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Comparison of a Behavioral and a Non-Restrictive Weight Loss Treatment Program

By

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ABSTRACT

COMPARISON OF A BEHAVIORAL AND AN INNOVATIVE WEIGHT LOSS TREATMENT PROGRAM

by

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Forty-nine overweight subjects were randomly assigned to either a "non-restrictive" or an established behavioral weight loss treatment. A repeated-measures design was used to test the hypothesis that the non-restrictive treatment would be more effective than a rival, highly regarded behavioral treatment, as assessed by weight loss and other outcome variables. There were no differences between the groups on any of the variables except for restrained eating, in which there was a significant time-by-group interaction ($F=4.16$, $p=.02$), with the behavior modification group reporting greater and more significantly increased restraint than the non-restrictive group. From Time 1 to Time 2, there was also a significant time-by-group effect for weight loss ($F=4.5$, $p=.04$), with the behavior modification group showing greater weight loss than the non-restrictive group. Although the study's hypothesis was not supported for most outcome variables, the results suggest that a non-restrictive treatment may be as effective as a behavioral program.

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INTRODUCTION

The problem of obesity is a "problem" not only in its serious effects on health and psychological well-being, but also in its notorious resistance to permanent change after treatment. Most treatments for obesity have shown only modest weight losses at best, with large, unexplained variability in results. Long-term maintenance of weight loss has been poor for most treatment methods, with relapse rates ranging between 50 and 90 percent (Brownell, Marlatt, Lichtenstein, & Wilson, 1986; Stunkard, 1978). Perhaps this ineffectiveness of treatment methods could be due to an overreliance on one treatment philosophy, namely, the behavioral approach.

Intuition tells us that most (non-obese) individuals eat when they are hungry and stop when they are sated. A natural biological mechanism for the regulation of body weight and the control of food intake has been documented by animal studies (Hoebel & Teitelbaum, 1966) and by studies of humans (Keys, Brozek, Henschel, Mickelson, & Taylor, 1950; Stunkard, 1983). Schacter (1971) has argued that obesity is caused by insensitivity to internal cues of hunger and satiety and an overreliance on external or environmental cues in the regulation of eating. Rodin (1980; 1981) agrees that external and cognitive factors, such as the sight and smell of food,

the eating behavior of others, perceived caloric value of a preload, and the degree of self awareness while eating strongly influence eating behavior in humans. In addition, many people will binge or overeat in response to mood states such as anxiety, depression, or hostility (Brownell et al., 1986; Bruch, 1961; Lingswiler, Crowther, & Stephens, 1987).

Behavioral treatment of obesity concentrates on the teaching of self-management skills to control such environmental and emotional cues and minimize their influence on eating behavior (Jeffery, 1987). However, research has shown that although such behavioral methods may be effective in facilitating weight loss, longer follow-up data indicate a pattern of consistent weight gain, or relapse, during the years after treatment (Brownell & Jeffery, 1987). External control of one's eating behavior appears difficult (if not impossible) to maintain over long periods of time without relapse or the eventual relinquishing of control.

An alternative, and equally logical, approach to treatment would be to focus on increasing an individual's responsiveness to <u>internal</u> cues of hunger and satiety, instead of trying to control and minimize external influences on eating. Such an approach has been outlined in several self-help books (Breithaupt & Agnew, 1983; Groger, 1983; Hirschmann & Munter, 1988; Orbach, 1978; Roth, 1984; Wardell, 1985) and presented in the form of seminars led by paraprofessionals. These non-restrictive programs teach overweight or dieting individuals how to identify interoceptive signals relating to

hunger and fullness. Participants are told that if they respond to these internal signals, by eating when hungry and stopping when comfortable, they will lose weight until their body reaches its "natural" weight. These non-restrictive programs assume that once hunger and fullness signals become easily identifiable, the participants will choose and be able to respond to them instead of to external or emotional cues to eating and thereby lose weight and maintain this weight loss by continuing to eat according to the body's needs.

Current Research

This study was based on the premise that overweight individuals do not regulate their weight naturally but may be taught to do so in a non-restrictive treatment program. This study employed the "treatment package strategy" (Kazdin, 1980). The effects of an established behavioral weight loss program that emphasizes behavior modification, nutrition education, and attitude change were compared to those of a non-restrictive program called Eating Awareness Training (E A T), which teaches individuals to eat in response to their body's hunger and food cravings. Proponents of E A T claim its success rate to be 80-85% (Groger, 1983; Groger, personal communication, December 31, 1988). This is the first scientific study to attempt to verify these claims.

The independent nonmetric variable in this study was type of treatment, and the dependent variables were weight loss, satisfaction with treatment, and scores at post-treatment and 4-month follow-up on three other variables which have been

associated with obesity: eating behavior, self-esteem, and body image. For the purpose of this study, eating behavior refers to restrained eating, disinhibition or overeating, and eating in response to external cues, emotional cues, and internal cues. Given the premise that obesity is caused by eating which is not driven by internal or physiological cues (Schachter, 1971), one would expect changes in eating behavior to accompany permanent weight loss. In this view, changes in eating behavior may be a better indicator of success than weight loss at a given point in time. With normalized (physiologically-based) eating behavior, the body should eventually regulate its weight to the appropriate level.

Self-esteem was measured because low self-esteem is a common attribute of obese individuals (Mahoney & Mahoney, 1976), emotional eaters (van Strien, Frijters, Roosen, Knuiman-Hijl, & Defares, 1985), and those with other eating disorders (Garner & Bemis, 1982; Katzman & Wolchik, 1984). Therefore, one would expect a successful weight loss program to impact self-esteem positively.

Disturbances in body image have also been associated with obesity (Stunkard & Mendelson, 1967; Wilson, Hogan & Mintz, 1983) and with other eating disorders (Garner & Bemis, 1982; Katzman & Wolchik, 1984). Body image was measured to detect improvements over time and between treatments.

Satisfaction with treatment, measured at post-treatment only, was included because satisfaction is based upon a client's subjective improvement of the target problems, which

is claimed by Strupp to be an important and valid outcome measure (Strupp & Binder, 1984; Strupp & Hadley, 1977). Although others (Denman, 1987; Reyher, 1980) have not found a strong relationship between satisfaction with treatment and other treatment outcomes, satisfaction with treatment was included in this study, not to measure outcome itself, but rather, to assess differences between the two treatments.

In this study, the only purely objective outcome measure was that of weight loss. All other outcome variables were measured via self-report, in questionnaire form. Kagan (1988) has reviewed the poor relationship between self-reported scores and behavioral observations or observer ratings of the same variable. Kagan argues that the theoretical meaning of a term applied to self-report data is likely to change when the same term is applied to behavioral or physiological referents. In addition, Kagan argues that each person only has a limited awareness of his or her moods, motives, and bases for behavior, and it is not obvious that only conscious intentions and moods make up the main basis for variation in behavior.

Hogan and Nicholson (1988) discuss additional problems with self-report measures, the primary problem being inadequate construct validation of a measure or an item. They also address the problems of social desirability, lack of stable covariations between personality measures and measures of corresponding physiological processes, and lack of correspondence to actual behavior. Hogan and Nicholson

recommend more thorough construct validation, while Kagan (1988) suggests the use of behavioral and physiological evidence, in combination with self-report, to cross-validate the results.

Kazdin (1980) has discussed other limitations of self-report measures which particularly apply to treatment evaluation research. Before treatment or therapy, clients may exaggerate their complaints or symptoms because these exaggerations may ensure that they receive treatment or increase the speed with which treatment is provided. After treatment, clients may respond to the same self-report measures in a more socially desirable fashion, in the sense that they provide the therapist or researcher with evidence of improvement, presumably the reward of providing treatment. Clients may also wish to "succeed" at the treatment. The changes in self-report responses before and after treatment due to exaggeration (before) and underplaying of problems (after) has been referred to as the "hello-goodbye" effect (Meltzoff & Kornreich, 1970).

Another potential limitation of self-report measures is evaluating whether they will be sufficiently sensitive to reflect the influence of the independent variable (type of treatment, in this study). Kazdin (1980) reports that the self-report literature in treatment evaluation has frequently demonstrated cases where the measures might be inappropriate. Measures which assess long-standing disorders have been shown to be relatively insensitive to short-term treatment.

Unfortunately, it was deemed infeasible for this study to use behavioral observations or observer reports, instead of or in addition to self-report measures. Because eating behavior was viewed as equally, if not more important than actual weight loss, self-report measures were used with full knowledge of their limitations, because they were essentially the only method available. The implications of these methodological limitations to the interpretation of results will be addressed in the discussion section of this paper.

The purpose of this study was to determine if Eating Awareness Training was as effective as a rival, highly regarded behavioral program. Although the hypotheses were directional, two-tailed significance tests were used to be conservative, due to the lack of prior research on the E A T method.

Hypothesis One

The E A T treatment will produce significantly greater results than LEARN, as assessed by the outcome measures of satisfaction with treatment at post-treatment, and total weight loss, eating behavior, self-esteem, and body image, at post-treatment and at 4-month follow-up.

Hypothesis Two

Both treatments will show significant improvements over time on the outcome variables of total weight, percentage overweight, eating behavior, self-esteem, and body image.

METHOD

Subjects

Program participants were solicited from the university and surrounding community via an advertisement in the university newspaper and letters to people who had responded to an ad in the local newspaper several months earlier for a different university weight loss research project (see Appendix A). Those who responded to the ad or to the recruitment letter (see Appendix B) were invited to attend an introductory meeting, which included an overview of the study and information on all restrictions and requirements.

Only adults (aged 18 or over) were allowed to participate, and then, only with a statement of informed consent and physician's consent. Potential participants were told that each subject must be at least 20 percent above his/her acceptable weight (Dwyer, 1986), to increase generalizability of results to other obese populations, but this rule was not enforced due to difficulty recruiting subjects. High risk subjects for weight loss (e.g., pregnant women) were to be excluded from the program, along with those actively participating in another weight loss program or those with a known eating disorder.

Subjects were randomly assigned to one of the two

treatments, with 25 subjects in each group initially. When necessary, subjects' schedules were considered in making assignments to groups. Spouses, relatives, and friends were assigned to the same group to reduce treatment contamination and possible demoralization. Of these intitial 50 subjects, one person dropped out of the research before the first treatment session, and two subjects dropped out after the first session but before the second, leaving a total of 24 subjects in Group 1 (LEARN) and 23 in Group 2 (E A T). The 49 subjects who attended the first treatment session were characterized as follows:

1. The age ranged from 19 to 76 years, with a mean of 39.25 and a standard deviation of 13.47.
2. Seven (14.3%) of the subjects were male.
3. All of the subjects were white (98%) except for one Asian.
4. With regards to marital status, 28.6% had never been married, 49% were married, 18.4% were divorced or separated, one person was widowed, and one was engaged.
5. Amount of education ranged from high school diploma to a graduate degree, with a mean of 14.98 years of school and a standard deviation of 1.7 years.
6. Regarding employment, 71.4% were employed full-time, 22.4% were employed part-time, and 6.1% were unemployed.
7. Based on self-reported age of onset, half (49%) first became concerned about their weight before or at age 15, whereas the other half (51%) indicated that they became

concerned about their weight at age 16 or older.

8. Forty-three percent indicated that their initial weight gain was associated with a specific event.
9. The three major reasons reported for wanting to lose weight were self-esteem (36.7%), appearance (34.7%), health (26.5%).
10. The number of previous attempts to lose weight ranged from "a few" (1-5 attempts) to "too many to count" (over 20), with the majority of subjects (42.9%) reporting 1-5 past weight loss attempts.
11. At the first weigh-in, weights ranged from 145.0 to 295.5 pounds, with a mean of 197.67 pounds and a standard deviation of 36.51 pounds; participants ranged from 4.5% to 53.3% overweight, with a mean of 25.0% overweight.

