a 6-month follow-up, there was no longer any difference between the two treatment groups, with weight loss for the minimal contact group being inferior.

Despite these generally negative reports concerning the long-term efficacy of this strategy, one report is more optimistic. At a 6-month follow-up, Carter et al. (1977) found that subjects who had met regularly with a therapist during treatment sessions had regained all the weight they had lost during treatment, and no longer differed significantly from a no treatment control group. Those subjects who progressively had less contact with a therapist during treatment were able to maintain the initial losses.

Like the literature on the use of booster sessions, the research pertaining to the fading of therapist contact presents conflicting results, some of which is uninterpretable due to methodological errors.

Only more research will determine if this is a profitable strategy to use for the long-term maintenance of weight loss.

Group Versus Individual Counselling. Another strategy that has been proposed to facilitate long-term weight loss is that of treating subjects on an individual basis so that interventions can be personally tailored to each subject's unique problems and needs (Mahoney, 1974b; Mahoney & Mahoney, 1976; Vincent, Schiavo, & Nathan, 1976). Supposedly individual treatment sessions would focus on changing an individual's long-term eating and activity patterns.

Anecdotal support is furnished by Stuart and Davis (1972), who, after treating over 200 overweight women, drew the following conclusions: "In each instance it was found expedient to individualize specific procedures within the rubric of a general approach to situational management" (p. 95).

There are few systematic evaluations of the long-term efficacy of individualized programs. Horan, Baker, Hoffman, and Shute (1975) evaluated weight loss in subjects assigned to either a group or individual counselling mode and who were exposed to either positive coverant or negative coverant conditioning. Although subjects who used positive coverants lost significantly more weight than those using negative coverants, there were no significant differences between the individual and group counselling regardless of the type of coverant used. No follow-up assessments were included.

Kingsley and Wilson (1977) conducted the only controlled study to date of the long-term efficacy of individual versus group counselling for weight loss. Subjects were assigned to either a social pressure



group, to a group which was taught behavioral principles and techniques based on Stuart and Davis (1972), or to individualized behavioral counselling. At posttreatment, both behavioral conditions lost significantly more weight than the social pressure group, although there were no significant differences between the two behavioral conditions. But a 12-month follow-up revealed that while the two group treatments resulted in successful maintenance of weight loss, subjects who underwent individual behavioral counselling showed substantial relapse; group treatment was significantly superior to the individual treatment.

Although there are some anecdotal reports (e.g., Stuart & Davis, 1972) which support the notion that individualized behavioral counselling may facilitate long-term maintenance of weight loss, Kingsley and Wilson's study (1977) indicates just the opposite. The existence of only one methodologically-sound study indicates the need for more research in this area.

The Use of Significant Others. Instead of relying upon therapists or other group members to provide support for a subject's weight loss efforts, significant others such as spouses can be enlisted to provide this necessary support and instructed in ways to facilitate weight loss. After completing a weight loss program, an individual who returns to an environment which is so structured that he or she does not receive support or assistance for efforts to maintain or continue weight loss will probably begin to regain (Stunkard & Mahoney, 1976). Thus, in order to maintain new eating and exercise behaviors, it may be necessary to restructure a subject's natural environment in ways that

behavior changes are reinforced and cued by significant others in it. Programs that rely solely on providing the subject with reinforcement and aid from people who have relatively little contact with the subject in his or her natural environment, such as the therapist and other group members, will probably not facilitate maintenance as well as programs which focus on those people with whom the subject has the most contact. Many programs have successfully utilized significant others in the natural environment in the treatment of such problems as deviant child behavior (Walder et al., 1969) and alcoholism (Hunt & Azrin, 1973). This approach has rarely been applied to the problem of obesity.

Although few applications of this strategy have been reported, several people have explicitly advocated its implementation. Stuart and Davis (1972) specifically recommended changes in the interaction between the obese individual and those with whom he or she daily interacts to promote long-term weight loss: "It is essential to modify the social environment as a means of achieving lasting weight control ... " (Stuart & Davis, 1972, p. 202). Stuart and Davis (1972) also cite some unpublished data which suggest that interactions between a subject and significant others in the natural environment may have important effects on weight reduction. Stuart (cited in Stuart & Davis, 1972) arranged for the dinner-table verbal interactions between women who were subjects in a weight reduction program and their husbands to be recorded. The following patterns were found: (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 offer food to the spouse; (3) wives were slightly 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 (Stuart & Davis, 1972, pp. 18 - 19). Although only 14 couples were involved, these data suggest that spouses may exert a strong and even negative influence on their wives' weight reduction efforts. In another study by Stuart (cited in Stuart & Davis, 1972), it was found that 83% of those subjects who could enlist the aid and co-operation of another person in cueing and reinforcing appropriate eating behavior lost 20% or more of their initial body weight and maintained this loss at a 12-month follow-up. Of those subjects who did not have the co-operation of another person, only 31% met this same degree of success. These studies illustrate the importance of involving others to facilitate long-term weight loss.

Other people have reiterated Stuart and Davis' (1972) recommendation. Abrahms and Allen (1974) suggested that the durability of long-term weight losses might be improved by training significant others to reinforce a subject for appropriate eating habits. Vincent et al. (1976) proposed a similar notion; marital and familial interactions might have to be modified in order to optimize weight loss maintenance. Steps should be taken to ensure that correct eating and activity habits are cued and positively reinforced. Abramson (1973), Franks and Wilson (1975), and McReynolds and Paulsen (1976) have all published articles which recommended restructuring the natural environment to elicit the co-operation of significant others.

The number of actual applications of this recommendation is small. Some programs have included significant others as one part of a treatment package. Musante (1976) provided a description of an intensive weight reduction program at Duke University. In addition to dietary supervision, patients were instructed in the behavior change techniques of Stuart (1967), and were asked to elicit the co-operation of family members, such as eliminating the wrong foods from the home or moving the television from the kitchen. The mean weight loss for all patients during the extended treatment of 6 to 11 months was 59.6 pounds.

Ferguson (1976) operated a multi-faceted treatment program (the Stanford Eating Disorders Clinic) in which families were invited to one session at which family interactions and the need for support at home were discussed. The mean weight loss for 62 patients at post-treatment was 9.7 pounds. A 2-month follow-up revealed that the group members who returned for follow-up lost an additional 1.2 pounds.

A problem common to both the Ferguson and Musante studies is that it is difficult, if not impossible, to determine the actual contribution that social supports made. Mahoney and Mahoney (1976) provide some clarification on this issue. In addition to training subjects in standard behavioral techniques like stimulus control, self-management, and self-reinforcement, families of participants were asked to: (1) restrict their feedback to praise; (2) avoid offering the subject food; and (3) co-operate by compromising their own meal and snack patterns in a way that was beneficial to the subject. During the tenth week of the program, each subject was given a social support score based upon

family attendance at the treatment sessions and their reports regarding the co-operation and encouragement they received from family and friends. The correlation between weight loss and social support was .92 at the end of the 10-week treatment program. It dropped to .33 at 6 months, but then rose to .39, .51, and .63 at the 1-year, 18-month, and 2-year follow-ups respectively. There are several methodological problems with this study; the number of subjects at the 2-year follow-up decreased to 5, and the social support score was, in large part, a subjective measure without any estimate of its reliability. Despite these problems, these results are very suggestive of the critical role social supports may play in the long-term maintenance of weight loss.

In a case study, Lutzker and Lutzker (1974) used the performance of household chores and other non-monetary reinforcers from the husband to promote the wife's weight loss. She was able to maintain the resulting 14 pound loss during a 1-year follow-up period. In another case study, Matson (1977) compared the effectiveness of self-monitoring of weight and restructuring environmental conditions with using the subject's spouse as a social reinforcer. Three pounds of weight were lost in 10 weeks with self-monitoring and environmental restructuring, and 39 pounds in 19 weeks with social reinforcement provided by the husband. Weight loss was maintained after 90 weeks of follow-up.

A commendable feature of these studies was the inclusion of follow-ups of 1 year and more. Unfortunately, other studies have not done the same. Rosenthal (1975) conducted a study involving 43 married

couples with an overweight wife desiring weight loss. Subjects were divided into three treatment conditions: husband involvement, partial husband involvement, and no husband involvement. All subjects were taught behavioral weight control techniques over a 4-month period. Data analyses revealed that subjects in the first two groups lost significantly more weight than subjects whose husbands were absent, both at posttreatment and at a 6-week follow-up.

Weisz (1976) assigned overweight married women whose husbands were willing to participate in treatment to one of three groups: (1) a self-control group, which was designed to develop self-management behavior which could be continued after treatment; (2) an external-control group which was designed to assess the effect of training the subjects' husbands to cue and reward appropriate eating behaviors; and (3) a no-treatment control group. At posttreatment and at a 2-month follow-up, the two treatment groups lost significantly more weight than the control group, although they did not differ from each other. It may indeed be that the independent variable (inclusion of spouses) was not effective in generating weight loss. An alternative hypothesis that might account for the lack of significant differences between the two treatment groups is that contrary to the expectations of the experimenter, husbands in the first group who were not formally trained to assist their wives might have in fact been providing their wives with support and encouragement for their weight loss efforts. This support might have been a function of their general marital relationship and might have occurred independently of any experimental manipulations. Conversely, spouses in the second group, who were

supposedly cueing and rewarding appropriate eating behaviors might not have been complying with these instructions. The failure to assess the amount of support husbands provided to their wives in either group impairs the identification of the active treatment components.

Mathews (1976) assigned subjects to a self-reinforcement group, a group in which reinforcement was provided by a significant other, or a group where reinforcement was provided by the experimenter. No significant differences were found on any of the three measures of weight loss (pounds lost, percent body weight lost, and a reduction index) among the groups.

Lantz (1977) assigned 36 overweight women to one of three self-management conditions: (1) a Husband-Absent condition, in which subjects attended the 11 weekly meetings alone; (2) a Husband-Contracting group, in which husbands attended weekly meetings with their wives, and were coached and participated actively in the planning and implementation of their wives' contracted weight control programs; and (3) a Husband-Not-Contracting group, in which husbands attended meetings with their wives but were not coached or instructed to help their wives. At posttreatment, the wives in the Husband-Contracting group had lost significantly more weight than those in the Husband-Not-Contracting group. Husband-Absent and Husband-Contracting subjects were found to have lost significantly more weight at a 1-year follow-up than had the Husband-Not-Contracting subjects, although the first two groups did not differ significantly from each other. The study is weakened by the omission of control and nonspecific treatment groups, and by the lack of any independent assessment of the extent of the

husbands' support. Husbands who were absent from the sessions (Husband-Absent group) might have been providing their wives with support, which would account for the lack of significant differences between this group and the Husband-Contracting group at the 1-year follow-up.

Saccone and Israel (1978) assigned 48 women and one man to either a basic stimulus control treatment condition or the basic program plus one of four reinforcement conditions: (1) reinforcement by therapist for weight loss; (2) reinforcement by therapist for change in eating behavior; (3) reinforcement by a significant other for weight loss; or (4) reinforcement by a significant other for eating behavior change. At the end of the eight session treatment program, the group which received reinforcement from a significant other for behavior change demonstrated the greatest weight loss. In a report of maintenance of weight loss at 3- and 12-month follow-ups, Israel and Saccone (1979) demonstrated that subjects who received reinforcement from a significant other for eating behavior change continued to maintain greater weight loss than all other groups. At the 12-month follow-up, this group had lost an average of 10.4 pounds; however, none of the treatment procedures produced continued weight loss during follow-up. Unfortunately the authors neglected to assess the degree of adherence of both subjects and spouses to the program regimen.

Zitter and Fremouw (1978) compared the weight loss of overweight partners with individuals without partners in a 6-week behavioral weight reduction program. In the partner consequence group, subjects were able to gain money if they lost weight, and extra money if their



partner lost weight. Discussion was oriented towards ways that subjects could help control their obese partner's eating and exercise behaviors. Only individual performance was rewarded in the individual consequence group. At posttreatment, both of these groups had lost significantly more weight than the minimal treatment control group but did not differ from each other. A 6-month follow-up revealed that the individual consequence group lost significantly more weight than the other two treatments which no longer significantly differed from each other. At the 6-month follow-up, the partner consequence group had gained 1.5 pounds over its pretreatment weight. Anecdotal observations indicated that partners socially reinforced each other for deviating from newly learned eating patterns. Thus significant others may have a negative effect upon weight reduction, corroborating Stuart and Davis' (1972) unpublished data.

Wilson and Brownell (1978) randomly assigned 32 women to a family member present or absent condition. Both conditions were based upon the behavioral self-control procedures described in detail by Kingsley and Wilson (1977). In the family member present group, the same family member was required to attend each of the eight weekly treatment sessions and to participate in the treatment. These family members were taught the principles of behavior change, and instructed to cease criticizing their partners' weight and/or eating behavior and to positively reinforce their wives for improved eating habits. They were also asked to provide assistance in their partners' attempts to monitor eating behaviors. No significant differences were found between the two groups, either at posttreatment or at a 6-month follow-

up for mean weight loss or the mean weight reduction quotient. These results are inconsistent with Mahoney and Mahoney's (1976) findings that social support is positively correlated with success in a weight reduction program. But the absence of an independent assessment of the degree to which family members co-operated with the program and a high attrition rate confound the interpretation of these results.

The most ambitious study to date that has been conducted in this area is that of Brownell et al. (1978). In a study designed to evaluate the influence of spouse co-operativeness and couples training on the long-term maintenance of weight loss, 29 obese men and women were assigned to three experimental conditions: (1) co-operative spouse-couples training, in which spouses attended all meetings with the subjects and were trained in modeling, monitoring, and reinforcement techniques; (2) co-operative spouse-subject alone, in which subjects attended meetings alone even though their spouses had initially agreed to attend and (3) nonco-operative spouse, in which subjects attended meetings alone because their spouses refused to participate in the program. It is important to realize that the spouses in the third group were defined as nonco-operative solely on the basis of their refusal to participate in the program. No independent assessments were made of the actual interactions of these individuals with their spouses. A similar criticism is applicable to the second group; it was defined as co-operative on the basis of the husbands' initial agreement to participate in the program, but no assessments were conducted to determine if these spouses were truly co-operative (e.g., providing positive reinforcement for appropriate eating behaviors,

cueing appropriate behaviors, etc.) with the subjects in the natural environment.

Some of the results support the argument that spouses in the non-co-operative spouse group were not as nonco-operative as was assumed. At all three assessment intervals (posttreatment, 3- and 6-month follow-ups), there were no significant differences among the three treatment groups on the weight reduction quotient. Although one might argue that the influence of training spouses in specific ways had a negligible effect, an alternative hypothesis is that those two groups in which spouses were not explicitly trained might have been naturally providing support to their wives. Also, at the 6-month follow-up, there was no significant difference in mean weight loss between the subjects whose spouses underwent training and those who did not but were defined as co-operative on the basis of their initial agreement to participate in the program with their wives. Support and encouragement might have been provided by the spouses in this latter group, just as it was by spouses who underwent training. There were no significant differences among the three groups on any of the measures at posttreatment.

Despite these inconsistencies, the couples training group did significantly better than the other groups at 3- and 6-month follow-ups on the mean weight loss and percentage overweight loss measures. The dramatic results obtained at 6 months (approximately 30 pounds lost) for this group certainly merits further investigation. Training spouses may be an effective strategy to enhance maintenance of weight loss. This study was not a definitive test of this hypothesis

because of the unsubstantiated assumption that the nonco-operative spouse group with which the spouse-training group was compared was truly nonco-operative. Further investigations must include assessments to the amount of support spouses in the treatment conditions provide to the subjects in order to identify the effective components of obesity treatment outcome studies. Additionally, no significant correlations were found between the amount of weight loss and the degree of support spouses provided in the co-operative-spouse training group at any of the assessment intervals. This finding also deserves further investigation.

Further scrutiny reveals other methodological weaknesses in the Brownell et al. (1978) study. Despite the recommendations of Paul (1969), Hall and Hall (1974), Gormally et al (1977), and Wilson (1978), no control or nonspecific treatment control groups were included in the design. Thus no statements about the effects of intercurrent life experiences or nonspecific variables such as peer pressure, advice and encouragement, or weekly contacts with a therapist can be made.