These subjects seemed to be representative of the general population of obese clients in that they varied in age, age of problem onset, and breadth of past efforts of weight control. In fact, the sample seems fairly representative of prior weight loss studies. Wilson (1985) comments that reviews of behavioral weight loss programs have shown that women are four times more likely to participate than men, and that the average participant is 40 years old, weighs 200 pounds, and is approximately 50% overweight. In this study, the average subject was female, 39.25 years old, weighed 197.67 pounds, and was 25% overweight. Given the moderately conservative nature of the percentage overweight estimate, this sample is reasonably "average."

Subjects were treated in accordance with the ethical standards of the American Psychological Association and the University Committee on Research Involving Human Subjects.

Measures

Demographic and past history. An Initial Questionnaire, based on Mavis' (1987) Personal Nutrition and Diet Profile, was used to elicit information about participants' demographics, weight and dieting history, reasons for wanting to lose weight, and perceived social support (see Appendix I). The purpose of gathering this background data was to determine if certain variables were associated with weight loss or success/failure in a particular program. Mavis (1987) reports test-retest reliabilities of .92 to .97.

Weight loss. Three measures of weight loss were used: change in total body weight and change in percentage overweight, as assessed by a Repeated-Measures ANACOVA, and relative weight loss. Total weight loss was determined as the change over time in weight from the first session of the program and weight at the end of the program.

Percentage overweight was included as a standardization measure, based on weight and self-reported height. The 1983 revision of the Metropolitan height-weight tables were used to provide height-weight norms (Metropolitan Insurance, 1983). For each subject, a conservative "ideal" or acceptable weight was assessed as the upper bound of the middle range of acceptable weight for a given height and frame size (as suggested by Mavis, personal communication, May 17, 1990).

With this information, a percentage deviation from ideal weight was calculated. Change in percentage overweight was determined as the change over time between pre- and post-treatment percentage overweight.

Relative weight loss, a measure which has been used in other weight loss research, refers to weight lost divided by amount needed to lose (initial weight minus ideal weight). Total weight loss, percentage overweight, and relative weight loss were calculated again at a 4-month follow-up.

Attendance. Attendance was taken at every class session.

Program evaluation. At the last session of both programs, subjects were asked to complete a Program Evaluation, which measured satisfaction with the instructor and content (Mavis, 1987), and subjective results of the program, for example, changes in eating and weight, health, energy, etc. (Groger, 1982). According to Strupp and Binder (1984), a client's satisfaction with treatment is based upon his/her assessment of change and improvement in the target problems.

The Program Evaluation was also used to measure and control for leader effects. According to D. M. Garner (personal communication, February 3, 1989), subject ratings of treatment are less time-consuming than tape ratings and are of almost comparable validity as a check for nonspecific treatment effects. Although the validity of self-report measures remains questionable (Kagan, 1988), they were used in this case to save time, with full knowledge of their limitations. To assess whether both treatments were presented

with equal enthusiasm and believability, subjects were asked to rate the program leader on dimensions of credibility, enthusiasm, competence, and conviction about the program. In addition, as a manipulation check, subjects completed a checklist rating the degree to which the program leader focused on various program components, to measure the integrity of the leader in following the program manuals, and to assess whether subjects in the different treatment conditions actually received different treatments. The program components were principles or techniques for weight loss such as "weighing yourself regularly," "relaxation," "keeping a weight graph," "trusting your body," etc.

Other Measures

The following variables were measured at the first and last session of the programs, and at 4-month follow-up:

Eating behavior. An Eating Behavior questionnaire was used to measure restrained or dieting eating behavior, disinhibition of restrained eating or overeating, external eating, emotional eating, and responsiveness to internal physiological cues. This questionnaire was based on items from the Three-Factor Eating Questionnaire (TFEQ) (Stunkard & Messick, 1984, 1985) and the Dutch Eating Behavior Questionnaire (DEBQ) (van Strien, Frijters, Bergers, & Defares, 1986).

The TFEQ contains items which measure three factors of eating: restraint, "disinhibition" of restraint, and "hunger." All 20 items on the restraint factor and 16 out of

20 items on the disinhibition factor were used in the Eating Behavior questionnaire. Two restraint items were reworded to increase generalizability. (The four disinhibition items that were excluded deal with weight trend and are asked elsewhere, in the Initial Questionnaire.) The "hunger" factor was excluded because it is not a measure of physiological hunger but rather, measures the perception of "always being hungry." The restraint factor reflects the concept of using cognitive control to refrain from eating. Stunkard and Messick (1985) report an alpha reliability coefficient of .93. The "disinhibition" factor measures abandonment of restraint in restrained eaters and taps conditions which have been shown to cause disinhibition, such as emotional states and exposure to palatable foods (Herman & Mack, 1975). Stunkard and Messick (1985) realize that disinhibition might be a different concept for those who score low on the restraint factor (unrestrained eaters). The disinhibition contruct may be comparable to overeating in unrestrained eaters, as it measures nonphysiological conditions which trigger eating in obese people. The disinhibition factor has an alpha reliability coefficient of .91 (Stunkard & Messick, 1985).

Also included in the Eating Behavior questionnaire were items from the DEBQ. The DEBQ also consists of three factors of eating: restrained eating, emotional eating, and external eating. Items from the emotional and external eating factors specifically tap the desire to eat in response to a variety of emotional situations and external cues. All items

on these two factors were reproduced in my questionnaire; however, some items were reworded to tap actual eating behavior instead of the desire to eat (perceived "hunger"). van Strien et al. (1986) report Cronbach's alpha coefficients for a mixed population of obese and non-obese men and women of .94 for the 13-item emotional eating scale and .80 for the 10-item external eating scale. The DEBQ restrained eating scale is highly similar to the TFEQ restraint factor (van Strien et al., 1986) so it was not included in my questionnaire. Lastly, 12 original items were included to measure responsiveness to internal physiological cues.

Self-esteem. Self-Esteem was measured by the Rosenberg (1965) Self-Esteem Scale, administered at pre- and post-treatment and at 4-month follow-up. The complete 10-item scale was used. A Guttman scale reproducibility coefficient of .92 was obtained by Robinson and Shaver (1978). Silber and Tippett (1965) found a test-retest correlation over two weeks of .85 (N=28), and correlations of .56 to .83 with several similar measures and clinical assessment (N=44). The Rosenberg scale scored for Guttman scalability also correlated .59 with Coopersmith's Self-esteem Inventory (Robinson & Shaver, 1978).

Body image. The Body Cathexis Scale (Secord & Jourard, 1953) was used to measure body image. The scale consists of a list of 40 physical characteristics, and subjects rate their satisfaction with each, on a 5-point Likert scale. The corrected split-half reliability for the body esteem score was

.78 for males and .83 for females. No test-retest data are reported. Physical self esteem and general self esteem correlated .58 for males and .66 for females (Secord & Jourard, 1953).

Other items. Although not part of the hypotheses, additional questions were asked regarding subjects' attitudes about food and eating, and their current energy level, health, physical activity, and happiness. These items were based on the E A T Inititial Questionnaire (Groger, 1982).

Procedure

Both treatment programs were led by the principal investigator, at the time a second-year female psychology graduate student, aged 25. To ensure consistent and proper administration of both treatments, the leader worked from detailed treatment manuals and was trained extensively before the start of each program. In addition, the leader was rated by subjects in the Program Evaluation to assess whether both programs were presented with equal conviction and enthusiasm. Both programs were taught in a classroom on the university campus. A medical scale was present for weigh-ins when needed. Subjects were weighed a final time at a 4-month follow-up.

LEARN. Dr. Kelly Brownell, of the University of Pennsylvania School of Medicine, was contacted, and he readily permitted use of his weight loss program called LEARN (Lifestyle, Exercise, Attitudes, Relationships, and Nutrition) (Brownell, 1988). Dr. Brian Mavis, a psychologist at

Michigan State University with much experience in behavioral weight loss programs, agreed to provide training and consultation for LEARN. The LEARN program was given in 16 one-hour sessions, meeting once a week for four months, which is the optimal length of time for a weight loss program, according to Brownell. Its proponents claim that LEARN produces average weight losses of 20-25 pounds, which translates into a 1-2 pound loss per week for the 16 weeks of the program. Brownell's patients and others have been followed for up to five years after treatment, and on the average, people maintain most of the weight they lose in the LEARN program (Brownell, 1988).

The contents of each session, based on the five components of LEARN, contain a practical application of cognitive and behavioral weight loss strategies. These strategies include Lifestyle techniques, such as keeping an eating diary, weighing oneself regularly, keeping a weight graph, following an eating schedule, and keeping problem foods out of sight, etc. Exercise techniques include keeping an exercise diary, walking regularly, and using stairs whenever possible. LEARN also teaches Attitude, Relationship, and Nutrition techniques to facilitate weight loss and behavior change.

Each participant received his/her own LEARN Manual, which contained a self-assessment questionnaire and a homework assignment for each session, as well as food, weight, and exercise records for self-monitoring. All sessions included a weigh-in by the program leader, presentation of material

from the Manual, and group discussion. A syllabus of the complete program is provided in Appendix C.

E A T. The non-restrictive weight loss program, Eating Awareness Training (E A T) (Groger, 1982), was developed by Ms. Molly Groger in 1982. Groger, who operates a private consulting firm in Los Angeles called Eating Awareness Training, was contacted, and she gladly agreed to the use of her program for research purposes. Groger trained and certified the principal investigator to teach her program. E A T was designed as a 6-week program with 4 follow-up sessions. The 10 sessions were spaced out over four months in this study to be comparable in length to the LEARN program, although unequal in number of sessions. Each session lasted 1-1/2 to 2 hours.

The purpose of E A T is to teach subjects how to listen and respond to their body's physiological signals of when, how much, and what to eat. E A T teaches eating awareness techniques and hunger and body awareness. Eating awareness techniques include sitting down before eating, relaxing the mind and body, turning off all distractions, putting full attention on the food and feelings of one's body while eating, and not eating if one can't put full attention into the eating process. Subjects are taught to distinguish physiological hunger from the urge to eat, and are taught to rate the body's hunger, fullness, and comfort on a scale of 1 to 10. Food intake is recorded along with hunger and comfort levels and whether the food was satisfying or unsatisfying. E A T is

based upon the principles of trusting the body, staying conscious in the present moment, attending to the E A T process without judging or evaluating (it or oneself), and forgetting (or ignoring) everything one has ever learned about nutrition, food, eating, and weight loss. Dieting and exercise are not part of the program.

Each session included discussion of the previous session's material, presentation of new material, and group discussion. Subjects were weighed at the first and last session, for research purposes only. Participants received hand-outs at each session and were encouraged to buy the book, Eating Awareness Training. A syllabus of the complete program is provided in Appendix D.

Treatment contracts and deposits. In order to prompt serious participation, all subjects were required to sign a formal treatment contract before the program began (see Appendix E). This contract detailed the terms of participation and elicited the subjects' agreement to cooperate with routine program requirements and attend all sessions. In addition to the treatment contract, subjects signed an informed consent document in accordance with university policies regarding the use of human subjects. All subjects were also required to obtain their physician's consent in order to participate (see Appendix F).

It has been shown, in a meta-analysis of 97 weight control studies (Eufemia & Wesolowski, 1985), that the use of monetary deposits is significantly associated with lower attrition

rates in weight loss programs. Therefore, all participants were required to make a refundable deposit of $30, half of which was returned after the last session, and the other half returned after the 4-month follow-up, contingent upon completion of the program and all questionnaires. If a subject had incured an injury or illness that necessitated withdrawal from the program, the deposit was to be refunded in full immediately. The deposits of those subjects who did not complete the program or attend the follow-up session were donated to the university Psychological Clinic.

Data collection and recording. Attendance was recorded at each session, and subjects in the behavioral treatment were weighed at each session. A time-table indicating the sequencing of other measures used in this study is provided in Appendix G.