The literature review clearly destroys any complacency about the long-term effectiveness of behavioral treatments of obesity. Strategies such as booster sessions, fading of therapist contact, and individual contact versus group counselling have been proposed as ways of maintaining weight loss; there are relatively few systematic evaluations of these approaches and those that have been done yield conflicting results. Enlisting the aid and co-operation of significant others has been advocated by many to facilitate the maintenance of weight loss, but rarely evaluated as to its efficacy. Although promising,

this tactic needs more evaluation.

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APPENDIX A  
STANFORD EATING AND ACTIVITY  
ASSESSMENT QUESTIONNAIRE

EATING AND ACTIVITY ASSESSMENTQUESTIONNAIRE

Name: \_\_\_\_\_ Sex: M F Age: \_\_\_\_\_  
 Birthdate: \_\_\_\_\_  
 Address: \_\_\_\_\_ Home Phone: \_\_\_\_\_  
 Office Phone: \_\_\_\_\_

WEIGHT HISTORY

1. Your present weight \_\_\_\_\_ height \_\_\_\_\_
2. How would you describe your present weight (circle one)?  
                                 very                                slightly                                about  
                                 overweight                                overweight                                average
3. At what weight have you felt your best or do you think you would feel your best?  
                                 \_\_\_\_\_
4. How much weight would you like to lose? \_\_\_\_\_
5. How dissatisfied are you with the way you look at this weight?  
                                 Completely    Moderately    Neutral    Moderately    Very  
                                 satisfied    satisfied                                  dissatisfied    dissatisfied
6. Do other people react to your weight problem? Yes \_\_\_\_\_ No \_\_\_\_\_  
     If yes, how do they react? \_\_\_\_\_
7. Why do you want to lose weight at this time? \_\_\_\_\_
8. What are the attitudes of the following people about your attempt(s) to lose weight?

	<u>Negative</u> (e.g., dis- approve, re- sentful)	<u>Indifferent</u> (e.g., don't care, don't help)	<u>Positive</u> (e.g., en- courage)
Husband			
Wife			
Children			
Parents			
Employer			
Friends			

9. Do the attitudes or behaviour of your spouse or children affect your weight loss or gain? Yes \_\_\_\_ No \_\_\_\_ If yes, please describe: \_\_\_\_\_

10. Indicate the periods in your life when you have been overweight on the following table. Where appropriate, list your maximum weight for each period and number of pounds you were overweight. Briefly describe any methods you used to lose weight, e.g., diet pills, diet, in that five year period. Also list any significant life events you feel were related to either weight gain or loss, e.g., college tests, marriage, pregnancies, illness.

Age	Maximum Weight	# Pounds Overweight	Methods Used to Lose Weight	Significant Events Related to Weight Change
Birth				
0-5				
5-10				
10-15				
15-20				
20-25				
25-30				
30-35				
35-40				
40-45				
45-50				
50-55				
55-60				
60-65				

11. How do you feel your weight affects your daily activities? (circle one)

No effect    Some effect    Often interferes    Extreme effect

12. How physically active are you? (circle one)

Very active    Active    Average    Inactive    Very inactive

13. What do you do for physical activity and how often do you do it?

Frequency (daily, weekly, monthly)	Activity (swimming, jogging, dancing, etc.)

14. A number of different ways of losing weight are listed below. Please indicate which methods you have used by filling the appropriate blanks.

	Ages Used	Number of Times Used	Maximum Weight Lost	Comments: Length of time weight loss maintained; success failure
TOPS				
Weight Watchers				
Streamliners				
Pills				
Supervised diet				
Unsupervised diet				
Starvation diet				
Behavior mod				
Psychotherapy				
Hypnosis				
Other				

15. Which method did you use for the longest period of time?

16. In your attempts to lose weight, have you ever had a physical or emotional reaction of such severity that it impaired your family and/or work relationships or functioning?

Yes \_\_\_\_ No \_\_\_\_ If yes, please describe the symptoms and how

long they lasted. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

17. What usually goes wrong with your weight loss programs?

\_\_\_\_\_

\_\_\_\_\_

#### MEDICAL HISTORY

18. What are your present medical problems? \_\_\_\_\_

\_\_\_\_\_

19. What medications or drugs are you taking? \_\_\_\_\_

\_\_\_\_\_

20. Are you allergic to medications, drugs or foods? \_\_\_\_\_

\_\_\_\_\_

21. Please list any hospitalization or operations. Indicate your age for each hospital admission.

Age

Reason for hospitalization

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

22. Please list, by age, any serious illnesses you have had which have not required hospitalization or operations.

Age

Reason for hospitalization

\_\_\_\_\_

\_\_\_\_\_

23. Please describe any medical problems you have which are complicated by your weight. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

24. When did you last have a complete physical exam? \_\_\_\_\_

\_\_\_\_\_

25. Who is your current doctor? \_\_\_\_\_

26. Please list any psychiatric contact, individual counselling, or marital counselling that you have had or are now having.

AgeReason for contact and type  
of therapy

_____	_____
_____	_____
_____	_____

SOCIAL HISTORY

27. Please describe your present occupation \_\_\_\_\_

28. How long have you worked for your present employer? \_\_\_\_\_

29. Circle the last year of school attended:

1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	M.A.	Ph.D.
Grade School								High School				College					

other \_\_\_\_\_

30. Please answer the following questions for each marriage:

Date of marriage \_\_\_\_\_

Date of termination \_\_\_\_\_

Reason (death, divorce, etc.) \_\_\_\_\_

Number of children \_\_\_\_\_

31. Yearly income: (circle one)

0 - 5,000	5,000 - 10,000	10,000 - 15,000
	15,000 - 20,000	above 20,000

32. Please describe your spouse's occupation in detail.

_____
_____

33. Spouse's age \_\_\_\_\_ Weight \_\_\_\_\_ Height \_\_\_\_\_

34. How would you describe your spouse's weight (circle one)

very	slightly	about	slightly	very
overweight	overweight	average	underweight	underweight

35. Please list your children's age, sex, height, weight, and circle whether they are overweight, underweight, or average. Include any children from previous marriages whether they are living with you or not.

<u>Age</u>	<u>Sex</u>	<u>Weight</u>	<u>Height</u>	<u>Overweight</u>	<u>Average</u>	<u>Underweight</u>
_____	_____	_____	_____	very slightly	average	slightly very
_____	_____	_____	_____	very slightly	average	slightly very
_____	_____	_____	_____	very slightly	average	slightly very

36. Who lives in your house with you? \_\_\_\_\_  
\_\_\_\_\_
37. Is your father living? Yes \_\_\_\_\_ No \_\_\_\_\_ Father's age now or  
age and cause of death \_\_\_\_\_  
\_\_\_\_\_
38. Is your mother living? Yes \_\_\_\_\_ No \_\_\_\_\_ Mother's age now or  
age and cause of death \_\_\_\_\_  
\_\_\_\_\_
39. Describe your father's occupation \_\_\_\_\_  
\_\_\_\_\_
40. Describe your mother's occupation \_\_\_\_\_  
\_\_\_\_\_
41. Describe your father's weight while you were growing up (circle  
one)  
                     very           slightly       about       slightly       very  
                     overweight   overweight   average   underweight   underweight
42. Describe your mother's weight while you were growing up (circle  
one)  
                     very           slightly       about       slightly       very  
                     overweight   overweight   average   underweight   underweight
43. Please describe your family attitudes toward food and eating  
while you were growing up \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
44. Who raised you as a child? \_\_\_\_\_
45. Please list your brothers' and sisters' ages, sex, present  
weight, height, and circle whether they are overweight, under-  
weight or average.
- | <u>Age</u> | <u>Sex</u> | <u>Weight</u> | <u>Height</u> | <u>Overweight</u> | <u>Average</u> | <u>Underweight</u> |
|------------|------------|---------------|---------------|-------------------|----------------|--------------------|
| _____      | _____      | _____         | _____         | very              | slightly       | average            |
| _____      | _____      | _____         | _____         | very              | slightly       | average            |
| _____      | _____      | _____         | _____         | very              | slightly       | average            |
| _____      | _____      | _____         | _____         | very              | slightly       | average            |
46. Please write any other information you feel is relevant to your  
weight problem below. This would include interactions with your  
family and friends that might sabotage a weight loss program.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



APPENDIX B  
PHYSICIAN CONSENT FORM

## PHYSICIAN CONSENT FORM

I am aware that my patient, \_\_\_\_\_ is participating in a program for obesity at the University of Manitoba. According to my knowledge, there is no medical reason that would prevent \_\_\_\_\_ from participating in this program.

Physician's signature \_\_\_\_\_

Date \_\_\_\_\_

APPENDIX C

CONSENT FOR USE OF DATA FORM

## CONSENT FOR USE OF DATA FORM

Mr. John W. Pearce has my permission to use data about me,  
\_\_\_\_\_, gathered while I  
participated in a weight control program conducted at the  
University of Manitoba, Winnipeg, Manitoba. This informa-  
tion may be used for presentations at professional/  
scientific meetings and in professional publications. How-  
ever, no person in the family, nor our family name, nor  
other identifying information would be included in any  
presentations made by Mr. Pearce.

---

Signature of Participant

---

Date

APPENDIX D  
ATTENDANCE CONTRACT

## ATTENDANCE CONTRACT

I, \_\_\_\_\_, agree to place a \$50.00 deposit with \_\_\_\_\_. The entire \$50.00 deposit will be returned to me at the 12-month follow-up assessment if I have attended nine of the ten treatment sessions, and the 3-, 6-, and 12-month follow-ups. If I have failed to do this, the entire deposit will be donated to the Manitoba Heart Fund.

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Signature of Therapist

Date \_\_\_\_\_

APPENDIX E  
MONITORING FORMS FOR THE  
THREE BEHAVIORAL CONTROL GROUPS

FORM 1 - WEEK 1Wife records her behavior:

1. Small mouthfuls.
2. Chewed food thoroughly before swallowing.
3. Lay down silverware after each bite and only picked it up after chewing and swallowing.

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 1A - WEEK 1Wife records husband's behavior:

1. Small mouthfuls.
2. Chewed food thoroughly before swallowing.
3. Lay down silverware after each bite and only picked it up after chewing and swallowing.
4. Did my husband positively reinforce my eating habits?
5. Did he reinforce my food intake monitoring?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points

Most of the time = 3 points

Some of the time = 1 point

None of the time = 0 points



FORM 1B - WEEK 1Husband records his behavior:

1. Did I take small mouthfuls?
2. Did I chew food thoroughly before swallowing?
3. Did I lay down silverware after each bite and only pick it up after chewing and swallowing?
4. Did I positively reinforce my wife's eating habits?
5. Did I reinforce my wife's food intake monitoring?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 1C - WEEK 1Husband records wife's behavior:

1. Did my wife take small mouthfuls?
2. Did she chew food thoroughly before swallowing?
3. Did she lay down silverware after each bite and only pick it up after chewing and swallowing?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points

Most of the time = 3 points

Some of the time = 1 point

None of the time = 0 points

## Food Record Form

Day \_\_\_\_\_ Date \_\_\_\_\_

Meal B L D S #today _____					Meal B L D S #today _____				
	Type	Qty	Cal	Prep		Type	Qty	Cal	Prep
Food 1					Food 1				
Food 2					Food 2				
Food 3					Food 3				
Food 4					Food 4				
Food 5					Food 5				
Food 6					Food 6				
Food 7					Food 7				
Food 8					Food 8				

Total Cal for Meal \_\_\_\_\_

Time Begin Eating \_\_\_\_\_

Feeling: \_\_\_\_\_

Remarks: \_\_\_\_\_

TOTAL CALORIES

THUS FAR TODAY \_\_\_\_\_

Total Cal for Meal \_\_\_\_\_

Time Begin Eating \_\_\_\_\_

Feeling: \_\_\_\_\_

Remarks: \_\_\_\_\_

TOTAL CALORIES

THUS FAR TODAY \_\_\_\_\_

Meal B L D S #today _____					Meal B L D S #today _____				
	Type	Qty	Cal	Prep		Type	Qty	Cal	Prep
Food 1					Food 1				
Food 2					Food 2				
Food 3					Food 3				
Food 4					Food 4				
Food 5					Food 5				
Food 6					Food 6				
Food 7					Food 7				
Food 8					Food 8				

Total Cal for Meal \_\_\_\_\_

Time Begin Eating \_\_\_\_\_

Feeling: \_\_\_\_\_

Remarks: \_\_\_\_\_

TOTAL CALORIES

THUS FAR TODAY \_\_\_\_\_

Total Cal for Meal \_\_\_\_\_

Time Begin Eating \_\_\_\_\_

Feeling: \_\_\_\_\_

Remarks: \_\_\_\_\_

TOTAL CALORIES

THUS FAR TODAY \_\_\_\_\_

FORM 3 - WEEK 2Wife records her behavior:

1. I ate each meal on a regular basis.
2. Were you successful in shaping a problematic behavior this week?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 3A - WEEK 2Wife records husband's behavior:

1. Was he co-operative about regular meals?
2. Did he reinforce my efforts at shaping one of my problematic behaviors?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points

Most of the time = 3 points

Some of the time = 1 point

None of the time = 0 points

FORM 3B - WEEK 2Husband records his behavior:

1. Was I co-operative about regular meals?
2. Did I reinforce my wife's efforts at shaping one of her problematic behaviors?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 3C - WEEK 2Husband records wife's behavior:

1. Did she eat each meal on a regular basis?
2. Was she successful in shaping a problematic behavior this week?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points  
 Most of the time = 3 points  
 Some of the time = 1 point  
 None of the time = 0 points

FORM 4 - WEEK 3Wife records her behavior:

1. Was eating a "pure activity"?
2. When I bought food for this week, did I buy groceries from a list?
3. Did I prepare the weekly shopping list after a meal?
4. Did I do the grocery shopping after a meal?
5. Did I buy groceries according to schedule?
6. Did I buy for specific meals and try to buy just enough food to minimize leftovers?
7. Did I buy food that requires at least some preparation?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 4A - WEEK 3Wife records husband's behavior:

1. Was his eating a "pure activity" in my presence?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points

Most of the time = 3 points

Some of the time = 1 point

None of the time = 0 points

FORM 4B - WEEK 3Husband records his behavior:

1. Was my eating a "pure activity"  
in my wife's presence?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 4C - WEEK 3Husband records wife's behavior:

1. Was her eating a "pure activity"?
2. When she bought food for this week, did she buy groceries from a list?
3. Did she prepare the weekly shopping list after a meal?
4. Did she buy groceries according to schedule?
5. Did she do the grocery shopping after a meal?
6. Did she buy for specific meals and try to buy just enough to minimize leftovers?
7. Did she buy food that requires at least some preparation?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points

Most of the time = 3 points

Some of the time = 1 point

None of the time = 0 points

FORM 5 - WEEKS 4 THROUGH 10

Date \_\_\_\_\_ Day \_\_\_\_\_

Initials \_\_\_\_\_

TOTAL EXPENDITURE

### ACTIVITY CHART

[illegible]

FORM 6 - WEEK 4Wife records her behavior:

1. Did I put all foods away from clear sight?
2. Did I store problem foods in inaccessible as well as out-of-sight places?
3. Did I store all refrigerator foods in non-see-through containers?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 6A - WEEK 4Wife records husband's behavior:

1. When he handled food, did he store it in inaccessible as well as out-of-sight places?
2. Did he store his favourite foods in their special spots?
3. Did he positively reinforce me for engaging in prolonged activities?
4. Did he participate with me in these prolonged activities?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points

Most of the time = 3 points

Some of the time = 1 point

None of the time = 0 points



FORM 6B - WEEK 4Husband records his behavior:

1. When I handled food, did I store it in inaccessible as well as out-of-sight places?
2. Did I store his favourite foods in their special spots?
3. Did I positively reinforce my wife for engaging in prolonged activities?
4. Did I participate with my wife in these prolonged activities?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 6C - WEEK 4Husband records wife's behavior:

1. Did my wife put all foods away from clear sight?
2. Did she store problem foods in inaccessible as well as out-of-sight places?
3. Did she store all refrigerator foods in non-see-through containers?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points

Most of the time = 3 points

Some of the time = 1 point

None of the time = 0 points

FORM 7 - WEEK 6Wife records her behavior:

1. Was I successful in meeting my short-term goal for the week?
2. Did I prepare the exact amount of food that was needed to avoid excesses or leftovers?
3. Did I prepare low calorie foods?
4. Did I prepare family favourites (not my own favourites)?
5. Did I cook with lids?
6. Did I sample cooking dishes only as I needed to?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 7A - WEEK 6Wife records husband's behavior:

1. Did my husband reinforce my efforts at meeting my short-term goals for this week?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points  
 Most of the time = 3 points  
 Some of the time = 1 point  
 None of the time = 0 points

FORM 7B - WEEK 6Husband records his behavior:

1. Did I reinforce my wife's efforts at meeting my short-term goal for this week?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 7C - WEEK 6Husband records wife's behavior:

1. Was my wife successful in meeting her short-term goal for the week?
2. Did she prepare the exact amount of food that was needed to avoid excesses or leftovers?
3. Did she prepare low calorie foods?
4. Did she prepare family favourites (not my own favourites)?
5. Did she cook with lids?
6. Did she sample cooking dishes only as she needed to?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points

Most of the time = 3 points

Some of the time = 1 point

None of the time = 0 points

FORM 8 - WEEK 7Wife records her behavior:

1. Did I serve food in covered, non-see-through containers?
2. Did I put on the table only what was needed for that meal?
3. Did I serve myself last?
4. Did I keep food away from me at the table?
5. Did I serve myself completely once; no seconds?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 8A - WEEK 7Wife records husband's behavior:

1. Did he keep food away from me at the table?
2. Did he prevent himself from offering me food at the table?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points  
 Most of the time = 3 points  
 Some of the time = 1 point  
 None of the time = 0 points

FORM 8B - WEEK 7Husband records his behavior:

1. Did I keep food away from my wife at the table?
2. Did I prevent myself from offering my wife food at the table?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 8C - WEEK 7Husband records wife's behavior:

1. Did my wife serve food in covered, non-see-through containers?
2. Did she put on the table only what was needed for that meal?
3. Did she serve herself last?
4. Did she keep food away from herself at the table?
5. Did she serve herself completely once; no seconds?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time           = 5 points  
 Most of the time        = 3 points  
 Some of the time        = 1 point  
 None of the time        = 0 points

FORM 9 - WEEK 8Wife records her behavior:

1. Did I leave the table as soon as I was finished?
2. Did I leave a small amount of food on the plate?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 9A - WEEK 8Wife records husband's behavior:

1. Did he leave the table as soon as he was finished?
2. Did he leave a small amount of food on the plate?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points  
 Most of the time = 3 points  
 Some of the time = 1 point  
 None of the time = 0 points

FORM 9B - WEEK 8Husband records his behavior:

1. Did I leave the table as soon as I was finished?
2. Did I leave a small amount of food on the plate?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 9C - WEEK 8Husband records wife's behavior:

1. Did she leave the table as soon as she was finished?
2. Did she leave a small amount of food on the plate?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points  
 Most of the time = 3 points  
 Some of the time = 1 point  
 None of the time = 0 points

FORM 10 - WEEK 9Wife records her behavior:

1. Did I hold the food on the fork for increasingly longer periods of time?
2. Did I interrupt eating with conversation?
3. Did I scrape dishes directly into the garbage can?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 10A - WEEK 9Wife records husband's behavior:

1. Did he hold the food on the fork for increasingly longer periods of time?
2. Did he interrupt eating with conversation?
3. Did he scrape dishes directly into the garbage can and store leftovers?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points  
 Most of the time = 3 points  
 Some of the time = 1 point  
 None of the time = 0 points



FORM 10B - WEEK 9Husband records his behavior:

1. Did I hold the food on the fork for increasingly longer periods of time?
2. Did I interrupt eating with conversation?
3. Did I scrape the dishes directly into the garbage can and store leftovers?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

FORM 10C - WEEK 9Husband records wife's behavior:

1. Did my wife hold the food on the fork for increasingly longer periods of time?
2. Did she interrupt eating with periods of conversation?
3. Did she scrape dishes directly into the garbage can?

S	M	T	W	T	F	S

Total points for the week \_\_\_\_\_

All of the time = 5 points  
 Most of the time = 3 points  
 Some of the time = 1 point  
 None of the time = 0 points

APPENDIX F  
THERAPIST MANUALS  
FOR THE  
CO-OPERATIVE SPOUSE, WIVES ALONE, AND  
NONPARTICIPATING SPOUSE BEHAVIORAL  
CONTROL CONDITIONS

THERAPIST MANUALS  
FOR THE  
CO-OPERATIVE SPOUSE, WIVES ALONE, AND  
NONPARTICIPATING SPOUSE BEHAVIORAL  
CONTROL CONDITIONS

Portions of this manual are collected from the following sources:

1. Kelly Brownell, Husband's Weight Control Manual, Brown University, 1975.
2. Kelly Brownell, Carol Heckerman, and Robert Westlake, Weight Control Manual, Brown University, 1975.
3. D. Balfour Jeffrey and Roger C. Katz, Take It Off and Keep It Off: A Behavioral Program for Weight Loss and Healthy Living, Englewood Cliffs, N. J.: Prentice-Hall, 1977.
4. Michael J. Mahoney and D. Balfour Jeffrey, A Manual of Self Control Procedures for the Overweight. In Catalog of Selected Documents in Psychology, 1974.
5. W. T. McReynolds, R. N. Lutz, B. K. Paulsen, and M. B. Kohrs, Therapist Manual for the "Behavior Control" Weight-Loss Treatment. In Catalog of Selected Documents in Psychology, 1975.
6. W. T. McReynolds, R. N. Lutz, B. K. Paulsen, and M. B. Kohrs, Treatment Manual for the Food Management (Stimulus Control) Treatment. In Catalog of Selected Documents in Psychology, 1975.
7. Janet P. Wollersheim, Behavioral Treatment Manuals, In Catalog of Selected Documents in Psychology, 1975.

OVERVIEW AND STATEMENT OF RATIONALE

This weight reduction program draws extensively from a number of diverse behavioral principles. The thinking in the development of this treatment has been to bring many known principles and processes of behavior change to bear on the problem of weight loss. Thus, the treatment includes elements of self-reinforcement, self-punishment, stimulus control, shaping, chaining, and self-monitoring, each of which is given special application to the behavior of eating. This is a self-control treatment. We will be teaching subjects principles which they, themselves, can apply in their own lives to alter their eating and exercise habits. What we want to do, then, is teach the behavior modification principles to all subjects in these three treatments, make them understand specifically how they can apply these principles them-

selves to lose weight, and encourage them to, in fact, apply the principles in specific ways outside of therapy. The specificity feature merits emphasis; you must try to get subjects to suggest specific ways in which they can change their eating and exercise habits consistent with the behavioral principles. The assumptions underlying these three treatments are (1) obesity results from excessive food intake, or low activity levels, or a combination of the two, and (2) successful weight reduction can result from the modification of learned eating and exercise behaviors. The focus is on reducing the amount of food intake and increasing activity expenditure through training in behavior modification principles.

Each individual's efforts should be discussed and misunderstandings and misapplications clarified and corrected. It cannot be emphasized too strongly that if treatment is to be successful, subjects must apply the techniques, not merely discuss them, and it is the therapist's responsibility to see that each subject's efforts are discussed in detail and the techniques tailored to her particular situation. Detailed discussion of each member's efforts will not be possible in each session but each member should be given some attention in each session and periodically each subject's efforts should be discussed in detail.

This manual forms the basis of these three treatment conditions. Instructions or procedures specific to one or all three of the behavioral groups will be included in the inserts. This procedure eliminates the need for three separate manuals.

An important element in the co-operative spouse treatment condition is the active involvement of the husbands. An attempt is made to instruct the husbands in ways in which they can facilitate their wives' weight reduction efforts.

In the nonparticipating spouse group, the husbands of the subjects will be asked specifically to detach themselves as far as possible from their wives' weight reduction program. This does not mean that they will be instructed to sabotage their wives' efforts. They will be presented with the rationale that this program is their wives' program and that we are interested in how well they can do on their own. The husbands will be instructed to ignore and not comment in any way on their wives' efforts and progress. This procedure contrasts with the wives alone group in which husbands will not be contacted or involved in any way in the program (except for their being monitored by their wives).

#### GENERAL OUTLINE OF TREATMENT SESSIONS FOR THE THREE BEHAVIORAL GROUPS

Each treatment session in each of the three behavioral groups will be organized in a similar, easily learnable manner. Each weekly class, new information on behavioral self-control and nutrition will be

taken up and old information and suggestions discussed. The general format for all class proceedings including weigh ins follows:

- I. Weigh in and graphing of weight; collection of food, activity and habit change records (5 minutes);
- II. Therapist's comments on progress, social pressure, and reminder of commitment to lose weight (5 minutes);
- III. Discussion of problems in keeping the data (5 minutes);
- IV. Open discussion of the previous behavior control lesson in practice (10 minutes);
- V. New behavior control lesson (30 minutes);
- VI. Summary and encouragement (5 minutes).

DETAILED DESCRIPTION OF THE BEHAVIORAL CONTROL  
TREATMENTS BY CLASS

CLASS I: INTRODUCTION AND PRE-VIEW

Class Summary

This initial class will center around the business of introducing everyone, pre-viewing the entire weight loss program, and introducing the food monitoring and some other specific techniques. During this session, the therapist will set the emotional and intellectual tone for the classes to come.

Class I - Outline

1. Introduction of group members (5 minutes);
2. Statement of meeting arrangements (2 minutes);
3. Summary of the behavioral control treatments and their rationales (10 minutes);
4. Weigh in, and graphing of weight (5 minutes);
5. Therapist's comments on progress, social pressure and reminder of commitment to lose weight (5 minutes);
6. Behavioral control less for Class I: Building positive associations concerning eating control, and monitoring food intake;
7. Summary and encouragement.

Specific Procedures for Class I

1. Introduction of group members. This initial 5 minutes or so should be casual and unstructured so as to set a friendly, informal tone for the treatment sessions. Everyone should be seated in a semi-circle as the session begins, and the therapist should begin by saying something like:

Well, I guess we are all here. First, let me welcome you to our program. As you may know by now, this particular program was developed by myself and Dr. LeBow. You will understand a lot more about it later. Let me just say at this time we are excited about what we have got here; and we are confident that if you really want to lose weight, we can help you be successful. More on this later.

First, let us get to know each other a little and try to take care of some of the busy work necessary to get the weight reduction treatment underway. Most of you know me by now. I am \_\_\_\_\_ of the Department of Psychology and I am interested in the problem of weight control. We have put together a weight reduction program here that reflects both personal experience and the present state of knowledge psychologists and nutritionists have reached about gaining and losing weight. Well, more on that later.

Now, I would like for all of us to get acquainted with each other a little. Let's see, you are Mrs. (Mr. and Mrs.) \_\_\_\_\_, can we call you \_\_\_\_\_ (and \_\_\_\_\_)?

In this manner, each participant is identified by name and given an opportunity to speak if she (or he) so desires. The introductions should be as non-threatening as possible since we do not want to make anyone uncomfortable. Use your own judgement on how to manage this first stage; maintain a gentle, friendly control over the group interaction and be confident and relaxed about their being there. Remember, the purpose of this introductory section is to establish rapport and comfort for the group and set a friendly, receptive tone for the group meeting.

2. Statement of meeting arrangements. After the introduction, take a couple of minutes to make sure everybody knows when the weekly meetings are to take place. Emphasize that we want everyone to attend all the meetings, and that we would appreciate being notified of any upcoming absences. Remind them that if they miss two or more of the ten sessions, they will not receive their refund. The refund is contingent solely upon attendance. Participants are to be told that attendance is critical for success, and that their deposit is symbolic of their commitment to the program. Their attendance is paramount, and this should be stressed in this session and in the remaining ones. Make it clear that new information will be presented at each session. Tell them that we expect success; but that if they get discouraged, to let us know so it can be discussed. Most of all, make it clear that absences mean a loss of commitment and a passive way of saying, "I don't want to lose weight".
3. Summary of the three behavioral control treatments and their rationales. This 10 minute pre-view and summary is intended to remove any doubts or uncertainties the

participants may have about the program. Essentially, you are going to tell everyone what you are going to do over the next 10 weeks and why.

In the pre-view the therapist explains that the discussion in the sessions will be concerned with aiding them to change their eating and activity patterns by helping them specifically apply principles of learning which account for the way in which behavior<sup>s</sup>, specifically eating and exercise behaviors, are developed, changed and maintained. The subjects are to be assured that the techniques and principles in which they will be instructed have been validated by considerable research and that correct application of these principles will help them develop more appropriate eating and exercise patterns. In short, the therapist gives the subjects the rationale for this program based upon learning principles. He should say something along these lines:

Any behavior or action which is learned through various experiences can also be changed through experience. Your eating and activity patterns are habits which have been learned through the years. The program we have designed for you will teach you to un-learn inappropriate eating habits which are in part responsible for your weight problem. We will also teach you ways in which you can increase your activity level. At the same time you will be learning how to apply principles which help you learn appropriate eating habits which will produce weight loss, make it possible for you to maintain that weight loss and still reap a good deal of pleasure from eating and other areas of your life.

The most important thing for you to realize, however, is that these principles and techniques which we will be discussing with you will work but to work, they must be applied in your own living situation and not merely discussed. When you are first using the techniques they may seem rather artificial because of their newness but as you continue to apply them they will become very natural and will aid you in modifying your eating and activity patterns in a natural and comfortable manner.

The goal of this program is to teach you (and your husband) principles and techniques that will lead to permanent weight loss. Many people can lose weight, but most quickly regain it. Such



fluctuations are bad for you medically as they can lead to extra stress on your cardiovascular system. The techniques will hopefully enable you to continue losing weight and keep it off once this program is finished. Since we are very interested in determining if you can maintain your weight loss once these 10 weeks are over, we will be asking you to come in at 3, 6, and 12 month intervals after the treatment has ended to be weighed.

Each week we will introduce one or two new techniques which, if correctly applied, will help you overcome your weight problem. You are to try each new technique and as time goes on you naturally will be making the most of the techniques you have found most helpful. Also, each week we will be reviewing techniques we introduced in the past, particularly the ones introduced in the previous session. All of us together will serve to help each of you apply these techniques specifically to your individual circumstances. Group members are encouraged to help each other because helping and rewarding others facilitates learning in the trainer.

Insert for the co-operative spouse group:

We have asked your husbands to participate fully in this program with you. Previous research has suggested that people who are trying to lose weight are much more successful when other people in their families are helping them. As we all know, losing weight can be a very difficult process; we expect that your husband's co-operation will make this an easier process for you. So this program will not only instruct you women in specific things to do to lose weight, but we will also ask you men to do some very specific things during each of the 10 weeks to help your wives. We hope we can count on your full co-operation in this program.

Insert for the wives alone group:

This program places the emphasis upon you as the person who is going to change your eating and activity patterns. However, there is some research which shows that family members can

sometimes help or hinder another person's weight loss efforts. We are not going to involve your husbands in this program - we are going to work directly with you. But we would like you to monitor for us the responses of your husbands. These records will enable us to determine what kind of role husbands naturally play in their wives' weight reduction program. For example, we are going to ask you, with the help of a special form we will give you, to record the number of times during a week that your husband praises you or compliments you for staying within a certain number of calories. It is important that you do not actively seek your husband's help; it is your program and we want to teach you to rely upon yourself to lose weight. Thus, even though we are asking you to record his reactions to your weight reduction efforts, you are not to seek his help. Is this clear?

Insert for the nonparticipating spouse group:

We have sent your husbands a letter prior to the meeting. We have asked your husbands to attend one meeting. The purpose of this program is to teach you to rely upon yourself in your weight reduction efforts. We are interested in how well you can do on your own, without any help from other people, especially those that are closest to you. Therefore, we have told your husbands to ignore and detach themselves as much as possible from your attempts to lose weight; this does not mean, however, that we have told them to make things tough for you, such as offering you chocolate sundaes. They have been instructed not to comment on your efforts, and not to involve themselves in any way in the program. We are interested in what you alone can do to lose weight. You in turn should not turn to them and ask for help - it is your responsibility and your program.