Last sessions. On the last session of each program, subjects were weighed and asked to complete post-treatment questionnaires and a program satisfaction evaluation. Fifteen subjects who missed the last session were mailed these post-questionnaires, but only one was returned via mail with a self-reported body weight.

Post-interviews. Within two weeks of the last program sessions, debriefing interviews were conducted individually with each subject from both treatments. The interviewer was a third-year graduate psychology student who was trained by the prinicipal investigator but blind to the treatment conditions and the study's hypotheses. The purpose of the

interview was to find out subjects' perceptions of why they either lost weight or didn't lose weight and to indirectly assess who followed the program and who didn't ("compliance"). The interviewer also assessed demand characteristics (what results the subjects thought the experimenter expected or hoped for.) The interview schedule is provided in Appendix H.

Four-month follow-up. Subjects were reminded, via mail, about the 4-month follow-up session, which was arranged at the last treatment session. Twenty-one subjects attended this session, and completed the Time 3 questionnaire and were weighed a final time. After the weigh-in and completion of the questionnaire, subjects were debriefed about the hypotheses of the study, the other treatment condition, and preliminary results. The leader met with five subjects individually to collect Time 3 data. Twenty-three subjects who did not attend the follow-up were mailed the questionnaire, and nine were returned with self-reported weights.

RESULTS

There were no significant differences between the two treatment groups on the outcome measures of total weight loss, satisfaction with treatment, or changes over time in overeating behavior, self-esteem, or body image. Both groups showed comparable and significant changes over time in total body weight, self-esteem, body image, and overeating behavior.

The only significant group effect for all three times was a time-by-group interaction for restrained eating behavior. The LEARN group reported greater and more significantly increased restraint over time than did the E A T group. From Time 1 to Time 2, there was also a significant time-by-group effect for weight loss, with the LEARN group showing greater weight loss than the E A T group.

Attendance

Thirty-five subjects (71%), of an initial 49 enrolled, completed the treatment: Sixteen out of 24 subjects from LEARN (67%) and 19 out 23 subjects from E A T (83%). There was a significant group effect for program attendance. Although AVOVAs of overall attendance and attendance at the last program session showed no significant group differences, Pearson Chi-Square analyses of attendance above and below the median split (55% attendance) showed a highly significant

group difference (X^2=5.98, df=1, p=.01). These data are presented in Table 1 (see Appendix J). Nineteen E A T subjects (76%) and only 10 LEARN subjects (42%) had attendance equal to or greater than 55%. Furthermore, the majority of subjects in the E A T group (76%) had attendance equal to or greater than 55%, whereas the majority of the LEARN subjects (58%) had attendance less than 55%.

Scale Reliabilities and Intercorrelations

Although most of the self-report measures were based on already-existing and tested scales, items included in the outcome analyses were selected to maximize scale reliability at all three times for the sample for which there were data for all times.

From intercorrelations of the five eating factors from various questionnaires, only two distinct (uncorrelated) scales emerged: restrained eating behavior (consisting of 17 items), with internal reliabilities of .79 to .89, and overeating, or non-physiologically-motivated eating, with reliabilities of .94 to .95 for 20 items. The factors of disinhibition, emotional, external, and (reversed) internal eating were all highly significantly correlated, with correlations ranging from .57 to .77 (p=.01). Similarly, when MANOVAs were performed on these separate scales, there was a redundancy of results. Therefore, the above-mentioned four factors were combined into the non-physiologically-cued eating scale. The entire Rosenberg (1965) Self-Esteem Scale produced reliabilities of .86 to .89. Eighteen items from the Body

Cathexis Scale (Secord & Jourard, 1953) produced reliabilities of .85 to .90. Nineteen evaluation items, derived from Mavis' (1987) Program Evaluation and additional original items had a reliability of .95. From intercorrelations of the Manipulation Check items, two distinct (non-correlated) scales emerged (one for each treatment), with reliabilities of .97 (for 12 items) and .91 (for 10 items). Descriptive statistics of these scales at all three times are presented in Table 2. Scale intercorrelations are presented in Table 3.

Comparability of Groups

The initial questionnaires administered at the first treatment sessions were used to determine the similarity between subjects in the two treatment conditions. These questionnaires gathered background and demographic information, data related to prior attempts at weight control, perceived social support, reasons for wanting to lose weight, as well as initial scores on eating behavior, self-esteem, and body image. At the first session, initial weight was determined (via a medical scale), from which percentage overweight was calculated. Group comparisons based on Multivariate Analysis of Variance (MANOVA) are presented in Table 4; similar comparisons based on Chi-Square analyses are shown in Table 5. Although full random assignment to groups was constrained due to participant considerations and pre-existing relationships between subjects, only one significant difference was discovered at Time 1 for 29 variables: There was a significant difference between the groups in the

reported weight of their best friend (p=.04). It is very likely that this minor difference is due to chance, although it will be considered when examining the results.

The initial assignment of subjects to treatment conditions appears to have resulted in equivalent groups based on pre-treatment characteristics and scores. The groups were within acceptable homogeneity of variance in terms of demographic backgound and initial scores at Time 1.

Testing the Hypotheses

A probability level of .05 was used as the criterion for significance for each of the hypotheses tested. Univariate and multivariate Analyses of Variance and Covariance were calculated using the SPSSX program. Initial weight was controlled by using it as a covariate when testing effects on body weight and percentage overweight. The hypotheses refer to effects of treatment outcome; therefore, these results are based on the data for those participants for whom data was obtained for all three times.

The homogeneity of variance across groups was tested for each of the outcome measures. The homogeneity test is based on Cochran (1941); it is the ratio of the largest variance to the sum of all variances across conditions. Thus, it is the test of the proportion of variance attributable to any single study condition. The results indicate that the necessary assumption of homogeneous variances was met for all of the treatment measures.

Group and time effects. There were no significant

differences between the two treatments at post-treatment or follow-up on the outcome measures of total weight, percentage overweight, overeating behavior, self-esteem, or body image. Similarly, there were no significant differences between the groups on satisfaction with treatment. As expected, both groups showed significant changes over time in total weight, percentage overweight, restrained and overeating behavior, self-esteem, and body image. Of the 49 subjects who were initially enrolled, 35 (71%) completed the treatment, and of those, 26 (74% of 35; 53% of the initial total; 13 from each group) lost weight. There were no significant differences between the groups in the number of subjects who lost weight at Time 2 and Time 3.

From analyses done on the sample for which data were available for all three times (31 to 32 subjects, depending on the variable), the only significant group effect was a time-by-group interaction for restrained eating behavior ($F=4.16$, $p=.02$). Although both groups reported significantly increased restraint from Time 1 to Time 2 ($F=16.72$, $p<.001$ for LEARN; $F=6.60$, $p=.02$ for E A T), the LEARN group then significantly decreased in restraint from Time 2 to Time 3 ($F=7.34$, $p=.02$). Overall, the LEARN group reported greater and more significantly increased restraint over time than did the E A T group, to produce a significant time-by-group effect. Cell means of weight and scale scores at Time 1, 2, and 3 are presented in Table 6. Repeated-Measures ANOVAs for restrained eating and the other self-reported outcome variables are

presented in Table 7. Repeated-Measures ANACOVAs for weight and percentage overweight are presented in Table 8. Means and F statistics of program satisfaction and relative weight loss are presented in Table 9.

There was also a significant time-by-group interaction for weight loss ($F=4.50$, $p=.04$, $n=35$), with the LEARN group showing greater weight loss from Time 1 to Time 2 than the E A T group, as presented in Table 10. This interaction effect was not found for weight loss when analyzing all three times. In addition, there were no significant group differences in relative weight loss at Time 2 or Time 3 (see Table 9).

Treatment Integrity

A manipulation check scale was administered at the last treatment session along with the program evaluation to measure the degree to which the leader focused on various program components (leader and program integrity). There were significant differences between the groups on the two manipulation check scales ($F=141.56$, $p<.001$ for MC1; $F=34.13$, $p<.001$ for MC2). Means and F statistics are presented in Table 11. Similarly, there was a significant negative correlation between scores on MC1 and MC2 ($r=-.63$, $p<.01$) (see Table 2).

Correlational Analyses

Although not part of the hypotheses, a correlational analysis was performed on non-ordinal demographic and background data, initial scores, and the outcome measures of relative weight loss, attendance, and satisfaction with

treatment. The only significant results were positive correlations between relative weight loss and age (r=.39, p=.05) and relative weight loss and program attendance (r=.40, p=.05) for the entire sample. Because of the group differences in program attendance, the relationship between attendance and relative weight loss was looked at for each treatment separately. There was a significant positive correlation between relative weight loss and attendance in the E A T group (r=.48, p=.05), but this relationship was not significant for the LEARN group. In testing the scale properties, correlational analyses were also performed on scale scores at all three times (see Table 3).

Interview Data

Interviews were conducted with 33 subjects--14 from the LEARN group and 19 from the E A T group. Most of the interviews were done face-to-face, but four were conducted via telephone with subjects who were unable to meet in person. The interviews produced rich and interesting data. Overall, subjects were unable to identify the purpose of the research or what happened in the other treatment condition. Most subjects were unaware that the other group received a different type of treatment. In addition, most subjects could not identify expectations that the experimenter might have had.

The interview data that were quantified and analyzed statistically fell into three catagories: Why the subject lost weight, which program tools worked or were helpful, and

why the subject didn't lose weight (or more weight than he/she did). Reasons given for why subjects lost weight included using the tools and techniques taught in the program, commitment/motivation, attending the meetings, lack of pressure/guilt/dieting, increased activity or exercise, social support, and participation in another weight loss program. The tools mentioned which facilitated weight loss included awareness of eating, awareness of emotions, awareness of hunger and the body's needs, no set eating schedule, ability to eat anything, being free to not eat, keeping a food diary, cutting down on specific foods or amount eaten, and counting calories. Reasons reported for why subjects did not lose weight included not using the tools, difficulty using the tools, dissatisfaction with the program, conflicts with work, low motivation, interference from work or social engagements, stress or personal crises, and lack of social support.

Pearson Chi-Square analyses of these data produced six significant group differences, presented in Table 12. Five subjects in the LEARN group (36%) and none in the E A T group (0%) reported commitment or motivation as a reason why they lost weight ($p<.005$). Similarly, seven subjects in LEARN (50%) and only one in E A T (5%) reported that the program meetings facilitated their weight loss ($p<.005$). When asked to identify helpful or effective tools, 11 subjects in the E A T group (58%) and zero in the LEARN group (0%) mentioned awareness of hunger and the body's needs ($p<.001$). Conversely, three subjects in LEARN (21%) and zero in E A T

(0%) reported that keeping a food diary was a helpful tool (p=.03), and four in LEARN (29%) and none in E A T (0%) reported that counting calories was an effective tool (p=.01). Finally, three subjects in the LEARN group (21%) and zero in the E A T group (0%) reported low motivation as a reason why they didn't lose weight (or more weight) (p=.03).

DISCUSSION

The E A T method was generally as effective as the LEARN method, but not more effective, according to this study. There were comparable and significant changes over time in the outcome variables measured, and, with two exceptions, there were no significant differences between the two groups on these variables. The two exceptions were a significant time-by-group effect for restrained eating behavior scores, and a significant time-by-group effect for weight loss, from Time 1 to Time 2. There were also significant differences between the groups on the manipulation check measure and on attendance. Several interpretations of these results can be made.

First, the highly significant group effect on the manipulation check suggests that, although both treatments were led by the principal investigator, subjects in the two conditions did actually receive distinct treatments. Despite the self-reported nature of these data, demand characteristics are likely minimal: Even if a subject tried to give the "right" response to be a "good subject," this must reflect what actually occurred in the sessions, or the subject would not know which would be the desired response. These results indicate that subjects did receive two different treatments, as the study intended, and that no leader bias was detected.

The significant group effect for program attendance indicates that subjects in the E A T group had better attendance than those in the LEARN group. Before the programs began, I had expected the E A T group to have worse attendance than the LEARN group, because the E A T class was longer, met later in the evening, and did not meet every week after the first six sessions. I had feared that E A T subjects would forget when to meet, since it wasn't every week. However, this was not the case.

Several possible explanations for this group difference in attendance can be made. It may be that unidentified subject differences (e.g., readiness for treatment, motivation) were responsible for differences in attendance. Significantly more subjects in the LEARN group did identify low motivation as a reason why they didn't lose weight. It may be that non-treatment group differences (e.g., time or length of the class, frequency of sessions, mode of presentation of material, group dynamics, etc.) were related to attendance. Perhaps subjects were more willing to attend fewer sessions than one every week. Or, the actual content of the treatments may account for the variance in attendance. Perhaps subjects in the LEARN group became discouraged by the restriction involved in the program, or perhaps they had already learned the material from other programs or books and were therefore bored. However, subjects' liking of the programs cannot be assumed to account for the difference in attendance, because there was no significant difference between the groups on the

Program Evaluation measure. Perhaps subjects in the LEARN group felt they did not need to attend the sessions because the material was in their workbooks, which they could read without attending the sessions. The attendance effect is interesting, but unfortunately one can only speculate about its cause.

The comparable and significant changes over time on the outcome variables suggest that a) both groups showed improvement over time, and b) one treatment was not more "effective" than the other. What cannot be ascertained from these results is whether the changes over time were due to actual treatment effects or rather to non-specific "treatment" effects. Given the lack of a no-treatment control group (due to difficulty recruiting subjects) or pre-treatment data from several months prior to treatment, there is no way to know whether these time effects would have occurred even without the treatment. In future research, a control group and pre-pre-treatment data would provide more conclusive results. However, the significant positive correlation between the outcome measure of relative weight loss and attendance in the E A T group suggests that the treatment sessions may have contributed to weight loss. An alternative interpretation of this correlation is that those subjects with good attendance were highly motivated to lose weight or succeed, and this motivation may have been the cause of their weight loss and other improved scores.

If the signficant changes over time in the outcome

variables can be attributed to actual treatment effects, these results offer important implications for theory of weight regulation and weight loss treatment. The fact that subjects in the E A T group lost a significant amount of weight and showed significant improvement on the other outcome measures suggests that a non-restrictive weight loss program like Eating Awareness Training is effective in promoting weight loss, and may be as effective, or more so, in the long run, as a traditional behavioral method, although the latter may produce greater and faster weight loss initially (as suggested by the larger weight loss in the LEARN group from Time 1 to Time 2). This study suggests that traditional behavior modification techniques of external control and reinforcment of behavior (although perhaps faster) are not necessary to facilitate weight loss. Instead, with training and practice, it seems that the human body can relearn to respond appropriately to natural signals of hunger and satiety, and that an individual can choose to eat according to these signals, without external control or cognitive restraint. These time results support the E A T philosophy and suggest that a non-restrictive approach is a viable and effective alternative to behavioral weight loss methods.

The significant group and time effects for restrained eating behavior have their own interesting implications. The time effects indicate that both groups increased significantly in restrained eating from Time 1 to Time 2, although the LEARN group showed a greater and more significant increase. From

Time 2 to Time 3, the LEARN group decreased significantly in restraint, whereas the E A T group increased slightly (but not significantly).

This time-by-group effect may indicate real differences in eating behavior between the groups, or it may be the result of demand pressures and self-presentation needs. Given that the LEARN program did encourage restrained eating as a weight loss technique, subjects in this group might have positively endorsed restraint items to please the experimenter or to present a certain (and "improved") image. However, subjects in the E A T group would not necessarily be expected to endorse restraint items, as (cognitive) restraint was discouraged in their program. Furthermore, the fact that LEARN subjects significantly decreased in restraint after the treatment was over suggests that demand pressures were not responsible for the changes over time in reported restraint. If they were, one would expect restraint to continue to increase in the LEARN group at Time 3, or at least to stay the same.

Another indicator that the group difference in restrained eating may reflect a real difference is the fact that low scores on the LEARN manipulation check (indicating endorsement of LEARN components) were significantly correlated with high restraint scores at Time 2, reinforcing a group difference in restrained eating at Time 2. In addition, there was a significant difference between the mention of "counting calories" as a helpful tool in the post-interviews. Counting

calories is a common technique of restraint which was taught only in the LEARN treatment. Hence, data from several sources seem to converge to validate the group difference in restrained eating behavior. However, given the limitations of self-report measures and subjects' self-presentation needs (Hogan & Nicholson, 1988; Kagan, 1988), one is unable to know the exact meaning of this group difference in reported restrained eating.

If this reported restraint difference is a "real effect" (not from demand or self-presentation pressures), it suggests that weight loss may be achieved without the degree of cognitive restraint, restriction, and external control of food intake previously thought necessary to lose weight. This implication supports the premise behind the Eating Awareness Training method--that an individual can lose weight, not by restricting intake, but by responding appropriately to the body's needs and messages. The unexpected increase in "restraint" in the E A T group from Time 1 to Time 2 may reflect a change in eating from overeating behavior to a more conscious or controlled eating. Eating only when hungry, instead of anytime, may show up as increased restraint on the restraint scale.

This group effect for restrained eating is exciting in that it appears to support the E A T philosophy and method. One would expect the potential for long-term maintenance of weight loss and behavior changes to be greater for an approach which does not require cognitive restraint, restriction, or

control, especially in light of current research on the negative effects of restrained eating (e.g., Heatherton, Polivy, & Herman, 1991). Additionally, the decrease in elevated restraint scores in the LEARN group supports the belief that restrained eating cannot be successfully maintained for long periods of time. However, further research on the long-term effects of the E A T method are needed.

Results from the post-interviews also have interesting implications. These data serve to cross-validate the manipulation check, by allowing subjects to state spontaneously which program tools they said worked for them (and hence, were presented in their program). These interview data may reflect subjects trying to be "good subjects" by reporting that the tools presented in their treatment were the reason that they lost weight (see Weber & Cook, 1972). However, two techniques mentioned by E A T subjects but not by any LEARN subjects, "hunger awareness" and "not eating by a set schedule," are the exact opposite of traditional behavioral weight loss techniques. With these tools, subjects become aware of their physiological hunger and eat according to this hunger, and not according to time of day, "the clock," or social convention. It is possible (and promising) that these tools did actually allow E A T subjects to lose weight, as the subjects reported.

Methodological Limitations

There are several methodological limitations which may

have inhibited the discovery of additional significant results. In this study, although the self-report measures used had been previously tested and validated, it was necessary to eliminate items which were not internally reliable for this sample. Therefore, with the exception of the Rosenberg (1965) Self-Esteem scale, items used in the final analyses did not constitute the entire scales from which they were taken. Furthermore, due to the small sample size (less than 50 subjects), a full factor analysis could not be performed to factor the reliable items into reliable sub-scales. Instead, a "poor person's factor analysis" was done by correlating sub-scales and combining those scales which were highly correlated. This process is acceptable but only second in preference to the full factor analysis. With more reliable or valid measures, or with a sample size large enough to more fully test the measures, it is possible that more significant results might have been discovered.

Despite these considerations, scale tests for reliability and other properties were generally satisfactory. Internal reliabilities were high for all scales at all three times, the lowest being .79 for restrained eating at Time 1. Average inter-item correlations within a scale were greater than interscale correlations. Skewness and kurtosis were within reasonable limits, with the exceptions of non-physiological eating at Time 3, self-esteem at Time 2, and the LEARN manipulation check. As desired, scale means were not extreme, but standard deviations were less than half the size of the

means, indicating low variability, which is less desirable than high variability in scores. It is unclear exactly how these scale characteristics affect the results, but it is true that the scales were not as robust as desired.

In addition, the validity of the self-report measures used in this study is unknown, as stated previously. It is generally unknown whether self-reported scores reflect the subjects' actual behavior. Given the social desirability (or undesirability) of the constructs and behaviors measured, it is possible that subjects' memory of their own past behavior or thoughts may have been distorted by the need to see themselves in a positive light. It is also possible that initial pre-treatment scores were exaggerated, while post-treatment responses may have been endorsed to display "improvement" on the outcome variables. However, if this were the case, one would expect scores to remain "improved" at follow-up (Time 3), which was <u>not</u> the case for most variables. Most outcome measures showed the pattern over time of improving at Time 2, with a slight "relapse" (sometimes significant and sometimes not) at Time 3. This relapse of scores supports the validity of the self-report measures. Data from the interviews also lessen the estimated influence of demand pressures in that most subjects reported no knowledge of the purpose of the study nor what the experimenter expected. However, even if the measures used did reflect true responses related to actual behavior, it is unknown whether the self-report measures were sensitive enough

to detect changes after relatively short-term treatment.

Related to the sensitivity of the measures is the concept of statistical power and subject attrition. A test of power was not performed in order to determine the necessary sample size to detect group differences in changes in the variables. Instead, sample size was constrained by the number of available and interested participants. Much to the experimenter's dismay, recruitment of subjects was difficult and slow, such that 49 subjects were judged as "enough" when it didn't seem possible to recruit any more.

Unfortunately, sample size was also reduced due to attrition of subjects, which is a major concern in weight loss research (Eufemia & Wesolowski, 1985). Due to the length of both programs (16 weeks) or numerous other factors, subjects did drop out, or participate minimally in the program. This attrition reduced the original sample size of 49 to 31 subjects for which data were obtained for all three times. Such attrition can bias results, in that poor weight-losers may drop out at a higher rate than do those who lose greater amounts, so that those who remain in treatment may be selected for greater weight loss (Levitz & Stunkard, 1974). Or, the direction of the possible bias may be unknown. External validity is then jeopardized, since attrition reduces generalizability, and internal validity is compromised if there is differential attrition across treatment groups. It was advised, however, that the resulting unequal groups would not statistically affect the results, because the repeated

ANOVA keeps the data proportional (R. Frankmann, personal communication, August 12, 1991).

The main problem with subject attrition is that it reduces the sample size and the power of the study, such that real group differences may not be detected due to low power. Large sample sizes are needed to detect group differences in outcomes, especially in weight loss research (Mavis, 1987). Unfortunately, this study could not fulfill the large sample size ideal. It may, however, have been possible to obtain more data on subjects who did not attend the last or follow-up session, had the experimenter been more persistent in her efforts (e.g., follow-up phone calls if questionnaires were not returned by mail).

The other difficulties with attrition is how "drop outs" are classified and interpreted. In this study, subjects were included in the analyses if data were available for all three times. However, some subjects seemed to drop out of the program, but did attend the last session and even the follow-up (perhaps to receive their monetary deposit back). Such subjects received incomplete treatment, which may have biased the results. Chi-Square analyses of attendance above and below the median split showed a highly significant group difference. A greater number and percentage of E A T subjects received more of their actual treatment than did the LEARN subjects. Although "receiving" the treatment does not guarantee its application or subsequent behavior change, it nevertheless must be considered in a treatment study.

The interpretation of the significance of drop outs also poses a challenge. Should the 14 subjects who did not complete the treatment be considered program failures? Or did they drop out for individual reasons, not due to the treatment? Since data on these subjects are unavailable, it is impossible to determine whether these subjects were program failures or successes. During the course of the treatments, the experimenter saw one subject who had not been to class for several sessions at a store in the community, and this woman said she had stopped coming to the meetings because she had lost all the weight she'd wanted to (which she said was about 15 pounds). It is unfortunate that data on these subjects who dropped out were not obtained.

Another possible limitation of this study is group leader bias. Since the leader was also the principal investigator, she was also the one who collected and analyzed the data, in addition to administering both treatments. Due to the scale of this study, it was not possible to hire other group leaders or data collectors. However, both the results of the program evaluation, the manipulation check, and the post-interviews suggest that leader bias was <u>not</u> present, at least in the delivery of the two treatments.