As was mentioned before, to effectively control your weight you must take the initiative to systematically change your eating habits. No special diet is required because the intention is to produce long-lasting changes in eating patterns. Most people could lose weight by eating nothing for a month or going on a special grapefruit diet or some other crash diet. However, few would be willing to remain on such a diet for the rest of their lives. Thus, after weight is lost on a

special diet, people usually resume their old eating habits - the very behaviors which caused the weight problem in the first place. For effective weight control, the individual must alter her eating patterns in such a way that she can live with them comfortably for the rest of her life and still maintain a desirable weight. "Crash" starvation diets have no lasting value. Rather, an attempt should be made to find a reasonable balance between fattening and unfattening foods - a balance that can be maintained for life. You must learn to break the old habit patterns of eating snacks while preparing meals, eating while watching television, eating everything that is placed before you in a restaurant, and so on.

In addition to effecting changes in your eating habits, we also want to make changes in your activity level. Most programs just focus on eating - very few look at activity, although work in this area has shown that even small increases in activity on an everyday basis, coupled with changes in eating habits, can produce dramatic weight losses.

A cardinal rule in weight reduction is make haste slowly. That is, do not try to lose weight too rapidly. You are probably anxious to see the pounds drop off (and rightfully so), but your strategy of weight control is aimed at modifying long-standing eating and activity patterns. These habits have been "in power" for many years and may take a little time to dethrone. Also, if you set your sights for dramatic and rapid weight loss, you may become prematurely discouraged with gradual but significant reductions. Take it one pound at a time. A one or two pound weight loss per week is recommended as a healthy weight loss goal. In 10 short weeks this adds up to a 10 to 20 pound weight loss.

Probably all of you have questions about why you are overweight. First of all, obesity is a complex condition, involving behavioral, physiological, glandular, metabolic, genetic, sociological, and economic factors. Exactly how these factors operate and how they interrelate are processes that are not well understood. Much more research is needed before

they will be.

Even when physical causes can be identified, however, their role is often secondary. For most people, behavioral factors seem to be the primary causes. The real culprit is the energy balance in your body, which is a balance you take in by eating and the energy you expend by physical activity. How you behave at the table and in your physical endeavors, therefore, has a direct bearing on how fat or slim you will be.

The energy contained in food is measured in calories. When you take in more food energy, or calories than your body needs - i.e. for activities, growth, cell metabolism, digestion, respiration, and so on - the body converts the unused portion to fat. Since this conversion takes place at the rate of about 3,500 calories per pound of fat, for every extra 3,500 calories you consume, you become one pound fatter. The fat is then stored throughout your body and can be used for energy itself if an external food supply is not available.

Energy balance, therefore, is an important concept which will not only help you see how you have gained weight, but also how you can lose it.

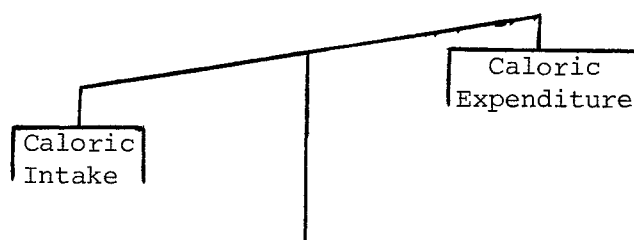
Essentially, three things can occur in your own energy balance. First, you can have a positive energy balance, in which the amount of food energy you consume is greater than what you expend. A positive energy balance can result either from eating too much food or from reductions in normal activity. Either way creates a positive energy balance, and you are sure to gain weight. Remember, the unused food is being stored in your body as fat.

Second, you can have a negative energy balance. In this case the amount of energy you are expending, through exercise and normal metabolism, is greater than the food energy you are taking in. Like a positive energy balance, a negative balance can result in two ways: you can eat less or exercise more. Over a period of time, with either solution, you will start to lose weight and slim down. Ultimately, a negative energy balance, in different ways and to various degrees, is what all diets seek to achieve.

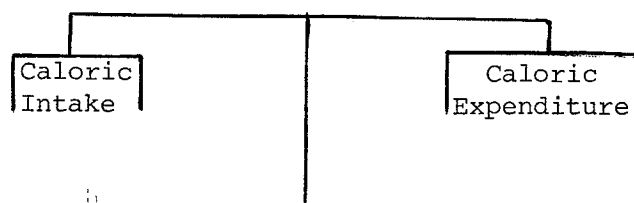
Third, your energy balance can, in fact, be balanced. In other words, the amount of energy you consume equals the amount of energy you expend. People who are able to maintain their weight at a constant level are doing nothing more than balancing their energy levels. Their eating habits give them all the energy they need to perform what they do, yet no more to gain weight nor less to lose it.

To take weight off, therefore, you need to create a negative energy balance by eating less and/or exercising more. To keep it off, you have to maintain the right energy balance.

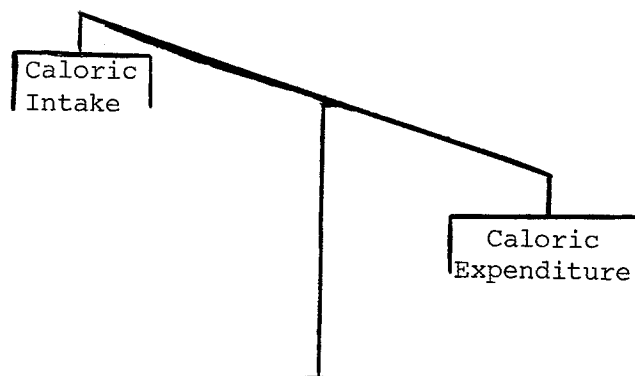
The following figure will be reproduced and enlarged to show to the subjects:



Weight Gain = Positive Energy Balance



Weight Maintenance = Energy Balance



Weight Loss = Negative Energy Balance

As we have seen, one way of creating a negative energy balance is to reduce the caloric intake. Therefore, starting this first week, we would like you to reduce your daily caloric intake to a level that is equal to your present weight  $\times 7$ . We strongly recommend that no one reduce her intake below 1,000 calories daily, as this might cause dizziness, fatigue, and other physical symptoms. If you find that you are having trouble losing weight at the 1,000 calorie level, we suggest that you increase your energy expenditure - e.g. take a walk during the day, or engage in activities like bowling or swimming. In order for you to determine your level of caloric intake, we will give each of you a book that lists the caloric values of many common foods.

4. Weigh in and graphing of weight. After this discussion of the rationales for the three programs has been completed, each subject will then be weighed privately. Using a physician's beam balance, each subject will be weighed to the nearest quarter-pound after removing her shoes, outdoor clothing, and any heavy jewelry. The weight will be recorded in the subject's file.
5. Therapist's comments on progress, social pressure, and reminder of commitment to lose weight. In a 5 minute interval, evaluate the progress of the group as a whole as well as individual members. Praise for weight losses should be dispensed (e.g. You're doing a terrific job, Barbara!) and invite the

group to share in your attitude (e.g. We can really be proud of Barbara!). For those subjects who have maintained or gained some weight, provide encouragement, but do not reprimand subjects; the emphasis should be on providing positive reinforcement for weight loss. You should also remind subjects that their commitment to lose weight must remain high (this section is omitted for Class I).

6. Behavioral control lesson for Class I.

- A. Building positive associations concerning eating control. The therapist explains that the purpose of this program is not to put them on a diet nor to take away their eating pleasures. On the contrary, the program is designed to add to their pleasure of eating by teaching them to eat properly and like a gourmet. The therapist should say something like this:

Now we are ready to look at the two techniques we want you to work with this week. The first is called building positive associations concerning eating control. While you certainly will be eating less, it is not the purpose of this program to take away your eating pleasure. On the contrary, the program is designed to add to the pleasure you experience in eating by teaching you to eat on purpose like a gourmet, one who really enjoys her food to the fullest with all her senses - visual, olfactory, tactile, and gustatory.

One who eats indiscriminately just stuffs food hastily into her mouth without really enjoying the eating experience. By changing your eating habits you can "eat less but enjoy it more". You can learn to enjoy your food by looking at it, experiencing the color of the food, its arrangement and smell.

Any food taken to the mouth should be taken on purpose and should be thought about and relished as it goes in. Slow down! That is one of the secrets to full enjoyment in eating. You will find that the following procedures will help you learn to eat more slowly. We would like you to use the following three techniques during next week; (1) Take small mouthfuls. (2) Chew the food thoroughly before swallowing. (3) Lay down your silverware after each bite and only pick it up after chewing and swallowing. We want you to

record the frequency of these three behaviors for everyday of next week.

At this point, the recording procedures should be introduced. When explaining the recording procedures to subjects in all three behavioral conditions, it should be emphasized that the recording should be as unobtrusive as possible. They are not to comment at all about whether their husbands are complying with the instructions, just record the behaviors. The wives in the wives alone and nonparticipating spouse groups should be instructed how to complete the behavior checklist for each day of Week 1 by placing the appropriate number on the chart for their own performance of these three behaviors and that of their husbands (Forms 1 and 1A, Appendix E). Remind subjects in the wives alone group that they should be as unobtrusive as possible.

Insert for the co-operative spouse group:

Husbands should be told to model these three behaviors when eating with their wives. They should be told that if they display these behaviors, it will serve as a reminder to their wives to do the same. Their wives and husbands should be instructed in how to record the frequency with which they and their husbands engage in these three behaviors for each day of next week. Do not consult with one another when recording!

The therapist should then continue by saying:

The purpose of this program is not to deprive you of eating pleasures, but to increase these pleasures. You can change your eating patterns so that you consume fewer calories, but at the same time you can also learn to enjoy to a greater degree the experience of eating.

Do you think of yourself as being on a diet. By dieting we frequently mean eating only certain low calorie foods in order to lose weight. Dieting and changing eating patterns are not the same thing. You will be changing your eating patterns in a sensible way. Developing effective self-control in the area of eating requires eating a nutritionally balanced diet and learning self-control under circumstances and with foods which



are to comprise your final eating pattern. Accomplishing this requires changing habits concerning WHEN you eat, WHAT you eat and HOW MUCH you eat.

After your formal comments you should lead the group in a discussion of the behavioral control lesson. Solicit further ideas, suggestions and specific examples. Make it clear that new behaviors seem awkward at first but soon become natural and automatic.

- B. Monitoring of food intake. Monitoring of food intake is relevant to the current stimulus-control treatment in that it makes the person aware of the volume of food they are consuming. Explain to the group members that they should become aware of when and how much they eat so as to be able to know when to stop. "Food intake monitoring," they can be told, "makes you aware of where the pounds come from. Weight monitoring tells you your overall progress and indicates whether you should monitor more carefully and eat less." Make it clear that a lot of people do not know when or how much they eat and that, obviously, without being aware they cannot exert eating control. Thus, keeping the daily food record serves an important monitoring functioning. The eating records should help identify the current discriminative, eliciting, and reinforcing stimuli associated with the eating behavior.

Wives in the wives alone and nonparticipating spouse groups should then be instructed to complete the eating record form (Form 2, Appendix E) for each day over the next 10 weeks. Form 1A (Appendix E) provides space for the monitoring of the frequency of reinforcement that the husbands provide to their wives for their eating habits and the monitoring per se, and subjects should be instructed to complete these sections for every day of next week.

The therapist should provide concrete examples of what is meant by the term "reinforcement", such as verbal praise or material rewards. Make certain that everyone in the group understands what they are being asked to do.

Insert for the co-operative spouse group:

Spouses should be told about the important role they can play in helping their wives with this monitoring. Specifically, the spouse can positively reinforce his wife for (1) keeping the data, and (2) maintaining a caloric level which is at or below the standard set for that subject. The therapist should give examples of how spouses might reinforce their wives for these two behaviors: verbal praise - "you're doing a great job recording your data today", or material rewards - "since your caloric intake was 100 calories below the standard, I'm going to take you to a movie tonight." Nagging, teasing, or criticism by husbands for lax performance on the part of the subjects should be strongly discouraged. Place the emphasis upon positive reinforcement. The therapist should then allow the group to discuss and propose other ways in which husbands can positively reinforce their wives for keeping the food intake data and for maintaining the appropriate caloric intake. Wives should then be instructed to complete the eating record form (Form 2, Appendix E) for each day over the next 10 weeks. They should also be instructed to record the frequency over the next week with which their husbands positively reinforce their wives' monitoring behaviour and their attempt to stay within a certain caloric limit using Form 1A (Appendix E).

7. Summary and encouragement. This 5 minute summary should be a simple, concise restatement of the proceedings of the session. Re-emphasize key points (e.g., the treatment rationale, the importance of weekly attendance at the sessions, and their assignment to monitor their behavior and that of their husbands over the next week). Encourage group members to make a serious commitment to weight loss (e.g., "Over the next week I'd like you to spend some time evaluating the importance of weight loss for you."). Finally, remind everyone of the meeting time.

Class II - Outline

1. Weigh in and graphing of weight, collect data (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Discussion of problems in keeping the data (5 minutes);
4. Open discussion of the previous behavioral control lesson in practice (10 minutes);
5. Behavioral control lesson for Class II: Shaping behavior, and the control of states of deprivation (30 minutes);
6. Summary and encouragement (5 minutes).

Specific Procedures for Class II

- 1, 2, and 6 are the same as in the previous session.
3. Discussion of problems in keeping the data. This 5 minute unstructured discussion should give all the group members a chance to ask any questions they may have on how to keep the food record. Ask if anyone has learned anything about herself and her eating habits by keeping the food records. Discuss any problems, observations, etc. You might begin by reiterating the general food record instructions, re-emphasizing the importance of monitoring and open it up for questions and comments.
4. Open discussion of the previous behavioral control lesson in practice. Remember that the purpose of this section is to emphasize the practical or applied aspects of the behavioral control technique and the importance of putting these techniques into daily use. Deal with any individual problems participants are having in applying the techniques, and solicit ideas and reactions from the group.
5. Behavioral control lesson for Class II.
  - A. Shaping behavior. Subjects are to be instructed in how to use shaping principles to modify their eating habits. The importance of small steps and realistic goals in developing more appropriate eating behavior should be emphasized throughout all sessions. Developing more self-control over eating behavior is a gradual process involving

the planning of goals which are limited enough to be realistic. Behavior should be changed gradually so that the changed behavior will be reinforced. The therapist should begin the lesson by saying:

"Shaping" is a word which has particular relevance for this program; however, psychologists use it in reference to changes in behavior rather than (as you may think) changes in body contours. This concept refers to small, yet realistic, changes in behavior. Shaping is a process of gradual change, with each change more closely approximating the desired terminal behavior.

Your task is to establish patterns of eating which will maintain your weight at a desirable level. If you attempt to change these patterns overnight, the chances of failure are greater than they would be if you make these changes in small, but realistic steps. Sure, it would be nice to lose five pounds the first week. But if you get so discouraged at your new pattern of eating that you give up and gain it all back the next week, what have you accomplished?

Set realistic goals. And determine that these goals will be met. After having success on these goals, then go to goals which require more self-control. Here are some concrete ways to get started using shaping to help you lose weight:

- a) Set goals only for each day and each moment (e.g., no snacks this morning).
- b) List situations in which you eat most often and cut out eating in some of these situations, first concentrating on situations in which it will be easiest not to eat.
- c) Before attending social events determine beforehand just how much you will eat (e.g., only 12 peanuts and 1 drink).
- d) List the situations in which you eat less and further decrease and finally eliminate eating in these situations altogether (e.g., no refreshments at movies).

- e) Limit between meal eating to certain specified foods. For example, between meal snacks can be limited to diet cola or coffee.
- f) List activities and situations in which you do not eat and then do these more often.
- g) Control between meal snacking by gradually lengthening periods of abstinence, working first with periods of the day that cause the least difficulty in temptation to overeat. When one has succeeded in abstaining for a specified length of time, allow yourself a reward. If the reward is food, the kind and amount should be determined ahead of time.

Each subject in the nonparticipating spouse and wives alone group should now be asked to shape one of their problematic eating behaviors and to record her effort (Form 3, Appendix E). The subject should also note whether her husband reinforced her efforts at shaping (Form 3A, Appendix E).