Another possible limitation was the influence of nonspecific treatment effects. Subjects may have lost weight, not due to any planned component of either treatment, but simply because they were in a weight loss program or to please the program leader. However, the debriefing interviews did

identify specific treatment components which subjects reported were responsible for their weight loss, but even these interviews may have been biased by demand characteristics of the subjects.

Another possible limitation of this study is what might be called "nonspecific subject effects." For example, age was found to be positively correlated with relative weight loss in this study. Subjects' readiness for treatment and behavior change has been considered in other research, especially in the treatment of alcoholism and drug abuse. Subjects' readiness for treatment and change was not assessed in this study, so it is possible that subject differences and characteristics may have contributed to the within-group variance and the effectiveness of both treatments. Because readiness was not assessed with other pre-treatment data, its effect on the outcome variables and program attendance and participation cannot be determined. Future research would benefit from including an assessment of readiness, like Berish's (1990) preliminary Client Readiness for Therapy scale. I believe that until an individual is truly ready to change (his/her behavior, body, self-image, identity), treatment will be resisted or rejected altogether and thus, be rendered "ineffective."

Finally, this research is lacking a long-term follow-up of subjects. At this writing, it is two years since the end of the treatment programs. Athough 4-month follow-up data were collected, longer follow-up data, like two or three years

post-treatment, would be helpful in assessing long-term treatment effects and maintenance of weight loss and other changes. Such a longer follow-up is not being planned at this time, although it is possible.

Conclusions

Despite these limitations, this study was the first of its kind to examine the effectiveness of a truly non-restrictive program like Eating Awareness Training, in comparison with an established behavioral program. The fact that subjects in the Eating Awareness Training group lost a significant amount of weight and showed significant improvement on the other outcome variables suggests that a previously unresearched, non-restrictive method is effective in promoting weight loss, and may be as effective, or more so, in the long run, as a traditional behavioral method. These results suggest that traditional behavior modification techniques of external control and reinforcement of behavior are not necessary to facilitate weight loss. Instead, with training and practice, it seems that the human body (and mind) can relearn to respond appropriately to natural signals of hunger and satiety, and that an individual can choose to eat according to these signals, without external control or cognitive restraint. This type of change in eating behavior may be a more realistic and long-term solution to the problem of obesity and overweight than behavioral changes which require restriction, control, and possible physical discomfort (e.g., unsatisfied hunger). Hopefully, this study will motivate continued

research on the non-restrictive approach to weight loss, which seems a promising alternative to traditional behavioral methods.

APPENDIX A

Recruitment Advertisements

Ran December 1988

NEED TO LOSE WEIGHT?

Persons who want to lose weight are invited to participate in a weight management project sponsored by the Michigan State University Weight Loss Research Program.
If you are interested in learning more about the project, call 353-4880 weekdays during regular business hours. You will receive an information package and be invited to an introductory meeting. Those attending the introductory meeting are under no obligation to participate in the project.

MSU WEIGHTLOSS RESEARCH PROJECT

Seeks overweight men and women for weightloss program. $30 through summer.

332-0256

047 Health and Fitness

M.S.U. WEIGHT LOSS RESEARCH PROJECT seeks overweight men & women for weight loss program. $30 through summer. Ph. 332-0256.

M.S.U. WEIGHT LOSS RESEARCH PROJECT

WANTED: ANYONE OVER THE AGE OF 18 WHO IS AT LEAST 20% ABOVE HIS/HER IDEAL WEIGHT.

THE PURPOSE OF THIS RESEARCH IS TO COMPARE THE EFFECTIVENESS OF DIFFERENT WEIGHT LOSS TREATMENT METHODS.

INTERESTED?

CALL LAURIE AT 332-0256
FOR MORE INFORMATION AND DETAILS

APPENDIX B

Recruitment Letter

MSU Weight Loss Research Project, Round 2

Dear Potential Participant:

Thank you for your interest in weight loss and in this research project. The following information should answer most of your questions about the project. PLEASE TAKE THE TIME TO READ THIS INFORMATION CAREFULLY. If you have any further questions or concerns, call Laurie Friedman at 332-0256.

Objectives of the Project

The purpose of this research is to compare the effectiveness of different weight loss treatment methods.

Program Description

The current project lasts 16 weeks, and sessions will meet once a week, or less frequently, depending on the class you are assigned to. The sessions will be held on Tuesday nights, at 5:30 PM or 7:00 PM on the university campus; class size will be limited to 25 participants.

The program is open to anyone over the age of 18 who is at least 20% over his/her ideal weight and who is not pregnant. A physician's consent form may be required.

The program will start as soon as all of the class slots are filled. If you are interested in participating, you must attend one of the scheduled orientations meetings or call Laurie Friedman at 332-0256.

Research

This program is offered as a research project by a graduate student. This means that in addition to receiving a quality weight control program, you will be asked to complete several questionnaires during the program, participate in a post-program interview, and attend a 3-month follow-up session. The questionnaires cover your weight history as well as your eating behavior and other variables.

Orientation Meetings

The first orientation meetings will be held in 219 Berkey Hall on the MSU campus (on East Circle Dr. off of Collingwood) on Tuesday, April 25, from 5:30-6:30 and 7:00-8:00 PM. You can attend the time most convenient for you, but this may not be the time your program session will meet.

If you cannot attend the orientation meeting but are still interested in participating, please call Laurie Friedman at 332-0256. Additional orientation meetings will be scheduled as needed.

The purpose of the orientation is for you to meet with the representative of the program to answer any questions you may have regarding the program. You can attend the orientation without any obligation to participate in the research. If you would like to join the program, you can reserve your place by making a $30 deposit at the orientation meeting.

Cost of the Program

There is no fee for the program itself, but you may be charged a small amount for program materials (i.e., $5). There is, however, a mandatory $30 deposit which will be refunded contingent upon completion of the program and attendance at the follow-up meeting. This deposit will also reserve your place in the program. Exact cash or check payable to the MSU Psychological Clinic is appreciated. Credit cards are NOT accepted.

Thank you for your interest! I look forward to meeting you soon.

Sincerely,

Laurie L. Friedman
Psychology Graduate Student

APPENDIX C

Behavioral Program Outline

LEARN Schedule

Week 0	Is the time right?; expected weight loss; description of LEARN program; questionnaires
Week 1	The LEARN approach; record keeping; reasons for overweight; exercise, relationships, nutrition; a word of caution; self-assessment
Week 2	Reviewing the diary; the role of exercise; why dieting is so difficult; the mysterious calorie; not all dieters are created equal; determining your target calorie level
Week 3	Analyzing the expanded diary; keeping the backfield in motion; a walking partnership; cravings vs. hunger; the mighty calorie
Week 4	The ABC's of behavior; perfecting the walking program; shaping the right attitudes; following a balanced diet; solo and social dieting; your target calorie level; introducing a new monitoring form
Week 5	Wresting control of eating; making exercise count; calorie values of exercise; food and weight fantasies; a quiz for choosing a partner; servings from the four food groups
Week 6	Slowing the eating rate; continuing walking and lifestyle activity; steps for taking your pulse; communticating with your partner; protein; yogurt and your diet; planning healthy meals
Week 7	Shopping for food; introducing programmed exercise; an exercise threshold attitude; striving for perfection; a shopping partnership; carbohydrates and your diet; breakfast cereals
Week 8	Storing foods; selecting and starting a programmed activity; internal attitude traps; the role of fat in the diet; fish oil and risk of heart disease
Week 9	Serving and dispensing food; more on exercise; impossible dream thinking; something for the partner; facts about vitamins
Week 10	For the family; dealing with pressures to eat; another attitude trap; jogging and cycling; water soluble vitamins
Week 11	Eating away from home; aerobics; pleasurable partner activities; poultry vs. red meat; fat soluble vitamins

Week 12	The behavior chain; a chain and its links; interrupting the chain; using stairs; fast food
Week 13	Preventing lapse, relapse, and collapse; using alternative activities; facts, fantasies, and fiber
Week 14	Coping with lapse and preventing relapse; becoming a forest ranger; life on chutes and ladders; cholesterol
Week 15	The master monitoring form; holidays, parties, and special events; the national walking movement; minerals
Week 16	Interpreting progress; examining the master monitoring form; making habits permanent; doing a master self-assessment; saying farewell, monetary payback; questionnaires

APPENDIX D

Non-Restrictive Program Outline

E A T Schedule

Week 0	Introduction; questionnaires
Week 1	Relaxation techniques; goals; trust; body awareness; illusion and reality; the mind; now body--natural shape; appropriate responses; attention without interference; potential and performance; E A T techniques; staying in the present; amnesia; responsibility; scales; practice for Week 1
Week 2	Fear of reality; hunger; fear of hunger; handling hunger for special occasions; comfort; the clean plate syndrome; the human body is not a garbage can; abusing the body to please others; practice for Week 2
Week 3	Fear of non-gluttony; danger signals; fear of mistakes; approval and disapproval; the mind; past decisions; automatic responses; concepts and judgments; past failures; how to deal with the mind; the when syndrome; practice for Week 3
Week 4	Mind attacks; freedom; fear of success; fear of loss; cravings; choosing foods; to satisfy or not to satisfy; nutrition; practice for Week 4
Week 5	Time and energy; what do I really want?; fear of unhappiness; image; what will they think?; identification; self image; more fear of reality; practice for Week 5
Week 6	Stop fighting the body; the when, what, how much, and why; awareness; reminders; applying E A T skills to other aspects of life; breaking habits; observing the mind; stress and other signals; have patience with others; experience; enjoy being free
Week 7	-------
Week 8	Review; questions and answers; feedback; eliminating obstacles
Week 9	-------
Week 10	Review; questions and answers; feedback; eliminating obstacles
Week 11	-------
Week 12	-------
Week 13	Review; questions and answers; feedback;

elimination of obstacles

Week 14	-------
Week 15	-------
Week 16	Review; questions and answers; feedback; elimination of obstacles; setting up a support group; final weigh in; monetary payback; questionnaires

APPENDIX E

Treatment Contract

Treatment Contract

I, _____, agree to participate fully in this 16-week weight loss program. I agree to attend all sessions, complete any and all homework assignments, and comply with program requirements (which may include keeping a food diary and other behavioral changes). I understand that my $30 deposit will be refunded upon my completion of the program, half at the last session, and half at a three month follow-up session.

Signature: _____ Date: _____

APPENDIX F

Registration and Consent Forms

Registration Form

Name: _____

Address: _____

_____ Zip _____

Telephone: Daytime _____ Evening _____

Sessions for this program will be held on TUESDAY EVENINGS at 5:30 PM and 7:00 PM. If there is a time which you CANNOT attend, please indicate below.

I cannot attend session on Tuesdays at: _____ 5:30 PM
_____ 7:00 PM

I cannot guarantee the time of your program, however, please indicate below if one time is more convenient for you to attend.

_____ I would rather attend the 5:30 PM session

_____ I would rather attend the 7:00 PM session

Is there someone you would like to be in the same program with; that is, are you driving with someone or attending with a family member?

_____ No

_____ Yes. If so, who? _____

Informed Consent

1. I have freely consented to participate in this study being conducted by Laurie Friedman, under the supervision of Dr. Joseph Reyher. I understand that the study involves a comparison of weight loss approaches.

2. The study has been explained to me, although full disclosure of the complete design will not take place until the last session.

3. I understand that the $35 I contribute to the program represents a $5 fee for program materials and a $30 refundable deposit, half of which will be returned at the last session, and half of which will be returned at a 3-month follow-up session.

4. I understand that I will be expected to complete all questionnaires, attend all program sessions during the 16-week program, participate in a post-program interview, and attend a 4-month follow-up session.

5. I understand that I am free to discontinue my participation in the program at any time. However, if I decide not to continue, I understand that all money I contributed, including the $30 deposit, will be forfeited.

6. I understand that the results of the program will be strictly confidential and anonymous. Only group results will be reported; no individuals will be identified.

7. I understand that my participation in the program does not guarantee any beneficial results to me.

8. If under a doctor's care, I understand that I will be asked to consult with my physician before beginning this program. At this time, I AM NOT pregnant. Should this change during the course of the program, I will immediately notify the program leader.

9. I understand that, at my request, I can receive additional explanation of the study from Laurie Friedman after my participation is completed.

Print Name: _____ Date: _____

Signature: _____

Informed Consent

1. I have freely consented to participate in this study being conducted by Laurie Friedman, under the supervision of Dr. Joseph Reyher. I understand that the study involves a comparison of weight loss approaches.

2. The study has been explained to me, although full disclosure of the complete design will not take place until the last session.

3. I understand that the $30 I contribute to the program represents a $30 refundable deposit, half of which will be returned at the last session, and half of which will be returned at a 4-month follow-up session.

4. I understand that I will be expected to complete all questionnaires, attend all program sessions during the 16-week program, participate in a post-interview, and attend a 3-month follow-up session.

5. I understand that I am free to discontinue my participation in the program at any time. However, if I decide not to continue, I understand that all money I contributed, including the $30 deposit, will be forfeited.

6. I understand that the results of the program will be strictly confidential and anonymous. Only group results will be reported; no individuals will be identified.

7. I understand that my participation in the program does not guarantee any beneficial results to me.

8. If under a doctor's care, I understand that I will be asked to consult with my physician before beginning this program. At this time, I AM NOT pregnant. Should this change during the course of the program, I will immediately notify the program leader.

9. I understand that, at my request, I can receive additional explanation of the study from Laurie Friedman after my participation is completed.

Print Name: _____ Date: _____

Signature: _____

Medical Release Form

_____, a patient of yours, is interested in participating in a weight loss research program through the MSU Department of Psychology. The program is based on current medical and scientific research in the fields of psychology, nutrition, and exercise physiology. The program is conducted by a psychology graduate student who is trained to deal with weight-related problems, under the supervision of Dr. Joseph Reyher.

As part of the program, participants can expect to lose weight at a rate of 1 to 2 pounds per week. Central to this weight loss program is a goal to help people develop healthful eating and lifestyle habits. There is no specific diet. The program encourages eating in moderation from a balanced diet. Participants will be expected to participate in a walking program to increase their activity level. A program syllabus is included for your information.

If you have any questions about this program, contact Laurie Friedman at (517) 332-0256.

If you believe your patient can safely participate in this program, please sign the release below.

* * * * * * *

_____ is medically able to
(patient's name)
participate in this weight loss program.

Special precautions the patient should take: _____

_____

_____

Signed _____ Date _____

Medical Release Form

_____, a patient of yours, is interested in participating in a weight loss research program through the MSU Department of Psychology. The program teaches participants how to listen to and respond to their body's physiological signals of when, how much, and what to eat. The program teaches eating awareness techniques and hunger and body awareness. The program will be conducted by a psychology graduate student who is trained to deal with weight-related problems, under the supervision of Dr. Joseph Reyher.

If you have any questions about this program, contact Laurie Friedman at (517) 332-0256.

If you believe your patient can safely participate in this program, please sign the release below.

* * * * * * *

_____ is medically able to
(patient's name)
participate in this weight loss program.

Special precautions the patient should take: _____

_____

_____

Signed _____ Date _____

EATING AWARENESS TRAINING (R)

NAME_____ PHONE (BUS)_____
(HOME)_____

ADDRESS_____

BIRTH
DATE_____ OCCUPATION_____

HOW LONG HAVE YOU HAD A WEIGHT PROBLEM?_____

GOALS FOR SEMINAR_____

REFERRED BY_____

THE EATING AWARENESS TRAINING AGREEMENT

In exchange for the course fee of $_____, the Consultant, Laurie Friedman, having been trained by Molly Groger, dba Eating Awareness Training, shall provide the Client with _____ (_____) lessons and applicable accompanying written materials, including but not limited to advice about developing awareness of eating habits, instruction in techniques to increase consciousness when eating, and consultation about utilizing the awareness developed to achieve eating natural to the Client's body.

Consultant is not a licensed health care professional or psychological expert. The content of the course consists solely of techniques for developing awareness and performance concerning consciousness while eating. No medical or psychological counseling or advice is intended or will be given.

Consultant represents and warrants that, upon completion of the course, the Client will be more aware of his or her eating patterns and habits. Under no circumstances shall the Consultant be liable to the Client or any other person for incidental or consequential damages of any nature, including, without limitations, damages for personal injury, however occasioned, whether alleged as resulting from breach of warranty by Consultant, the negligence of Consultant, or otherwise.

It is understood and agreed by the parties that Molly Groger has spent many hours in research and development of this awareness program; that Molly Groger has spent many hours training Consultant, and, after assuring herself that Consultant can effectively instruct, has licensed Consultant to train others in the Eating Awareness Training techniques;

and that Molly Groger's combination of business plans and methods could only be independently reproduced at considerable cost and effort. Thus the information and advice given by Consultant constitutes confidential information. The Client shall not divulge to others or use for his or her own benefit or profit any confidential information obtained as a result of this Agreement or Course including but not limited to information or data, the method or processes used to develop this program, the educational materials or techiques, the names of clients, and inventions or discoveries patentable or otherwise, with which the Client may become familiar during the term of this Agreement.

This Agreement is the entire Agreement between parties and any amendments or modifications hereof shall not be effective unless in writing signed by both parties.

_____ _____

DATE CLIENT

APPENDIX G

Timing of Program Measures

Timing of Measures Used in the Programs

Questionnaire Items	Week 0	Week 16	Week 17	Week 28
Demographic Information	X			
Weight Loss History	X			
Social Support	X			
Weight	X	X	X*	X
Eating Behavior	X	X		X
Self-Esteem	X	X		X
Body Image	X	X		X
Program Evaluation		X		

* Self-reported weight.

APPENDIX H

Interview Schedule

POST-INTERVIEW INSTRUCTIONS

(Introduce yourself. Thank person for coming; their coming tonight is important for the research and we appreciate it. Ask their name and make sure it's clear on the tape. Mention that you are taping.)

Did you lose weight during this program? (if yes,) How much?

(IF YES)
Can you tell me why it was that you lost the weight you did?

(Let them answer and prompt them to continue.)

(if not already answered, prompt)
What was it about the program that seemed to work for you?
Anything else?

Was there anything else going on that seemed to help you lose weight during this time? (ie, other factors besides the program)

Can you tell me what your goals or expectations were for this program?

Do you feel satisfied with the results of your participation in this program?

(if yes, go to end. If no, continue with "if no" questions)

(IF NO)
Can you tell me why you think you didn't lose weight / as much weight at you had hoped?

(prompt if necessary)
Can you think of anything about the program that didn't seem to help or work for you?
Anything else?

Was there anything else going on that seemed to get in the way of you losing weight during this time?

(Ask about goals and expectations and if they were satisfied with the program, if you haven't asked already.)

* * * * *

Did you have any thoughts as to the purpose of the experiment?

(if subject doesn't mention other treatment group, say) You knew about the other group, right?

Did it cross your mind about what the other group was doing? What do you think?

Do you have an idea of what results the experimenter expected? (if yes,) How do you know/ What makes you think this?

Do you think the experimenter had any expectations of how you and others in your group were supposed to respond to the program?

THANK YOU VERY MUCH FOR TAKING THE TIME TO SPEAK TO ME!

Name_____ Group_____ Weight_____

1. Lost weight? yes no
2. Why they lost weight (program reasons):

3. Other reasons:

4. Goals/expectations:

5. Satisfied w/ program? yes no
6. Why they didn't lose weight (program reasons):

7. Other reasons:

8. Purpose of research:

9. Ideas about other group:

10. What Laurie expected:

11. What Laurie expected of them/their group:

12. Other comments:

APPENDIX I

Measurement Instruments

Initial Questionnaire

Name _____ Date _____

Please answer the following items by filling in the blank or circling the number next to your response.

DEMOGRAPHICS

1. Age: _____

2. Sex:

   1. Male
   2. Female

3. Current marital status:

   1. Never married
   2. Married
   3. Divorced or separated
   4. Widowed
   5. Other _____

4. Education: Highest grade or degree completed _____

5. Ethnic background:

   1. White
   2. Black
   3. Native American
   4. Asian
   5. Hispanic
   6. Other _____

6. Occupation: _____
   (Fill in and circle the number below next to your answer)

   1. Part-time (less than 30 hours a week)
   2. Full-time (30 hours or more a week)
   3. I don't work outside of the home for pay.

7. Are you currently under a physician's care for

   a) high blood pressure
      1. Yes
      2. No

   b) diabetes
      1. Yes
      2. No

8. Are you currently under treatment for a known eating disorder, such as anorexia nervosa or bulimia?

   1. Yes
   2. No

9. Do you currently smoke cigarettes?

   1. Yes
   2. No

10. Are you currently taking any medications?

    1. Yes
    2. No

    If YES, please specify which medication(s): _____

    _____

    If YES, do any of these medications affect your weight?

    1. Yes
    2. No
    3. Don't know

    Which one(s)? _____

    _____

WEIGHT

11. Age of onset: Please indicate the age at which you first became concerned about your weight

    1. Before or at age 15
    2. Age 16 or older

12. Did your weight gain appear to result from a specific event?

    1. Yes
    2. No

If YES, please indicate the specific event below by circling the number next to your choice. Please choose only one.

1. Death of a loved one
2. Serious illness
3. Divorce or relationship break-up
4. Birth of a child
5. Change in job

6. Quit smoking
7. Marriage
8. Other (specify) _____

13. Weight trend: What is your present weight? _____

What was your weight 1 month ago? _____

What was your weight 3 months ago? _____

What was your weight 6 months ago? _____

What was your weight 12 months ago? _____

14. What is the maximum weight you have been (excluding pregnancy)? _____ pounds

15. What has been your maximum weight gain within a single week, excluding menstrual weight gain? _____ pounds

16. In a typical week, how much does your weight fluctuate, excluding mentrual weight gain? _____ pounds

17. What is your height without shoes? _____

18. What is your current weight? _____ pounds

19. What is your goal or ideal weight? _____ pounds

PRIOR DIETS:

20. How many serious attempts have you made at losing weight?

1. A few (1-5)
2. Several (6-10)
3. Numerous (11-20)
4. Too many to count (over 20)

21. What is the maximum amount of weight you have ever lost within one month, from a deliberate attempt to lose weight (excluding illness or the first three months after the birth of a baby?) _____ pounds

22. The following is a list of factors which most people indicate as reasons for wanting to lose weight. Please circle the MOST IMPORTANT reason in your case. Circle only one.

1. Concern for your health
2. Personal appearance
3. Family pressure
4. Social pressure

5. Recommendations from your physician
6. Self-esteem

23. Please indicate if you have tried any of the following methods of losing or maintaining weight. (Circle all that apply.)

1. Surgical (bypass or stapling)
2. Jaw wiring
3. Psychoanalysis or psychotherapy
4. Behavior modification
5. Acupuncture
6. Self-help groups
7. Exercising more
8. Cutting down on snacks
9. Cutting down on junk foods
10. Skipping meals
11. Eating smaller meals without counting calories
12. Using low-calorie or diet foods or drinks
13. Using special diets which involve eating mostly one kind of food, such as grapefruit or high-protein diets
14. Counting calories
15. Drinking less water or other liquids
16. Using sauna or steam baths
17. Fasting
18. Using diet pills
19. Using diuretic pills
20. Using laxatives
21. Vomiting
22. Other (specify) _____

SOCIAL SUPPORT:

25. Please indicate the attitudes of the following people about your attempts to lose weight. Are they:

NEGATIVE -- They disapprove or are resentful
INDIFFERENT -- They don't care or don't help
POSITIVE -- They encourage you

Circle the number representing your response. Leave blank if non-applicable.