Insert for the co-operative spouse group:

The husbands should now be asked to reinforce their wives' attempt at shaping a problematic behavior. The therapist should initiate a discussion between the wives and husbands concerning (1) what behavior is considered to be problematic and should be shaped, and (2) how the husbands can best reinforce their wives' shaping. The wives should then be instructed to record both their attempt and whether they were provided with reinforcement from their husbands during next week (Forms 3 and 3A, Appendix E).

Remember, our goal in these lessons is to teach them a learning principle which they can use in the interest of weight loss and help them come up with specific ways of applying these principles. Take a few minutes after your presentation of shaping and help them articulate other ways of using shaping to cut down on food intake.

Also, discuss the problem of setbacks (e.g., "Don't let one meal or one bad day blow the whole program.

If you do overeat at a particular time, return to working with the techniques as soon as possible. Usually one indiscretion will not destroy your weight control program. Failure occurs when you let one indiscretion lead to another indiscretion. Setting small goals will help prevent this cycle by making it easier for you to be successful at each step.").

- B. Control of states of deprivation. It is important that subjects do not severely deprive themselves but rather embark upon a gradual program of weight reduction. Food intake should be planned to avoid long periods of deprivation and to help subjects through difficult periods. It may also be helpful if subjects eat a bit of filling food just before entering a situation in which she will have a strong tendency to eat (e.g., 6 ounces of milk or juice before mealtime or attendance at a party). Subjects should be discouraged from losing weight too fast because a very rapid weight loss produces a level of deprivation and disposition to eat which exceeds the existing self-control. Subjects are to be discouraged from limiting the diet to one specific food such as protein because such a diet will likely produce a heightened disposition to eat other food stuffs. A well balanced diet will have adequate satiety value. The therapist can say the following:

There are times when you can anticipate when you will be strongly tempted to overeat. Before you go into these situations reduce your hunger just enough to get you through these situations successfully. Plan ahead to avoid hunger. One example is meal preparation. You usually are hungry at this time which makes it difficult to not taste. Plan ahead and have a light snack before you start cooking to avoid tasting.

Control your hunger. Do not let yourself get excessively hungry since this will make it very difficult for you to control your eating when you do get into an eating situation.

You should arrange to have highly desirable foods available only when hunger is low. For example, eat desserts only at the end of a meal. Conversely, allow yourself to have only less desirable foods when hunger is high. Just

before entering a situation in which you will have a strong tendency to eat (e.g., attendance at a party or mealtime) you may want to have 6 ounces of juice or milk.

Subjects in the wives alone and nonparticipating spouse groups should then be told that it is their assignment this week to have regular meals. Any potential problems should be discussed. Ask the subjects to record their performance and the extent of the co-operation of their husbands on the appropriate forms (Forms 3 and 3A, Appendix E).

Insert for the co-operative spouse group:

Husbands should now be instructed to co-operate with their wives, such as agreeing to eat regular meals. Subjects will be asked to monitor the co-operation of their spouses and their own performance in this area for each day next week using the appropriate checklist (Forms 3 and 3A, Appendix E).

### Class III - Outline

1. Weigh in and graphing of weight, collect data (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Discussion of problems in keeping the data (5 minutes);
4. Open discussion of the previous behavioral control lesson in practice (10 minutes);
5. Behavioral control lesson for Class III: Introduction to stimulus control, and food buying strategies (30 minutes);
6. Summary and encouragement (5 minutes).

### Specific Procedure for Class III

- 1, 2, 3, 4, and 6 are the same as in the previous session.
5. Behavioral control lesson for Class III.
  - A. Introduction to stimulus control. Certain situations present the stimuli for a person's eating behavior. One can modify her eating patterns by either changing these stimuli or by changing the behavior that occurs in certain stimulus situations. Subjects should be instructed to carefully select the stimuli that are to control their eating behavior. Using stimulus control to develop and maintain desirable eating habits can be accomplished in a number of ways. The first that will be presented is narrowing the range of stimuli which control eating. The therapist should say something along the following lines:

Most of us do not realize how much of our eating behavior is linked to certain situations or our environment in general. These situations present patterns of cues or stimuli which can exercise a great deal of control over our eating behavior. In other words, where we are can tell us to eat or not to eat. We know what to do by our environment. For instance, a messy room is often a stimulus for cleaning. A full mail box is a stimulus for opening envelopes and reading. Some people smoke when they see other people smoke or when they see cigarettes. These are all examples of the effect of environmental



stimuli on behavior. In the psychological literature, this phenomenon is known as "stimulus control of behavior." You should keep in mind that when this term is used, it does not refer to complete control, which would negate your own volition. Rather, stimulus control refers to the fact that our behavior is more likely to occur in some situations than it would in others.

Stimulus control is very important in that it provides organization for our lives and frees us of an overpreoccupation with details. We learn that many of our actions are appropriate only at certain times or places or in the presence of specified events. Then, gradually, these events, or stimuli, begin to operate almost automatically in producing the appropriate behaviors. For example, when you first started driving you had to think a great deal about all of the complex behaviors involved in staying on the road, going the proper speed, looking for other traffic, etc. However, in time many stimuli associated with driving began to exert "stimulus control" over the behaviors involved in driving to the point where these behaviors became quite automatic. The same can happen with eating. The time of day, the sight of a pizza parlour, the presence of certain people, the engagement in certain activities (e.g., reading, watching television) can all elicit hunger sensations if they have been regularly associated with eating. Furthermore, under some conditions you may eat when you are not even hungry just because you have been used to eating under those conditions in the past. This is what stimulus control is all about.

You can use the principle of stimulus control in several ways to modify your eating habits. First, you can systematically narrow the range of stimuli in your environment which have been associated in the past with eating. As these stimuli, or situations, become less frequent in your life, you will find yourself eating less.

To many people, eating has become strongly associated with such stimuli as watching television, reading, watching a movie, etc. You can eliminate the control these situations exert over your eating by making eating a distinctive process - a "pure activity". When you eat, you should do that and nothing else. Remember what was pointed out in

Class I concerning learning to eat like a gourmet. You should fully enjoy the sight, smell, texture, and taste of your food. You can do this properly only if you disassociate eating from all other activities. For example, you can specify that you will never eat unless you are sitting at a table. Or, you may want to specify that eating can occur only in certain places, for example, in the dining-room or kitchen but not in the livingroom. By specifying the stimuli under which you will allow yourself to eat, you will find that you are less tempted to eat under other circumstances.

At this point, it would be good to remind you again of the principle of shaping. The excess stimuli associated with eating do not have to be cut out all at once. We would like you to start by making eating a "pure activity". You are to eat only in a very specific spot and without engaging in other activities, such as watching television. You are to eat and that is all you are to do. We also want you to record the frequency with which you are able to do this on Form 4 (Appendix E) for every day of next week. We also want you to record the frequency with which your husbands do this (Form 4A, Appendix E) for the following week.

Insert for the co-operative spouse group:

Husbands should now be instructed to help their wives in making eating a "pure activity". Specifically, they are to be asked not to eat food in their wives' presence at unscheduled mealtimes or in inappropriate places, e.g., in the living-room before the television when it had been agreed that all eating would take place at the kitchen table. Subjects will be asked to record the frequency of eating as a "pure activity" each day for the following week, and the extent of their husbands' "pure activity" on Forms 4 and 4A (Appendix E).

- B. Food buying strategies. The therapist should introduce this technique to members of all three behavioral groups by saying:

Making eating a "pure activity" is the first step. There are other ways in which you can arrange your environment so that overeating is less of a problem for you. Eating is actually much more than sitting

down at a table. First you buy the food, store it in your kitchen, cook or prepare it, serve it, eat it and, then, clean up the leftovers. We have reason to believe that your behavior at each step in this chain will affect how much you eat. Therefore, we will be making suggestions as to how you can buy food, serve food, etc. in such a way to make eating too much less likely. We will consider each step in the eating process during each of the upcoming sessions. Our job here is simple. We are going to help you engineer your environment so as to reduce the environment's effect on your eating behavior and allow you to easily develop new eating habits. We are trying to change control of your eating from the environment to you.

This food management lesson is all about one thing - "You don't eat what you don't buy". Self-control and self-restraint are much easier the earlier in the response sequence the control is exerted. We are to reduce availability of food at home, temptation, etc. by blocking the conditions that lead up to these circumstances.

Make it clear to all group members what the philosophy of engineering new food buying habits is. The therapist can begin by saying:

You eat what you buy, right? You may not have seen things this way before, but buying food is the first step in the whole process of eating. Without question, then, your food buying habits will affect your food eating habits. How can you change your shopping habits to support reduced and wise eating? This is the question we are considering here.

Next, present the 6 food buying suggestions and elaborate briefly on each one.

#### Food Buying Do's

- i Do buy groceries from a weekly shopping list.
- ii Do prepare the weekly shopping list after a meal.
- iii Do go grocery shopping after a meal.
- iv Do buy groceries once a week or at least on a regular schedule.

- v Do buy for specific meals and try to buy just enough food to minimize leftovers.
- vi Do buy food that requires at least some preparation.

Have all participants familiarize themselves with these food buying do's. Invite them to openly discuss these points, add comments and suggestions of their own. Reiterate the rationale behind these guidelines. See if anyone anticipates any trouble in following these simple rules. Deal with particular problems (e.g., "I have to go shopping every two weeks") within the treatment rationale ("Fine, make sure you shop from a grocery list. The main thing is to not go to the grocery store too frequently."). After discussing these strategies, instruct the women in all three behavioral groups to record whether they followed the six recommendations for food buying for the next week (Form 4, Appendix E).

#### Class IV - Outline

1. Weigh in and graphing of weight, collect data (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Discussion of problems in keeping the data (5 minutes);
4. Open discussion of the previous behavioral control lesson in practice (10 minutes);
5. Behavioral control lesson for Class IV: Activity increases, and food storage (30 minutes);
6. Summary and encouragement (5 minutes).

#### Specific Procedures for Class IV

- 1, 2, 3, 4, and 6 are the same as in the previous session.
5. Behavioral control less for Class IV.
  - A. Activity increases. The therapist should begin this lesson by saying:

The view that exercise expends relatively little energy and that it is insignificant in weight control is erroneous. Although exercise is not an answer in itself, it is an important factor in weight control. There are two major misconceptions relating to physical activity that I would like to dispel. These are (1) that physical activity has little effect on energy output, and (2) that what effect it does have is outweighed by the increased food intake that accompanies increased activity.

Looking at the first misconception, the cost of physical activity has been measured for many activities either directly or indirectly. These figures have often been translated in terms of how much of an activity is necessary to burn a pound of fat. For example, moderate walking for 36 hours will burn one pound of fat. Someone looking at this statement thinks that it would be hopeless for him to walk this much, therefore, exercise has a minimal effect. One should remember that this 36

hours of walking does not have to all be at the same time. Walking one hour per day will give you 30 to 31 hours a month which will be almost one pound burned and in a year will add up to approximately 10 pounds. Another example is swimming. One hour of swimming is approximately 670 calories in energy expended. This means that the 5 hours of swimming will add up to 1 pound. On a regular basis this can contribute significantly to the energy output.

Because these seemingly small amounts of exercise do add up, rather small changes in our daily habits can have a profound effect on weight control as mentioned earlier. Remember that I said that brisk walking one hour daily will add up to approximately a 17 pound weight loss in one year. Or if you usually walked one hour daily and then quit doing so, you could gain 17 pounds in one year. By adding or subtracting one hour of brisk walking daily, you really do not alter your appetite enough that it would affect how much you ate. You would probably continue to eat the same as before.

This leads us into the second area which is concerned with the effect of physical activity on food intake. There is an increase in appetite with increased physical activity and this is why most people maintain their weight at a relatively constant level despite variations in activity. This control has limitations, however.

There is a "normal" range of activity in which an increase in activity leads to an increase in appetite. At levels both above and below this range appetite and food intake do not respond to this mechanism.

Above the normal range exhaustion occurs and appetite and food intake both decrease. Weight will decrease accordingly. This state is not a stable situation and cannot be endured indefinitely.

Below the normal range is what is termed the sedentary range. In this range even though activity is decreasing, the food intake stays the same. Regardless of how inactive a person is she will still continue to eat a certain amount of food and, in fact, the intake may even increase somewhat. The reason for this increase is not clear, but has been shown in studies with both rats and humans.

In respect to physical activity, obesity may be a disease of "civilization". Increased mechanization and modern transportation methods have certainly cut down on your physical activity. In some cases it may lower it to the sedentary range which leads to excess calories and fat.

Because our physical activity has not decreased overnight, but has changed gradually, we do not realize just how much it has decreased. We also equate being tired with being active. This is not always the case. Reading or watching television or knitting may be tiring, but none of these involves a very high energy expenditure. This should lead us to look carefully at our activity and see if we are as active as we think we are.

Studies have also shown that physical activity can affect the type of weight loss a person has, as well as the amount. When people diet only, they lose more muscle or lean tissue and less fat tissue; while people who are physically active while dieting lose more fat and less lean tissue. Since we are primarily interested in having you lose fat, this is an important point to keep in mind when planning your physical activities.

I have pointed out the role that exercise or physical activity plays in weight control. Exercise cannot be used alone, however. Uncontrolled eating will overcome the benefits of physical activity; therefore, we have to watch the food we eat. Increased physical activity will have an effect on the amount of food we can eat and still lose or maintain weight. By increasing physical activity it is possible to lose weight without having to cut food intake as much as without physical activity.

The best system is to try to increase physical activity in small steps and to do so in areas that can be used to set up regular patterns. Calisthenics usually are not much fun and only last a few days. Walking, swimming, cycling, cross-country skiing are much more enjoyable and are activities you can enjoy with your family and build into your life. Also do not try to make drastic changes overnight and do not change something you only do once a year. We will be handing around a list of the caloric expenditure

of common activities. Starting tomorrow and for every day until the termination of the program, we would like you to record the number of activities you expend per day in prolonged activities; activities like walking, skiing, bowling, etc. You should try to increase the caloric expenditure over the course of the remaining weeks.

Wives in the wives alone and nonparticipating spouse groups should now be instructed in how to monitor their activities and caloric expenditure. They should also be taught to record the frequency over the next week of the reinforcement that is provided by their husbands for participating in these activities. The frequency of the husbands' participation in these activities with their wives should also be recorded (Forms 5 and 6A, Appendix E).

Insert for the co-operative spouse group:

The beneficial role of husbands should be pointed out. These spouses can positively affect changes in the activity patterns of their wives. First, they can positively reinforce any activity changes their wives make. Secondly, they can participate with their wives in the activities, such as walking with their wives on a regular basis. Such participation not only has a modeling effect, but also makes the activity much more enjoyable for the wife, thereby increasing the probability that she will engage in the activity again. An open discussion should follow on ways in which husbands can facilitate activity changes in their wives. Wives should be instructed to record their activities and caloric expenditure and to record (1) the reinforcement they receive from their husbands, and (2) the extent of their spouses' participation with them in these activities (Forms 5 and 6A, Appendix E).

- B. Food storage. Reiterate the environmental control rationale for the food management aspect of this treatment. Remember the control-eating-through-controlling-the-environment formulation. Introduce the food storage step in the eating process as the next focus for food management procedures. List and discuss the following food storage do's.

Food Storage Do's



- i Do put all foods away from clear sight.
- ii Do store problem foods (e.g., candies, potato chips) in inaccessible as well as out-of-sight places (e.g., back of bottom cupboard).
- iii Do store all refrigerator food in non-see-through containers to take them out of clear sight.

Add suggestions to this list as you feel appropriate. Make sure everyone understands the rationale of food storage management and the thinking behind each of these specific guidelines. The latter issue can serve as a point of discussion. Lead a brief discussion and end on an encouraging, enthusiastic note (e.g., "Whether these guidelines seem important or not, try them. If you will try everything we are suggesting for at least a few weeks, you will be pleasantly surprised. Remember, these are the natural keys to normal weight with a normal diet.").

The assignment for this week for subjects in the wives alone and nonparticipating spouse groups is to put these three recommendations into effect, and they should monitor their behavior using Form 6 (Appendix E). Certain behaviors of the husbands should also be recorded (Form 6A, Appendix E).

Insert for the co-operative spouse group:

Husbands can also play a role in these strategies. They should be instructed not to leave food out in clear sight, to store refrigerator foods in non-see-through containers, and to store their favourite foods (e.g., beer) in their special spot. Wives should be instructed to record the extent of their own compliance with these recommendations and that of their husbands on the appropriate forms (Forms 6 and 6A, Appendix E).