	NEGATIVE	INDIFFERENT	POSITIVE
Significant other	1	2	3
Children	1	2	3
Mother	1	2	3
Father	1	2	3
Employer/Supervisor	1	2	3
Best friend	1	2	3

26. How would you describe the WEIGHT of the following people in your life? (Leave blank if non-applicable.)

	Very Overweight	Slightly Overweight	About Average	Slightly Underweight
Significant other	1	2	3	4
Child	1	2	3	4
Child	1	2	3	4
Child	1	2	3	4
Mother	1	2	3	4
Father	1	2	3	4
Employer/Supervisor	1	2	3	4
Best friend	1	2	3	4

Current Status Questionnaire

Name _____ Date _____

Please answer the following questions based on how you currently feel or behave by rating yourself on a scale of 1 to 5. Circle the appropriate number for each item.

1. Do you feel that your weight or eating interfere with your work-life or daily activities?

1 2 3 4 5
Very much Not at all

2. How often are you distracted by thoughts about dieting or eating?

1 2 3 4 5
Very often Not at all

3. How often do you experience unhappiness over the looks or feel of your body?

1 2 3 4 5
Very often Not at all

4. How would you rate your present energy level?

1 2 3 4 5
Low High

5. Your present health?

1 2 3 4 5
Poor Excellent

6. On a typical day, do you generally feel tense or relaxed?

1 2 3 4 5
Very tense Very relaxed

7. How much time and energy do you devote to thinking about eating and/or dieting?

1 2 3 4 5
Considerable None

8. How physically active are you?

1 2 3 4 5
Sedentary Very active

9. How happy are you?

1	2	3	4	5
Not at all				Very

Eating Behavior

Please read each statement and decide whether or not it describes you. If you agree with the statement, circle T for true. If you disagree with the statement, circle F for false. Please answer each item either true or false, even if you are not completely sure of your answer.

1. When I smell a sizzling steak or see a juicy piece of meat (or something else I like), I find it very difficult to keep from eating, even if I have just finished a meal. T F

2. I usually eat too much at social occasions, like parties and picnics. T F

3. When I have eaten my quota of calories, I am usually good about not eating any more. T F

4. I deliberately take small helpings as a means of controlling my weight. T F

5. Sometimes things just taste so good that I keep on eating even when I am no longer hungry. T F

6. When I feel anxious, I find myself eating. T F

7. Life is too short to worry about dieting. T F

8. Since my weight goes up and down, I have gone on reducing diets more than once. T F

9. When I am with someone who is overeating, I usually overeat too. T F

10. I have a pretty good idea of the number of calories in common food. T F

11. Sometimes when I start eating, I just can't seem to stop. T F

12. It is not difficult for me to leave something on my plate. T F

13. If I eat a food that that I wish I hadn't, I consciously eat less for a period of time to make up for it. T F

14. When I feel blue, I often overeat. T F

15. I enjoy eating too much to spoil it by counting calories or watching my weight. T F

16. I often stop eating when I am not really full as a conscious means of limiting the amount of food I eat. T F

17. My weight has hardly changed at all in the last 10 years. T F

18. When I feel lonely, I console myself by eating. T F

19. I consciously hold back at meals in order not to gain weight. T F

20. I eat anything I want, any time I want. T F

21. Without even thinking about it, I take a long time to eat. T F

22. I count calories as a conscious means of controlling my weight. T F

23. I do not eat some foods because they make me fat. T F

24. I pay a great deal of attention to changes in my figure. T F

25. If I eat a food that I wish I hadn't, I often then splurge and eat other high calorie foods. T F

Please answer the following questions by circling the number above the response that is appropriate to you:

26. How often are you dieting in a conscious effort to control your weight?

1	2	3	4
Rarely	Sometimes	Usually	Always

27. Would a weight fluctuation of 5 pounds affect the way you live your life?

1	2	3	4
Not at all	Slightly	Moderately	Very much

28. Do your feelings of guilt about overeating help you to control your food intake?

1	2	3	4
Never	Rarely	Often	Always

29. How conscious are you of what you are eating?

1	2	3	4
Not at all	Slightly	Moderately	Extremely

30. How likely are you to shop for low calorie foods for yourself?

1	2	3	4
Unlikely	Slightly unlikely	Moderately likely	Very likely

31. Do you eat sensible in front of others and splurge alone?

1	2	3	4
Never	Rarely	Often	Always

32. How likely are you to consciously eat slowly in order to cut down on how much you eat?

1	2	3	4
Unlikely	Slightly likely	Moderately likely	Very likely

33. How likely are you to consciously eat less than you want?

1	2	3	4
Unlikely	Slightly likely	Moderately likely	Very likely

34. Do you go on eating binges though you are not hungry?

1	2	3	4
Never	Rarely	Sometimes	At least once a week

35. How frequently do you <u>avoid</u> "stocking up" on tempting foods?

1	2	3	4
Almost never	Seldom	Usually	Almost always

36. On a scale of 0 to 5, where 0 means no restraint in eating (eating whatever you want, whenever you want it) and 5 means total restraint (constantly limiting food intake and never "giving in"), please circle the number would you give yourself.

0 Eat whatever you want, whenever you want it

1 Usually eat whatever you want, whenever you want it

2 Often eat whatever you want, whenever you want it

3 Often limit food intake, but often "give in"

4 Usually limit food intake, rarely "give in"

5 Constantly limiting food intake, never "giving in"

37. To what extent does this statement describe your eating behavior? "I start dieting in the morning, but because of any number of things that happen during the day, by evening I have given up and eat what I want, promising myself to start dieting again tomorrow."

1	2	3	4
Not like me	Little like me	Pretty good description	Describes me perfectly

Please answer the following questions according to the scale below.

1 = NEVER
2 = SELDOM
3 = SOMETIMES
4 = OFTEN
5 = VERY OFTEN

	NEVER				OFTEN
38. Do you eat when you are irritated?	1	2	3	4	5
39. Do you eat when you have nothing to do?	1	2	3	4	5
40. Do you eat when you are depressed or discouraged?	1	2	3	4	5
41. Do you eat when you are feeling lonely?	1	2	3	4	5
42. Do you eat when somebody lets you down?	1	2	3	4	5
43. Do you eat when you are cross or angry?	1	2	3	4	5
44. Do you eat when you are approaching something unpleasant to happen?	1	2	3	4	5

45. Do you eat when you are anxious, worried, or tense?	1	2	3	4	5
46. Do you eat when things are going against you or when things have gone wrong?	1	2	3	4	5
47. Do you eat when you are frightened?	1	2	3	4	5
48. Do you eat when you are disappointed?	1	2	3	4	5
49. Do you eat when you are emotionally upset?	1	2	3	4	5
50. Do you eat when you are bored or restless?	1	2	3	4	5
51. If food tastes good to you, do you eat more than usual?	1	2	3	4	5
52. If food smells and looks good, do you eat more than usual?	1	2	3	4	5
53. If you see or smell something delicious, do you eat it?	1	2	3	4	5
54. If you walk past the baker, do you buy something delicious?	1	2	3	4	5
55. If you walk past a snack-bar or a cafe, do you buy something delicious?	1	2	3	4	5
56. If you see others eating, do you also eat?	1	2	3	4	5
57. Can you resist delicious foods?	1	2	3	4	5
58. Do you eat more than usual, when you see others eating?	1	2	3	4	5
59. When preparing a meal, are you inclined to eat something?	1	2	3	4	5

Please answer the following questions based on how you currently feel or behave.

1. How often do you weigh yourself? (Circle the number next to your response.)

1. More than 5 times daily
2. 2-5 times daily
3. Once a day
4. 2-5 times weekly
5. Once a week
6. Seldom or never

Please answer the following questions by rating yourself on a scale of 1 to 5. Circle the appropriate number for each item.

2. How often do you eat to satisfy physical hunger?

1 2 3 4 5
Very often Not at all

3. How often do you eat when you are not hungry?

1 2 3 4 5
Very often Not at all

4. How often do you continue eating when you are no longer hungry (or have "had enough")?

1 2 3 4 5
Very often Not at all

5. How well can you distinguish true hunger from the urge to eat?

1 2 3 4 5
Very often Not at all

6. How often do you eat what your body is craving?

1 2 3 4 5
Very often Not at all

7. How often do you experience discomfort due to overeating?

1 2 3 4 5
Very often Not at all

8. How often do you have low energy due to dieting?

1	2	3	4	5
Very often				Not at all

9. Do you ever feel guilty about your eating habits?

1	2	3	4	5
Always				Never

10. Do you ever feel guilty about eating certain foods?

1	2	3	4	5
Always				Never

11. How compulsive or obsessive do you consider your eating behavior?

1	2	3	4	5
Extremely				Not at all

12. How light and comfortable do you feel when you finish eating?

1	2	3	4	5
Very heavy & uncomfortable				Very light & comfortable

Perceptions of Body

The following items are a number of characteristics about yourself. Circle the number for each one that best represents your feelings about that item according to the following scale:

1 = Have strong positive feelings
2 = Have moderate positive feelings
3 = Have no feeling one way or the other
4 = Have moderate negative feelings
5 = Have strong negative feelings

	POSITIVE				NEGATIVE
1. Hair	1	2	3	4	5
2. Facial complexion	1	2	3	4	5
3. Appetite	1	2	3	4	5
4. Hands	1	2	3	4	5
5. Distribution of hair (over body)	1	2	3	4	5
6. Nose	1	2	3	4	5
7. Physical stamina	1	2	3	4	5
8. Elimination	1	2	3	4	5
9. Muscular strength	1	2	3	4	5
10. Waist	1	2	3	4	5
11. Energy level	1	2	3	4	5
12. Back	1	2	3	4	5
13. Ears	1	2	3	4	5
14. Age	1	2	3	4	5
15. Chin	1	2	3	4	5
16. Body build	1	2	3	4	5
17. Profile	1	2	3	4	5

	POSITIVE				NEGATIVE
18. Height	1	2	3	4	5
19. Keeness of senses	1	2	3	4	5
20. Tolerance for pain	1	2	3	4	5
21. Width of shoulders	1	2	3	4	5
22. Arms	1	2	3	4	5
23. Chest/breasts	1	2	3	4	5
24. Appearance of eyes	1	2	3	4	5
25. Digestion	1	2	3	4	5
26. Hips	1	2	3	4	5
27. Resistance to illness	1	2	3	4	5
28. Legs	1	2	3	4	5
29. Appearance of teeth	1	2	3	4	5
30. Sex drive	1	2	3	4	5
31. Feet	1	2	3	4	5
32. Sleep	1	2	3	4	5
33. Voice	1	2	3	4	5
34. Health	1	2	3	4	5
35. Sex activities	1	2	3	4	5
36. Knees	1	2	3	4	5
37. Posture	1	2	3	4	5
38. Face	1	2	3	4	5
39. Weight	1	2	3	4	5
40. Sex organs	1	2	3	4	5

Perceptions of Self

The following are a series of statements. Please read each statement carefully and indicate how much you agree or disagree with each one, using the categories given below.

1 = STRONGLY AGREE
2 = AGREE
3 = DISAGREE
4 = STRONGLY DISAGREE

	STRONGLY AGREE			STRONGLY DISAGREE
1. I feel that I'm a person of worth, at least on an equal basis with others.	1	2	3	4
2. I feel that I have a number of good qualities.	1	2	3	4
3. All in all, I am inclined to feel that I am a failure.	1	2	3	4
4. I am able to do things as well as most people.	1	2	3	4
5. I feel I do not have much to be proud of.	1	2	3	4
6. I take a positive attitude toward myself.	1	2	3	4
7. On the whole, I am satisfied with myself.	1	2	3	4
8. I wish I could have more respect for myself.	1	2	3	4
9. I certainly feel useless at times.	1	2	3	4
10. At times I think I am no good at all.	1	2	3	4

Evaluation

Please complete the following scales, indicating how you perceive the program leader and materials by circling the appropriate number for each item.