Class V - Outline

1. Weigh in and graphing of weight, collect data (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Discussion of problems in keeping data (5 minutes);
4. Open discussion of the previous behavioral control lesson in practice (10 minutes);
5. Nutrition lesson for Class V (30 minutes);
6. Summary and encouragement (5 minutes).

Specific Procedures for Class V

1, 2, 3, 4, and 6 are the same as in the previous session.

5. Nutrition lesson for Class V.

Instead of introducing new behavioral techniques, Class V focusses upon nutrition and its importance for weight reduction. The therapist should say something like this:

Let us begin our nutrition information by reviewing the basics of nutrition. Our bodies need many different nutrients in order to maintain good health and these can be grouped as carbohydrate, protein, fat, vitamins, minerals, and water. These all work in combination with each other so it is important to include all of these in the diet.

Carbohydrates are our main source of quick energy. All plants contain carbohydrates which we refer to as sugars and starches. Although carbohydrates do have some other functions, their main function is to provide energy. The caloric or energy value of plants depends on the fiber and water content of the plants. Plants with a low fiber or water content are higher in calories than those with a high fiber or high water content. Recently, refined carbohydrates or sugars have been implicated as a factor in heart disease. Although high levels of the refined sugars may not be desirable, it is important to have some carbohydrate in the diet, including weight reduction diets.

Protein furnishes calories and can be used for energy or for building and repairing body tissue. It cannot be used for both purposes at the same time though, so we need enough calories from other sources to meet the energy needs of the body. We will talk about this in more detail a little later. Our most important sources of protein are animal products such as meat, fish, poultry, eggs, milk and cheese. Dried peas and beans and peanut butter are also good protein sources.

Fat is our most concentrated source of calories. A given amount of fat supplies over twice the calories that the same amount of carbohydrates or protein would give. This is why we have to watch the amount of fat we eat when cutting down on calories. This does not mean, however, that we have to cut all fat out of our diet. Since all animal products contain fat we would have to severely limit our protein in order to eliminate fat out of our diet. Fat is important because it has a high satiety or filling value, it increases the palatability of foods, and is a carrier of the fat-soluble vitamins.

Vitamins and minerals do not furnish calories to the diet, but they are important in regulating and controlling many body processes.

Although we do not always think of water as a nutrient, it is a very important one. A large percentage of our body is water and water carries nutrients to our body cells and carries waste away from the cells.

We have already mentioned calories several times and since this is one of the first things we think of when we think about losing weight, let us look at this a little closer. It is impossible to talk about weight control without discussing calories since proper weight maintenance is dependent upon a balance between energy output (activity) and energy intake (calories). A calorie is a measure of heat equivalents like a pound is a measure of weight. A kilo-calorie or large calorie which is what is used for food is the amount of heat required to raise 1 kg of water 1 degree Cent.

There are two aspects of calories that we are concerned with: the caloric value of foods and the caloric needs of the body. The caloric values of

various foods have been determined in the laboratory. The caloric value of pure carbohydrate or protein or fat has also been determined. One gm of carbohydrate yields 4 calories, 1 gm of fat yields 9 calories, and 1 gm of protein yields 4 calories. Once we know these basic figures we can easily determine the caloric value of any food by looking at its composition and then using these figures.

The caloric needs of a person depend on several factors and can be classified into two main areas. These are the basal metabolic rate (BMR) which is the calories needed for body maintenance, and calories needed for muscular work. The BMR is affected by several factors: growth (increase), sex (men higher than women due to body composition), pregnancy (increase), age (decreases as age increases). The BMR stays fairly constant per person, however, and the muscular work is what causes variation in a person's daily caloric needs.

As we have seen in this class and in the previous class on energy expenditure, to lose weight you need to create a negative energy balance. This can be created not only by increasing your activity, but also by reducing your caloric intake. As we have seen, our bodies use food as a source of fuel to provide energy to keep it running and as a source of nutrients to continually repair and maintain all tissues. Almost all foods can serve as fuel for energy, but no single food provides all the essential nutrients. Consequently, you need a balanced diet of different foods. Your daily diet should be a well-balanced one, high in protein and low in carbohydrates and fat. However, do not eliminate all carbohydrates and fat from your diet.

The remainder of the class should be spent answering any questions about nutrition, and dealing with individual problems that particular subjects bring up. If no one mentions any difficulties, ask each subject to ascertain this.

### Class VI - Outline

1. Weigh in and graphing of weight, collect data (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Discussion on problems in keeping the data (5 minutes);
4. Open discussion of the nutrition lesson (10 minutes);
5. Behavioral control lesson for Class VI: Developing a reward system, and food preparation (30 minutes);
6. Summary and encouragement (5 minutes).

### Specific Procedures for Class VI

- 1, 2, 3, 4, and 6 are the same as in the previous session.
5. Behavioral control lesson for Class VI.

- A. Developing a reward system. It is important that subjects reinforce themselves for the development of self-control in the area of eating else the developing self-control behavior will extinguish especially since the reinforcing consequences of weight loss is a slow accomplishment. Food itself is highly rewarding, and it is mandatory that subjects find powerful rewards for their behavior of not eating.

The reason many weight control programs fail appears to be largely because the rewards of weight reduction come very slowly while food is highly rewarding and is almost continually available. As long as the reward value of the food overpowers the rewards which accompany the slow process of weight reduction, it can be strongly predicted that the food is going to win out. For this reason it is imperative that you find powerful rewards to administer to yourself for performing behaviors which are conducive to weight loss.

Here are some examples of short-term contracts you may set up with yourself: "If I have a salad for lunch, I'll allow myself to read a novel this afternoon." "If I eliminate all evening snacking this week, I'll treat myself to going to a movie Saturday night." "If I have a fruit salad for lunch, I'll

allow myself a piece of pizza at the party tonight." Rewarding yourself with treats involving food must be very carefully planned for this procedure can work against your program. But in general, if you carefully plan your caloric intake during the day, you may have up to 200 to 250 calories left after the evening meal. Then you can reward yourself with a very desirable food or drink and still stay within the limit.

In addition to short-term contracts like those mentioned above, your program should include self-reward systems for long-term maintenance of self-control. Try to reward yourself for self-control, not just weight loss. Remember the main goal of this program is to help you retrain your eating habits. One approach is to place twenty-five or fifty cents in a jar for each day you successfully limit your caloric intake and use this money to purchase some desired object.

Another use of self-reward is to develop reinforcers which remove you from situations in which you are tempted to eat. It is one thing to substitute non-eating behaviors for eating behaviors, but it is far superior to substitute highly reinforcing non-eating behaviors for eating behaviors. For example, instead of having a mid-morning snack, go for a walk downtown and shop. If you tend to watch television and eat on Friday nights, you can arrange to attend a movie or a play, determining beforehand that you will not buy food there.

The women in all three behavioral groups should now be asked to set up one short-term contract with themselves for the following week, and to record whether they followed through with their plans and whether their husbands provided them reinforcement for their efforts (Forms 7 and 7A, Appendix E). Each woman should be given the opportunity to discuss her plans for this week and any problems that might hinder her efforts.

Insert for the co-operative spouse group:

The only other additional instructions that should be given to this group is to reiterate the role the husbands can play in reinforcing their wives' efforts to reduce, especially the wives' efforts to meet the short-term goal during the following week. As in the other two groups, subjects should

decide upon a short-term goal during the session. Specific ways in which each husband can reinforce his wife's attempts should also be decided upon.

- B. Food preparation. There are five recommendations which should be presented to members of all three groups:

Food Preparation Do's

- i Do prepare the exact amount of food that you need to avoid leftovers.
- ii Do prepare low calorie foods.
- iii Do prepare family favourites (but not your own favourites).
- iv Do cook with lids.
- v Do sample cooking dishes only as you need to.

As before, lead members in an open discussion of the logic behind each of the five recommendations. Draw from your previous lesson on buying the correct amount to bolster your comments on preparing exact amounts of low calorie foods. Solicit specifics from the group on such generalities as "low calorie foods", and "family favourites versus your own favourites". Remember our emphasis on being as specific as possible about each of the food management guidelines. When you have few specific recommendations to make or would like to have members specify from their own life, throw it open for discussion with such questions as "Will some of you tell us about your own and your family's favourite foods?"

Tell the women in all three groups that they should use Form 7 (Appendix E) to record the frequency with which they used these five recommendations for the following week.

### Class VII - Outline

1. Weigh in and graphing of weight, collect data (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Discussion of problems in keeping the data (5 minutes);
4. Open discussion of the previous behavioral control lesson (10 minutes);
5. Behavioral control lesson for Class VII:  
Development of ultimate aversive consequences, and food service (30 minutes);
6. Summary and encouragement (5 minutes).

### Specific Procedures for CLASS VII

- 1, 2, 3, 4, and 6 are the same as in the previous session.
5. Behavioral control lesson for Class VII.
  - A. Development of ultimate aversive consequences. By the next session each subject is to develop and write out a list of the ultimate aversive consequences of overeating and being fat. The trouble with overeating is that its undesirable consequences are far removed in time from the actual act of overeating. When a person is in a stimulus situation which tempts her to eat, she usually is not seriously contemplating the undesirable consequences that will later befall her because of indiscriminate eating. If an individual can seriously contemplate and mentally rehearse these UAC's at the time a stimulus to eat inappropriately presents itself, these UAC's will serve to punish thoughts about overeating and the actual behavior of overeating in such situations will be less likely to occur.

One of the troubles with overeating is that its undesirable consequences are far removed in time from the actual act of overeating. When you are in a stimulus situation which tempts you to eat, usually you are not seriously contemplating the undesirable consequences that will later befall you because of indiscriminate eating. However, if you can seriously contemplate and mentally



rehearse these long-term bad effects or ultimate aversive consequences (UAC's) at the time a stimulus to eat presents itself, these UAC's will serve to punish thoughts about overeating and the actual behavior of overeating in these situations will be less likely to occur.

You will recall in a previous lesson that it was suggested that you alter the stimulus situation by seeing to it that snacks are not available. That is still the best procedure, but you cannot always avoid stimuli associated with eating. At those times the use of UAC's can be very important.

What are some of the UAC's of being overweight? On a general level, obesity is related to a number of undesirable physical, psychological, and social consequences. Certain physical disorders which are noted so frequently among overweight patients that a causal effect is suspected include respiratory difficulties, cardiovascular dysfunctions, diabetes, kidney disease, toxemia of pregnancy, menstrual abnormalities, and arthritis of the spine and lower extremities.

Excessive weight can also contribute to difficulties in the psychological and social realm. The psychological literature abounds with references to the detrimental emotional effects of being overweight, such as feelings of inferiority, inadequacy, and shame. It has been stated that obesity not only impairs a person's physical well-being and her appearance, but also tends to throw a dark shadow on her relationship to other people. This is the case because, in our culture, overweight people are often viewed as sloppy, irresponsible and ungainly. Worse, the fat person may subscribe to this evaluation of herself.

An assignment for this lesson is to write out a list of at least 10 UAC's of overeating and being fat. The statements above are potent, but they are too generalized and abstract to be of maximum benefit to you. You are not to write generalized statements such as: "Overweight people die younger." "Overweight women are not attractive to their husbands." Rather, your list of UAC's is to be made up of those UAC's which are specific and

meaningful to you. The examples listed below illustrate the type of specificity which is necessary if your list is to be helpful:

"I may die at a younger age if I am obese."

"Some people do not seem to want to by my friends."

"My husband is embarrassed to be with me because I am fat."

Statements of actual or imagined social rejection, sarcastic treatment, critical references to bodily contours or proportions, or demeaning references concerning professional incompetence or carelessness can all be effective. These statements about one's self certainly are not easy to write. It will be a humbling experience, but it is extremely important that your UAC's hit you right between the eyes. This list is just for you. No one else needs to see it, so be very frank and honest.

You should read the UAC's over at the first indication that you are tempted to eat inappropriately. Suppose you are downtown shopping and you walk by a snack bar which advertises strawberry pie with whip cream. And, let us say, you stand there for a few seconds trying to decide whether or not to indulge yourself. That is the time for you to pull out the UAC's and read them over. Do not trust your memory. The list of UAC's should be carried with you at all times; and, whenever you are tempted to eat inappropriately, you should read this list through. You will also find it helpful when you are grocery shopping. One last word on the use of the UAC's. Be sure to use this list only when you are tempted to eat inappropriately. You are not to rehearse this list before appropriate eating.

So in the intervening week we want you to write out a list of 10 aversive consequences. No one else will see them, so make them as strong as possible.

- B. Food service. Our food service recommendations are:

Food Service Do's

- i Do serve food in covered, non-see-through serving dishes.
- ii Do put on the table only what is needed for that meal.
- iii Do serve yourself last.
- iv Do keep food away from you at the table.
- v Do serve yourself completely once; no seconds.

Again, recap the rationale for helping them change eating habits and the eating situation and introduce the topic of serving food within that rationale. List the 5 food service guidelines (add enough elaborative details to make each a specific behavioral suggestion) and lead a discussion of the logic, personal meaning, reaction to, etc. of each food service guideline. Again, the guidelines can be made specific behaviors by encouraging each member to provide specific examples and applications of each in her own life.

The assignment this week is for the women in the wives alone and nonparticipating spouse groups to follow these five recommendations and to monitor these behaviors on Form 8 (Appendix E). They should also record two of the behaviors of their husbands which can help them: (1) keeping food from piling up before them at the table, and (2) not offering food to their wives (Form 8A, Appendix E).

Insert for the co-operative spouse group:

Husbands should be told that they can play a large role in this area. Spouses should be instructed that they can help their wives by (1) keeping food from piling up in front of their wives, and (2) not offering any food to them. Wives should monitor these behaviors and that of their husbands on Forms 8 and 8A (Appendix E).

### Class VIII - Outline

1. Weigh in and graphing of weight, collect data (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Discussion of problems in keeping the data (5 minutes);
4. Open discussion of the previous behavioral control lesson (10 minutes);
5. Behavioral control lesson for Class VIII:  
Development of incompatible behaviors and eating behavior (30 minutes);
6. Summary and encouragement (5 minutes).

### Specific Procedures for Class VIII

- 1, 2, 3, 4, and 6 are the same as in the previous session.
5. Behavioral control lesson for Class VIII.

- A. Development of incompatible behaviors. The disposition to eat can be lessened by establishing other activities which are incompatible with eating. The behavioral repertoire in various situations should be developed such that activities incompatible with eating become strong and the eating behavior weakened. Whenever possible these incompatible activities should be ones that the subjects find reinforcing. The therapist should begin this discussion by saying:

The disposition to eat can be lessened by engaging in activities which are incompatible with eating. This technique has already been touched upon; in this session the idea will be further developed.

By way of review, there are certain situations or stimuli which in the past have been associated with eating; and, sometimes it is impossible to keep yourself from coming into contact with these stimuli. There are some situations which you just cannot avoid. Earlier, it was suggested that for situations of this nature you must systematically change your behaviors, substituting behaviors which do not, or

cannot, involve eating. To be maximally effective, these new behaviors should be highly reinforcing ... something you really enjoy.

Here are some examples. In the area of recreation, you can involve yourself in a card game or engage in some sport or competitive games such as ping-pong. Work-related activities, such as reading, or ironing, or doing the laundry can also be substituted. You can also choose social activities in which you will be less likely to eat, for example, attending plays, movies or concerts.

The practice of substituting behaviors incompatible to eating can be made even more effective if you substitute an activity which is highly reinforcing, or highly pleasurable in its own right. You may even want to save highly reinforcing activities to be performed when there is an especially strong tendency to eat. You may find taking up a hobby is especially helpful here. The main thing is to do something that blocks eating. Choose a highly desirably incompatible behavior so that you will not mind doing it - you will find you will not miss eating much at all.

There is one more important way you can block eating by engaging in incompatible behavior. This one is especially helpful when you are away from home. If you have trouble buying and eating "goodies" when you are shopping or are downtown, you can avoid this by not taking money, especially small change. Without money to buy tempting food during excursions your outside eating will be reduced. This principle can also apply to all restaurant and cafeteria eating. If you plan to eat out and you want to control how much you eat before facing the inviting menu or cafeteria line, take only enough money to allow minimal food buying. You do not eat what you cannot buy. Think about it and try it.

- B. Eating behavior. The how-to-eat food management lesson should be presented within the treatment rationale focussing on the following do's.

#### How to Eat Do's

- i Do leave the table as soon as you are finished or remove your plate and utensils from where you are sitting.

- ii Do get into the habit of leaving a small amount of food on your plate - just for effect.

As before, try to involve the group members in a discussion of the logic, potential benefits, problems, etc. associated with these two recommendations.

Wives in the wives alone and nonparticipating spouse groups will be instructed to leave the table as soon as they are finished and to leave a small amount of food on the plate each time they eat during the following week, and also to record whether their husbands do the same (Forms 9 and 9A, Appendix E).

Insert for the co-operative spouse group:

Husbands can be told that they can model these two behaviors for their wives. Specifically, they should be told to leave the table as soon as they are finished and to leave a small amount of food on the plate. Wives should monitor their own compliance and that of their husbands with these two recommendations (Forms 9 and 9A, Appendix E).

### Class IX - Outline

1. Weigh in and graphing of weight, collect data (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Discussion of problems in keeping the data (5 minutes);
4. Open discussion of the previous behavioral control lesson (10 minutes);
5. Behavioral control lesson for Class IX: Chaining and food clean-up (30 minutes);
6. Summary and encouragement (5 minutes).

### Specific Procedures for Class IX

- 1, 2, 3, 4, and 6 are the same as in the previous session.
5. Behavioral control lesson for Class IX.
  - A. Chaining. Chaining may be defined as a series of responses in which one response produces the stimuli for the next response. The frequency of the behavior that occurs at the end of the chain (in this case eating) can be changed by changing the responses making up the chain. The chain can be broken or lengthened or the consequences of certain responses in the chain can be manipulated such that the end behavior of eating will occur less frequently. The therapist should say something like this:

In this class we do not intend to introduce many new techniques, but we do feel that this discussion of chaining will help you gain a better understanding of the purpose behind many of the things you are now doing.

All of us have problems writing the correct year during the month of January, and we often type "ting" instead of "tin" because we are so used to performing the sequence of behaviors which lead to "ing". These common mistakes illustrate the power of chaining. Each behavior is a stimulus as well as a behavior. And the stimulus value of the behavior exerts stimulus control over other

behaviors which follow. Thus the process of writing "197" becomes the stimulus for writing "6" even though the year is "7". Chaining, then, may be defined as a series of responses in which one response produces the stimuli for the next response.

This concept, of course, relates to chains of behavior which terminate in eating, and the principles involved in building and breaking chains of behavior.

In the first class we discussed taking small bites, laying down your fork between bites and not putting more food on the fork until the food in your mouth has been chewed slowly and swallowed. While doing this you should completely relish and enjoy your food. All of these actions involve lengthening the chain of behaviors which will terminate in food consumption. And the longer the chain, the less food you will eat. You can further slow down your rate of eating (and thus decrease the amount of food you eat) by interrupting your eating with periods of conversation or by holding the food on the fork for increasingly longer periods before placing it in your mouth. Remember that in order for you to successfully establish a long-lasting habit, you should use the principle of shaping. If you do not regularly talk much while you eat, a few breaks for conversation while eating may be introduced at first, and then these can be increased in frequency. Similarly, you can practice holding food on your fork for longer and longer periods of time. You will recall the principle regarding capitalizing on periods of relative hunger and satiety. With this in mind, you might practice interruption procedures at first near the end of the meal when you are not as hungry. Then, gradually move these interruption procedures toward the front of the meal (shaping).

Wives in the wives alone and nonparticipating spouse groups should now be asked to monitor the frequency during the following week for two behaviors recommended above: (1) holding food on the fork for increasingly longer periods of time, and (2) interrupting the meal with periods of conversation. They are also to be asked to record the frequency with which their husbands



engage in these two behaviors (Forms 10 and 10A, Appendix E).

Insert for the co-operative spouse group:

Husbands can help their wives with these two recommendations. They can initiate conversations with their wives during mealtime to slow down the rate of eating. They are to be instructed to do this at least once every time they eat a meal with their wives during the following week. Husbands are also asked to hold the food on the fork for increasingly longer periods of time during the following week when eating with their wives to model this behavior. Wives should monitor their own behavior and that of their husbands with regard to these two recommendations using Forms 10 and 10A (Appendix E).

- B. Food clean-up. This is a brief lesson that may be appropriately applied to some but not all your group members. You might start with a question like "How many of you hate to throw away food so much you would rather eat it yourself?" Some of your group members may not even consider the process of cleaning up part of eating. Many might, however, admit to finishing that last big piece of meat or dessert off of someone's abandoned plate or finishing the last bit of potatoes in the serving bowl. As with all other food management lessons, present the problems of the kitchen clean-up with the stimulus control rationale centering on a discussion of the following do's:

- i Do have someone else scrape the dishes and store leftovers (if possible).
- ii Do scrape plates and serving dishes directly into the garbage can at the table as one rapid process.

The wives in the wives alone and nonparticipating spouse groups should be instructed to monitor the frequency with which they scrape the dishes into the garbage can during the following week and the frequency with which their husbands scrape the dishes and store the leftovers (Forms 10 and 10A, Appendix E).

Insert for the co-operative spouse group:

Husbands can play a role in helping their wives

to scrape the dishes and store the leftovers. Bring this possibility up for discussion, but do not be too surprised if husbands balk at doing "women's work". Wives should monitor the frequency with which they scrape the dishes directly into the garbage and the frequency with which their husbands scrape the dishes and store leftovers during the following week (Forms 10 and 10A, Appendix E).

### Class X - Outline

1. Weigh in and graphing of weight, collect data (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Discussion of problems in keeping the data (5 minutes);
4. Open discussion of the previous behavioral control lesson (10 minutes);
5. Maintenance lesson (30 minutes);
6. Summary and encouragement (5 minutes).

### Specific Procedures for Class X

1, 2, 3, 4, and 6 are the same as in the previous session.

#### 5. Maintenance lesson for Class X.

Below are a number of suggestions for losing and maintaining weight loss after the classes have terminated. Each can provide points for discussion. Remember to be as behaviorally specific as possible, providing concrete suggestions where possible.

#### Maintenance Suggestions:

- I Remember your original weight loss goal. Are you still committed to achieve that weight level? Think about your original reasons for setting that goal. Have things changed any in terms of what you want for yourself? If not, recommit yourself to your goal and maintain determination to reach it. Whatever you do, do not let the success you have enjoyed so far lull you into complacency.
- II Set weekly weight loss goals and weigh in at least once a week to determine progress. Continue to chart your progress toward your final goal. Choose the caloric level that works best for you. Choose the caloric level that satisfied you the most and yet leads to a weight loss. Remember that if you still have a fair amount of weight to lose, it will take you a while to reach your goal and you need a meal pattern you can stay with for a period of time. You may need to settle for a slower loss. The

important thing is to reach your goal. How fast you reach it is not the important thing. Remember, you should be losing at a rate of 1 to 2 pounds per week, no more!

- III Remember to continue your prolonged activities. As we have stressed through the program, exercise can play a very critical role in determining how much fat you lose.
- IV Continue to use the techniques that have helped while you were in the classes. Remember our focus on establishing new eating and activity patterns. The techniques and procedures you learned here should become permanent patterns in your life. We want you to continue losing weight, and most importantly, to keep it off for good. This means that you continue with these new behaviours. Hand out copies of "Continuance Suggestions" to each participant.
- V We will be contacting you at the end of 3 months to ask you to come in again so that we can assess how you have been doing. We will also contact you at the end of 6 and 12 months to assess your progress. Please let us know if you will be moving at any time during this period so that we will be able to contact you.

Insert for the co-operative spouse group:

- VI As we told you at the beginning of the program, the involvement of the husbands is critical to this treatment. Hopefully you men have learned ways in which you can help your wives lose weight. Just because the program is now officially over does not mean that you should discontinue with these procedures. We hope that you will continue to help your wives to lose weight and to maintain their weight losses. Hand out "Continuance Suggestions for Husbands" to each husband.

## CONTINUANCE SUGGESTIONS

1. Motivation

Losing weight can be very difficult and tiresome business, especially if you have a lot of weight to lose. One reason for this difficulty is the rate of weight loss. For health reasons, people should lose weight slowly - one to two pounds per week. Thus some people take months or even years to reach their weight loss goal. Most people would like to lose weight very quickly, and some people become very discouraged and disheartened when this does not happen. You want quick results, and when they do not occur, you feel discouraged and cease your efforts to lose weight. This is a particularly prevalent problem for people who have participated in a weight reduction program, and then have to continue without the support of the therapist and other group members once the program is ended. There are some strategies that you can apply to maintain your motivation to lose weight once you have finished this program.

- A. Set short-term goals for yourself. These can be weight loss goals (e.g., "I want to lose 1.5 pounds by this time next week") or behavioral goals (e.g., "I will increase the time I spend walking by five minutes per day for each day next week"). These goals should be as concrete and as realistic as possible, ones which you have a good chance of achieving. Give yourself rewards after you attain a short-term goal. Although you may want to lose 75 pounds more, break it down into steps, say 5 pounds per month. Remember, if you still have a fair amount of weight to lose, it will take time. Be prepared for this eventuality. The important thing is that you reach your goal. How fast you reach it is not the important thing.
- B. Remember your reasons for losing weight. If you have a tendency to forget them, write them down and carry them with you at all times. Read over the list of 10 aversive consequences of being overweight if you feel discouraged and feel like quitting. Another important point to keep in mind is that some weeks will be better than others. You may lose one to two pounds for six weeks straight, and then reach a plateau in which you maintain or even gain. These periods are critical for your further success. Even though you may feel very discouraged and feel like quitting, try to continue with the regimen.

## 2. Weekly Weigh-Ins

Weigh yourself once a week. If you weigh yourself daily, you will probably notice weight fluctuations, which for some people can be as big as 3 to 4 pounds from one day to the next. This can be very discouraging. The best strategy is to weigh yourself once a week, at the same time and on the same day. Keep the scale in the same place as different flooring can cause different readings. Many people would rather not weigh themselves, this is suicide!! If you do not weigh yourself on a regular basis, you do not know 1) how you are progressing, and 2) what you should do. Keep a written record of your weights. A graph might also be useful.

## 3. Continuance of Behaviors

In order to continue losing weight, use the techniques that have helped while you were in the classes. We have attached a list of all the things we have asked you to do - keep on using them. If you find it beneficial to write down caloric intake, do it!! If you gain several pounds during the week, go back to recording everything you eat and the number of calories involved. Be as precise as possible - weigh and measure everything. To calculate the approximate caloric level, multiply your weight by 7. Be wary of symptoms like nausea, dizziness, fatigue.

Remember to continue your prolonged activities. Exercise can play a very critical role in determining how much fat you lose. Again, build up slowly, and do not start with unrealistic goals, like running 4 miles. Start off slowly and gradually increase the time you spend doing physical activity.

In order to permanently lose weight you have to make permanent changes in your behavior. Fad diets, starving yourself, etc. are not going to lead to permanent weight loss. It is no good to revert to old patterns and believe that the fat will magically disappear. You must change your behavior (either through reduced caloric intake, increased expenditure, or a combination of the two) in permanent ways in order to lose weight and to keep it off. Permanent weight loss is what this program is all about - use these techniques!

## 4. Weight Loss Maintenance

Even though you have now reached your weight loss goal, beware of complacency. Many people regain fat because they do not keep a close scrutiny on their weights. Again, weigh

yourself once a week, and keep a written record of the weights. Set weight limits for yourself. For example, if you now weigh 130 pounds, set a 5 pound limit. If you go above this limit, say 137 pounds, reinstitute the program (behaviors) to lose these two pounds. Go back to recording calories, etc. The important thing is not to let things slide. Many people will say to themselves "I can always take these few pounds off next week" - for many this never happens. It is much more difficult to lose 30 pounds than 2 pounds. So once you notice you have exceeded your weight limit, take action immediately.

5. Summary

Hopefully, this ten week course has taught you everything you need to know in order to lose weight. Now your job is to continue applying these techniques and strategies. Unfortunately, there is no magic or quick-and-easy way to lose weight. In order to achieve permanent weight control, you have to make permanent changes in your behavior and lifestyle.

I will be contacting you in three months to assess your further progress. Please let me know if you will be moving during this period so that I will be able to contact you. You can reach us at:

John Pearce  
51 - 1781 Pembina Highway  
Winnipeg, Manitoba R3T 2G6  
Phone: 269-5535

OR

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Psychological Services Centre  
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## LIST OF BEHAVIORS

WEEK 1

1. Take small mouthfuls of food.
2. Chew food thoroughly before swallowing.
3. Lay down silverware after each bit and only pick it up after chewing and swallowing.

WEEK 2

4. Eat each meal on a regular basis.
5. Shape problematic behaviors.

WEEK 3

6. Make eating a "pure activity".
7. Buy groceries from a list.
8. Prepare the weekly shopping list after a meal.
9. Do the grocery shopping after a meal.
10. Buy groceries on a regular basis.
11. Buy for specific meals and try to buy just enough to minimize leftovers.
12. Buy food that requires at least some preparation.

WEEK 4

13. Put all foods away from clear sight.
14. Store problem foods in inaccessible as well as out-of-sight places.
15. Store all refrigerator foods in non-see-through containers.

WEEK 6

16. Set up short-term goals for yourself.
17. Prepare the exact amount of food that is needed to avoid excess or leftovers.
18. Prepare low calorie foods.



19. Prepare family favourites (not your own favourites).
20. Cook with lids.
21. Sample cooking dishes only as you need to.

WEEK 7

22. Serve food in covered, non-see-through containers.
23. Put on the table only what is needed for that meal.
24. Serve yourself last.
25. Keep food away from yourself at the table.
26. Serve yourself completely once: no seconds.

WEEK 8

27. Leave the table as soon as you are finished.
28. Leave a small amount of food on the plate.

WEEK 9

29. Hold the food on the fork for increasingly longer periods of time.
30. Interrupt eating with conversation.
31. Scrape dishes directly into the garbage can.

## CONTINUANCE SUGGESTIONS FOR HUSBANDS

1. One of the principal ways in which you can help your wife lose weight is to give her support and encouragement for her efforts. Try to avoid nagging, teasing, and criticizing her; such strategies sometimes backfire and the individual who is subject to this sort of abuse engages in contrary behavior to spite the other person. Place the emphasis upon positive aspects of your wife's behavior. If you discover that she is deviating from her plans (e.g., eating that extra piece of cake), it is probably best to say nothing at all. On the other hand, provide her with support and encouragement if you discover that she is doing well.
2. In addition to giving your wife positive reinforcement for her weight loss efforts, you can also engage in the behaviors you practiced during the 10 week program. Your wife has a list, and you may refer back to this to refresh your memory. Engaging in these behaviors serves as a reminder to your wife as to what she should be doing. They also will make weight loss an easier process for your wife; if you continually offer food to your spouse when she is trying to cut back, she will have a much more difficult time. Another example pertains to physical activity; your wife will probably engage in physical activity more frequently, such as walking, if you participate with her.
3. Finally, one of the most important roles you can play is that of a good listener. There will be times when your wife may feel very discouraged about her progress, and will feel like quitting. You can play a very beneficial role in this situation by listening to your wife, being as sympathetic and empathetic as possible, and encouraging her to continue with the program. Try to show to her that you care about her and her progress.

APPENDIX G  
DESCRIPTION OF THE LETTER SENT  
TO THE HUSBANDS OF THE WIVES IN  
THE NONPARTICIPATING SPOUSE GROUP

4th February 1978.

Dear Sir:

Your wife is participating in a weight reduction program that I am operating at the University of Manitoba. This program is part of my Ph.D. dissertation in clinical psychology. In addition to being a research project, it is also very much a treatment program.

In the past few years, many people have been involved with helping overweight individuals lose weight. Clubs such as Weight Watchers, Streamliners, etc., all attest to this great upsurge in weight reduction efforts. Recent years have witnessed a phenomenal growth in a method called behavior modification. As it is applied to weight reduction, behavior modification aims to change, in permanent ways, the eating and exercise behaviors of overweight people. There seem to be many reasons why people are overweight; a central one is that individuals are taking in more calories than they are expending. This surplus of calories is converted into fat. Most behavior modification approaches try to reduce the surplus by reducing the number of calories that are ingested or by increasing the number of calories that are expended by participation in exercise or other activities, or by a combination of the two. The program in which your wife is participating is based on behavior modification approaches.

A very controversial issue these days is the role that family members may play in helping overweight individuals lose weight. We are interested in determining if there is a difference in the amount of weight lost by women whose husbands participate with them in the program and those who participate without their husbands.

Your wife was randomly assigned to a group in which women will go through the program without any aid from their husbands. We are very interested to see how much weight your wife can lose on her own, especially without any help from you. We want to determine if they can rely upon themselves to lose weight.

We would like to ask you to detach yourself as far as possible from your wife's efforts to lose weight. She is to receive no help or aid from you - it is her program! We would like to stress that this does not mean that we want you to impede or sabotage your wife's efforts. We are not asking you to make things tough for your wife - all we are asking is that you do not interfere in any way. Let us be more specific.

One way that husbands can help or hinder their wives is by praising their weight reduction efforts, or by criticizing, teasing,

or nagging them. We would like you not to comment in any way or in any manner to your wife about her weight, or about her participation in this program. Thus, you should not praise or reward your wife for losing weight or trying to lose weight. If she declines to eat a piece of chocolate cake at dinner, you should not say "Boy, that shows real willpower" or "It's great that you were able to resist that cake." You should say nothing about it. Similarly, if she does eat the cake, you should not remind her that she is not supposed to eat it, or to tease or criticize her. Again, your job is to say nothing about it. It is her responsibility whether she eats it or not. We would like you to remain completely out of the picture. Please do not comment one way or the other on her weight, or on her efforts to lose weight. We will also be asking your wife to increase her activities. If you see that your wife has been out jogging or participating in any other activity, the same rule applies - say nothing about it. If you notice that she has not been following the activities program, say nothing about it. It is her job to do it - not yours!

I would like to reiterate that we are asking you to pay no attention to your wife's participation in this program - we are not asking you to make things tough for her.

There are some other things that you should remember. One thing is that your wives will be changing not only what they eat, but how they eat, when they eat, where they eat, and how quickly they eat. It is not your job to copy her in these behaviors. You should eat at your regular speed and in your regular way.

Remember, your job is to be as far as possibly removed from this program. You should not criticize, nag, or praise your wife for weight loss or for any of the things she will be doing in this program. You are to ignore, to the best of your ability, any changes you see in her eating or activity behaviors. It is her job to learn these things by herself.

Thank you for your full co-operation. I will be phoning you to answer any questions you might have.

Yours truly,

John Pearce, M.A.

APPENDIX H  
THERAPIST MANUAL FOR THE  
ALTERNATIVE TREATMENT CONDITION

THERAPIST MANUAL FOR THE  
ALTERNATIVE TREATMENT CONDITION

Portions of this manual are collected from the following sources:

1. Janet P. Wollersheim, Behavioral Treatment Manuals, In Catalog of Selected Documents in Psychology, 1975.

OVERVIEW AND STATEMENT OF RATIONALE

The major purpose of the alternative treatment group is to serve as a control for placebo effects which may result in the behavioral control conditions, not as a result of the specific therapeutic procedures in those treatment conditions but rather from the mere attendance at group meetings, weigh-ins, receiving attention, interest, and support from the therapist and group members, and presentations of a rational and systematic ritual.

The focus of treatment will be directed at the hypothetical underlying causes and reasons for the subject's behavior not only in the area of eating, but in other areas as well. An attempt is made to focus more on behaviors other than eating and to emphasize past behaviors rather than current behaviors. Discussions are not to focus on the target behaviors themselves (i.e., the overeating and activity behaviors). Subjects are not to be instructed in the application of learning principles designed to aid them in changing their eating and activity behaviors as will women in the behavioral control conditions. Instead, group members will be encouraged to provide support to one another for weight loss and to develop insight and self-awareness into the "real and not readily recognizable underlying reasons" for their behaviour. The therapist is to explain that when each individual obtains insight, she will be better able to accomplish her goals and lose weight. Self-understanding and insight are to be regarded as necessary for the subjects to obtain maximum success with weight reduction. When subjects state their problems with eating, the therapist is to direct discussion into the underlying reasons for these actions and to focus on behaviors other than eating and to search for the causes of these behaviors. When subjects speak of their behavior in any area, the therapist should attempt to direct attention to past rather than current behavior.

The therapist's main task in this treatment condition is to divert attention away from current behavior (both eating and activities) because dwelling upon current behavior may help subjects identify problem areas related to overeating and may suggest incompatible and more appropriate responses in various situations. Suggestions should never be given concerning ways of modifying current behavior.

In general, the therapist is to guide group discussion and get group members to take major responsibility for talking. This can be accomplished by the therapist assuming and manifesting a basic attitude

of inquiry and wonderment of what "real motives" lie behind a subject's eating behavior. He can express this inquiring attitude by commenting in the form of questions (e.g., "Betty, you say at a party you can't leave snacks alone. Do you think it's really food you want?"), and by referring remarks to the group for comment (e.g., "Mary says she's always been overweight. Now as a young child what feelings might have contributed to her overeating?"). The therapist can elicit group discussion by expressing curiosity, puzzlement, etc., and by calling upon group members to contribute their ideas as to what underlying forces may have played a role in the subject's personality makeup.

It is to be expected that since the main focus of this treatment condition is underlying causes and unconscious motives for behavior, group discussions will frequently become far removed from the topic. These diversions are to be allowed and indeed encouraged if it is apparent that the group is interested in the particular diversion because such diversions accomplish the aim of this treatment technique in diverting attention away from ways of modifying overt eating behavior. Also the therapist should feel free to comment upon any of the factual information relating to obesity, nutrition, and weight reduction as long as he refrains from giving specific suggestions concerning ways to change eating or activity patterns. The therapist's attitude should be that weight reduction will best proceed by each member limiting her caloric intake and increasing her activities in a way conducive to her living pattern and that this will be accomplished by each member taking seriously her commitment to herself, the group and the therapist concerning weight loss, and by having the group check on each member's progress. Each subject's obtaining insight and understanding of the underlying and deep-seated motives for her eating behavior will also facilitate weight loss.

#### General Outline Of Treatment Sessions For The Alternative Treatment Group

The general format for all class proceedings follows:

1. Weigh-in and graphing of weight (5 minutes);
2. Therapist's comments of progress, social pressure and reminder of commitment to lose weight (10 minutes);
3. Open discussion about personality makeup and its relation to weight reduction (40 minutes);
4. Summary and encouragement (5 minutes).



Detailed Description of the Alternative Treatment  
Condition by Class

CLASS I - Introduction and Pre-view

Class Summary

This initial class will center around the business of introducing everyone and pre-viewing the weight loss program.

Class I - Outline

1. Introduction to group members (5 minutes);
2. Statement of meeting arrangements (2 minutes);
3. Summary of the alternative treatment and treatment rationale (10 minutes);
4. Weigh in and graphing of weight (5 minutes);
5. Therapist's comments on progress and social pressure (5 minutes);
6. Open discussion about personality and its relation to weight reduction (30 minutes);
7. Summary and encouragement (5 minutes).

Specific Procedures for Class I

1, 2, 4, 5, and 7 are the same as the behavioral control condition, Class I, pp.

3. Summary of the alternative treatment and treatment rationale.  
The therapist should begin his presentation by saying:

An essential part of this program is attempting to discover the underlying reasons for your overeating. In our group discussions, you will be encouraged to develop insight and self-awareness into the reasons why you overeat. It is the opinion of many people that self-understanding and insight are essential for subjects to obtain maximum success with weight reduction. Hopefully, your weight reduction efforts will become easier as you discover the reasons why you overeat and enable you to permanently change your eating habits. Each of you will be encouraged to talk about some of the reasons why you overeat. At the beginning of each meeting, members will be weighed privately. Today I will weigh each of

you privately. Also, we are asking that the group respect each other's right to confidentiality - this means that outside of the group meetings, no one discusses someone else's weight problems.

The therapist shall then continue his presentation by giving the subjects the same information regarding obesity, the need for a negative energy balance, and caloric intake that he gave to the subjects in the three behavioral control conditions (see Class I, Section 3, pp. , Appendix E) for this discussion.

6. Open discussion about personality and its relation to weight reduction. Here the therapist is to elicit active discussion by the group and encourage them to seek out the underlying reasons and unconscious motives which may be responsible for their weight problem, focusing on unconscious aims and motives, always striving for historical development. The therapist and the group may touch upon any issue in obesity as long as the therapist does not give specific behavioral suggestions about weight reduction strategies.

Classes II through X - Outline

1. Weigh-in and graphing of weight (5 minutes);
2. Therapist's comments on progress and social pressure (5 minutes);
3. Open discussion about personality and its relation to weight reduction (40 minutes);
4. Summary and encouragement (5 minutes);

Specific Procedures for Classes II through X

1, 2, 3, and 4 are the same as in the previous session.

Before the session ends the therapist is to make an overall summary statement such as the following:

As our last meeting draws to a close, we would like to leave you with a parting message. Some of you are pleased with your progress and other of you feel somewhat discouraged. However, all of you have been started on a program of learning to develop self-understanding and to grow in self-awareness. This process does not really end with the termination of our formal meetings. It is something that should continue as a natural part of your lives. As your self-insight grows, you will find it easier to cope with difficulties and to plan effective courses of action. As you continue to develop self-insight you will more effectively be able to attain your goals. We have learned that there is no magic formula for losing weight and no matter what the causes contributing to your being overweight, the only reliable way to take pounds off and keep them off is to reduce caloric intake and to increase activities. We believe that in general students who have completed a program such as the one you have just completed should continue to reduce after the formal meetings have discontinued. This should be true of fast-moving members as well as of more slowly-progressing ones.

So by all means continue working toward self-understanding and continue counting calories to achieve a weekly two pound weight loss. Change your attitudes about yourself such that you accomplish this goal. Later, when you reach

your normal weight, you can increase your caloric intake to the point where you notice that if you keep your daily caloric intake within a certain range your weight remains constant. Do not get discouraged. If you gain weight, pick right up and start cutting calories again and start activities. You will find that as your eating habits and activity habits change you will not miss the extra food. As you know, you should be sure your daily diet is well balanced nutritionally and you should not consume less than 1,000 calories a day without being under the care of a physician.

So remember that in the last analysis you must change your own eating habits. You can do it regardless of your difficulties up to this time. We will contact you in 3 and 12 months to take your weight in order to evaluate the effectiveness of this program.

APPENDIX I  
RAW WEIGHTS FOR EACH SUBJECT

Subject	Height (Feet-Inches)	Assessment Interval				
		Pre-treatment	Post-treatment	3 Month Follow-up	6 Month Follow-up	12 Month Follow-up
Co-oper- ative Spouse						
1.	4 - 11	212.50	204.50	200.25	201.75	200.00
2.	5 - 2	178.75	172.75	174.75	170.50	169.00
3.	5 - 5	189.00	165.50	162.50	161.75	160.00
4.	5 - 5	195.00	174.50	172.25	171.00	170.00
5.	5 - 4	177.00	156.50	136.50	141.25	138.00
6.	5 - 4	201.00	188.75	190.00	195.00	190.00
7.	5 - 7	214.00	201.50	-	-	-
8.	5 - 5	172.50	167.25	167.00	171.50	165.00
9.	5 - 7	203.50	184.25	184.50	184.50	183.00
10.	5 - 6	172.00	153.25	143.00	143.00	140.00
11.	5 - 8	182.25	169.00	169.75	175.50	184.25
12.	5 - 4	158.00	147.25	138.75	136.00	135.00
13.	5 - 6	209.75	200.50	195.75	203.00	199.00
14.	5 - 7	239.00	214.00	-	-	-

Subject	Height (Feet-Inches)	Assessment Interval				
		Pre-treatment	Post-treatment	3 Month Follow-up	6 Month Follow-up	12 Month Follow-up
Wives Alone						
15.	5 - 4	173.25	155.25	148.00	149.50	151.00
16.	5 - 3	171.50	158.25	152.50	159.50	154.00
17.	5 - 6	208.00	197.00	198.00	200.00	206.00
18.	5 - 5	199.25	188.00	-	-	-
19.	5 - 9	225.75	220.00	215.50	228.00	250.00
20.	5 - 6	260.50	251.50	264.00	267.75	246.00
21.	5 - 6	187.75	185.75	192.00	186.25	201.00
22.	5 - 0	199.75	181.75	183.00	185.75	184.00
23.	5 - 1	166.50	158.75	166.00	165.50	162.50
24.	5 - 4	163.00	148.00	148.00	162.25	163.00
25.	5 - 1	213.50	209.25	195.00	192.50	204.00
26.	5 - 5	159.00	155.25	156.75	156.00	155.00
27.	5 - 7	170.50	165.75	160.00	155.50	165.25

Subject	Height (Feet-Inches)	Assessment Interval				
		Pre-treatment	Post-treatment	3 Month Follow-up	6 Month Follow-up	12 Month Follow-up
Nonparticipating Spouse						
28.	5 - 1	171.75	168.00	166.00	168.00	171.50
29.	5 - 0	181.25	167.50	161.00	163.25	171.50
30.	5 - 5	174.25	163.50	-	-	-
31.	5 - 4	178.50	163.00	159.25	166.00	164.75
32.	5 - 8	301.75	288.50	297.75	300.25	287.75
33.	5 - 6	205.75	171.00	161.00	184.25	171.00
34.	5 - 2	189.00	172.75	172.75	174.00	177.50
35.	5 - 5	211.75	209.75	204.00	202.00	207.00
36.	5 - 2	145.00	136.75	134.75	135.50	139.75
37.	5 - 2	161.00	157.25	163.75	166.50	163.25
38.	5 - 4	162.75	151.75	153.00	151.50	148.25
39.	5 - 5	199.75	196.75	196.25	196.25	198.00
40.	5 - 5	189.75	187.50	-	-	-
41.	5 - 0	182.25	163.50	147.00	147.50	142.00



Subject	Height (Feet-Inches)	Assessment Interval				
		Pre-treatment	Post-treatment	3 Month Follow-up	6 Month Follow-up	12 Month Follow-up
Alternative Treatment						
42.	5 - 1	201.75	191.75	197.75	200.00	204.00
43.	5 - 4	210.00	209.50	207.25	209.00	208.00
44.	5 - 8	248.50	246.75	-	-	-
45.	5 - 3	214.50	210.25	218.50	220.00	218.75
46.	5 - 6	205.00	188.50	181.00	183.00	188.00
47.	5 - 5	178.75	176.00	176.00	181.50	193.00
48.	5 - 5	194.50	196.00	195.00	185.00	187.00
49.	5 - 5	186.50	192.00	198.25	208.25	206.25
50.	5 - 2	153.00	145.00	145.00	147.00	147.00
51.	5 - 4	227.25	227.75	234.75	229.75	233.75
52.	5 - 2	142.25	135.00	140.00	139.25	129.00
53.	5 - 3	202.25	201.00	196.25	199.50	217.00
54.	5 - 3	190.00	180.25	152.75	149.50	182.50

Subject	Height (Feet-Inches)	Assessment Interval			
		Pre-treatment	Post-treatment	After Treatment	8 Month Follow-up
Delayed Treatment Control					
55.	5 - 5	216.25	224.75	215.00	231.00
56.	5 - 2	179.00	172.25	174.25	170.25
57. *	5 - 5	194.75	194.25	179.50	175.00
58.	5 - 4	193.50	197.50	190.00	189.00
59. *	5 - 6	153.00	152.50	142.25	140.75
60.	5 - 2	177.50	172.50	-	-
61.	5 - 0	208.25	215.50	-	-
62.	5 - 5	165.00	163.00	161.00	161.25
63.	5 - 2	163.00	170.75	162.00	161.50
64. *	5 - 6	220.25	216.75	210.75	210.25
65.	5 - 4	171.50	176.50	-	-
66. *	5 - 6	182.25	175.25	169.75	169.25
67.	5 - 2	156.00	156.00	-	-
68	5 - 3	316.00	315.75	-	-

\* Spouse attended treatment with subject.