The program leader is:

1.	Pleasant	1	2	3	4	5	Unpleasant
2.	Valuable	1	2	3	4	5	Worthless
3.	Unhelpful	1	2	3	4	5	Very helpful
4.	Supportive and caring	1	2	3	4	5	Unsupportive/ disinterested
5.	Not very motivating	1	2	3	4	5	Very motivating
6.	Very actively involved	1	2	3	4	5	Passively involved
7.	Not very knowledgeable	1	2	3	4	5	Very knowledgeable
8.	Very enthusiastic	1	2	3	4	5	Unenthusiastic
9.	Inexperienced	1	2	3	4	5	Very experienced
10.	Very competent	1	2	3	4	5	Incompetent

The program materials are:

11.	Unhelpful	1	2	3	4	5	Very helpful
12.	Boring	1	2	3	4	5	Interesting
13.	Difficult to understand	1	2	3	4	5	Easy to understand
14.	Not very motivating	1	2	3	4	5	Very motivating

How much does the program leader seem to endorse or believe in the program?

15. Very much 1 2 3 4 5 Not at all

Please rate the degree to which the program leader focused on the following principles or techniques for weight loss, given the scale below:

1 = VERY MUCH
2 = SOMEWHAT
3 = NOT MUCH
4 = NOT AT ALL

1.	Weighing yourself regularly	1	2	3	4
2.	Relaxation	1	2	3	4
3.	Keeping a weight graph	1	2	3	4
4.	Trusting your body	1	2	3	4
5.	Following an eating schedule	1	2	3	4
6.	Reality vs. illusion	1	2	3	4
7.	Eating in one place only	1	2	3	4
8.	Observing the mind	1	2	3	4
9.	Shopping on a full stomach	1	2	3	4
10.	Appropriate responses	1	2	3	4
11.	Keeping problem foods out of sight	1	2	3	4
12.	Attention without interference	1	2	3	4
13.	Nutrition education	1	2	3	4
14.	Staying in the present	1	2	3	4
15.	Leaving the table after eating	1	2	3	4

16. Amnesia	1	2	3	4
17. Eating one portion at a time	1	2	3	4
18. Visualizing your natural shape	1	2	3	4
19. Keeping an exercise diary	1	2	3	4
20. Recording hunger and comfort	1	2	3	4
21. Walking regularly	1	2	3	4
22. Hunger	1	2	3	4
23. Outlasting urges to eat	1	2	3	4
24. Not eating by the clock	1	2	3	4
25. Eating approximately 1200 to 1500 calories a day	1	2	3	4
26. Satisfying cravings	1	2	3	4
27. Behavior modification	1	2	3	4
28. Danger signals	1	2	3	4
29. Eating a balanced diet	1	2	3	4
30. Listening to your body	1	2	3	4

Please indicate how this program has affected you in the following areas, based on the scale below:

1 = NEGATIVE IMPACT
2 = NO CHANGE
3 = POSITIVE IMPACT
4 = VERY POSITIVE IMPACT

1.	Eating problem	1	2	3	4
2.	Weight problem	1	2	3	4
3.	General health	1	2	3	4
4.	Stress level (less tense, more relaxed)	1	2	3	4
5.	Energy level	1	2	3	4
6.	Ability to function at work (energy, concentration, efficiency)	1	2	3	4
7.	Ability to function in life situations (relationships, parenting, etc.)	1	2	3	4

8. Do you feel this program was worthwhile?

1	2	3	4	5
Not at all				Very

9. Do you feel this program would be valuable to others?

1. Yes
2. No

General comments about your experience in this program:

APPENDIX J

Statistical Tables

Table 1

Chi-Square Analysis of Program Attendance

Variable	Group 1 LEARN	Group 2 E A T
Attendance At or Above 55% (X^2=5.98, df=1, p=.01)		
Yes	10 (42%)	19 (76%)
No	14 (58%)	6 (24%)
Subjects per Group	24	25

Table 2

Descriptive Statistics and Reliabilities of Scales

Scale*	$\bar{X}$	SD	# of Items	Range	Skew	Kurt	Alpha	Inter-item Correlation
RES1	2.18	.49	17	1.13-3.34	.19	.36	.79	.21
RES2	2.60	.68	17	1.13-3 73	-.12	-.96	.89	.35
RES3	2.53	.56	17	1.78-3.91	.47	-.53	.81	.23
NPC1	3.62	.93	20	1.37-4.73	-.88	-.02	.95	.52
NPC2	2.78	.97	20	1.10-4.85	.19	-.49	.95	.54
NPC3	2.87	.91	20	1.15-4.17	-.26	-1.19	.94	.50
SE1	1.99	.58	10	1.00-3.50	.41	.20	.86	.40
SE2	1.58	.51	10	1.00-3.20	1.23	2.04	.86	.40
SE3	1.62	.55	10	1.00-2.80	.83	-.45	.89	.46
BI1	2.54	.52	18	1.17-3.44	-.68	.18	.85	.24
BI2	2.21	.62	18	1.11-3.22	-.23	-.80	.90	.35
BI3	2.39	.59	18	1.11-3.33	-.55	-.64	.89	.32
MC1	2.52	1.08	12	1.00-4.00	.01	-1.74	.97	.74
MC2	1.60	.60	10	1.00-3.10	.88	-.30	.91	.52
EVAL	3.50	.75	19	2.35-5.00	.31	-.79	.95	.48

*Scale Names:
RES1, RES2, RES3= Restrained Eating at Times 1, 2, and 3
NPC1, NPC2, NPC3= Non-Physiologically-Cued Eating at Times 1, 2, and 3
SE1, SE2, SE3= Self-Esteem at Times 1, 2, and 3
BI1, BI2, BI3= Body Image at Times 1, 2, and 3
MC1= Manipulation Check for LEARN
MC2= Manipulation Check for E A T
EVAL= Satisfaction with Treatment

High scores on Self-Esteem and Body Image scales represent low self-esteem and poor body image.

Descriptive statistics were based on the full sample; reliabilities and inter-item correlations were based on only those subjects who reported data for all three times.

Table 3

Scale Intercorrelations

Time 1

	RES1	NPC1	BI1	SE1	EVAL	MC1	MC2
RES1	1.00	-.20	-.08	-.05	.21	.08	.02
NPC1	-.20	1.00	-.01	.28*	-.05	-.29	.00
BI1	-.08	-.01	1.00	.23	-.01	-.01	.22
SE1	-.05	.28*	.23	1.00	.06	-.08	.20
EVAL	.21	-.05	-.01	.06	1.00	-.00	-.23
MC1	.08	-.29	-.01	-.08	-.00	1.00	-.63**
MC2	.02	.00	.22	.20	-.23	-.63**	1.00

Time 2

	RES2	NPC2	BI2	SE2	EVAL	MC1	MC2
RES2	1.00	-.08	-.09	-.00	.03	-.34*	.27
NPC2	-.08	1.00	.53**	.31	-.19	-.19	.18
BI2	-.09	.53**	1.00	.52**	.04	.03	.04
SE2	.00	.31	.52**	1.00	.02	.07	.02
EVAL	.03	-.19	.04	.02	1.00	-.00	-.23
MC1	-.34*	-.19	.03	.07	-.00	1.00	-.63**
MC2	.27	.18	.04	.02	-.23	-.63**	1.00

Time 3

	RES3	NPC3	BI3	SE3	EVAL	MC1	MC2
RES3	1.00	-.02	-.10	-.00	.09	-.17	-.06
NPC3	-.02	1.00	.32	.41*	-.22	-.17	.02
BI3	-.10	.32	1.00	.29	-.07	-.06	.04
SE3	-.00	.41*	.29	1.00	-.04	.31	-.18
EVAL	.09	-.23	-.07	-.04	1.00	-.00	-.23
MC1	-.17	-.17	-.06	.31	-.00	1.00	-.63**
MC2	-.06	.02	.04	-.18	-.23	-.63**	1.00

* p<.05
** p<.01 (2-tailed)

Table 4

Pre-Treatment Means and F-Ratios

Variable	Group 1 LEARN	Group 2 E A T	F Ratio
Age	42.00 (13.47)	36.60 (13.15)	2.02
Weight (in pounds)	198.81 (39.04)	196.58 (34.67)	.04
Percent Overweight	26.2% (11.4)	23.9% (13.2)	.42
Height	65.19" (2.70)	66.09" (3.24)	1.12
Education (in years)	14.92 (1.69)	15.13 (1.75)	.18
RES1	2.19 (.45)	2.17 (.53)	.02
NPC1	3.72 (.78)	3.54 (1.07)	.45
SE1	2.07 (.65)	1.88 (.51)	.27
BI1	2.57 (.49)	2.52 (.57)	.74

*p<.05,
n=49
Standard Deviations in parentheses ( ).
No covariates were used in these analyses.

Table 5

Chi-Square Tests Comparing Subjects by Treatment Condition

Variable	Group 1 LEARN	Group 2 E A T
Gender (X^2=.12, df=1, p=.73)		
Male	3 (13%)	4 (16%)
Female	21 (87%)	21 (84%)
Marital Status (X^2=5.33, df=4, p=.25)		
Never Married	4 (17%)	10 (40%)
Married	14 (58%)	10 (40%)
Divorced/Separated	5 (21%)	4 (16%)
Widowed	1 (4%)	0 (0%)
Other	0 (0%)	1 (4%)
Ethnicity (X^2=.98, df=1, p=.32)		
Caucasion	24 (100%)	24 (96%)
Asian	0 (0%)	1 (0%)
Employment (X^2=1.39, df=2, p=.50)		
Part-Time	4 (17%)	7 (28%)
Full-Time	19 (79%)	16 (64%)
Not Working	1 (4%)	2 (8%)
Onset of Problem (X^2=1.01, df=1, p=.32)		
Before Age 15	10 (42%)	14 (56%)
After Age 15	14 (58%)	11 (44%)
Previous Attempts (X^2=1.71, df=3, p=.63)		
A Few (1-5)	9 (38%)	12 (48%)
Several (6-10)	4 (17%)	6 (24%)
Numerous (11-20)	6 (25%)	4 (16%)
Over 20	5 (21%)	3 (12%)
Reasons for Participation (X^2=7.50, df=3, p=.06)		
Concern for Health	6 (25%)	7 (28%)
Appearance	5 (21%)	12 (48%)
Social Pressure	0 (0%)	1 (4%)
Self-Esteem	13 (54%)	5 (20%)
Subjects per Group	24	25

Table 6

Cell Means of Outcome Measures at All Three Times

Variable	Group 1 - LEARN T1	T2	T3	Group 2 - E A T T1	T2	T3
Weight	214.46	203.84	207.50	189.57	184.91	185.84
% Overweight	31.00	27.50	28.40	21.00	19.10	19.70
Rel. Wt. Loss	---	.16	.08	---	.13	.06
RES	2.15	2.87	2.64	2.21	2.44	2.49
NPC	3.61	2.90	2.92	3.43	2.69	2.82
BI	2.50	2.17	2.38	2.49	2.25	2.39
SE	2.02	1.53	1.43	1.95	1.73	1.79

Table 7

Repeated-Measures ANOVAs for Outcome Variables at All 3 Times

Restrained Eating Source	df	MS	F
Within Cells	30	.83	
Group	1	.70	.84
Within Cells	60	.11	
Time	2	2.00	18.00***
Group by Time	2	.46	4.16*

* p<.05, ***p<.001
n=32

Table 7 (continued)

Repeated-Measures ANOVAs for Outcome Variables at All 3 Times

Non-Physiologically-Cued Eating

Source	df	MS	F
Within Cells	30	2.18	
Group	1	.64	.29
Within Cells	60	.28	
Time	2	5.01	18.16***
Group by Time	2	.03	.10

***p<.001
n=32

Body Image

Source	df	MS	F
Within Cells	32	.93	
Group	1	.02	.02
Within Cells	64	.10	
Time	2	.70	6.70**
Group by Time	2	.01	.14

**p<.01
n=34

Self-Esteem

Source	df	MS	F
Within Cells	32	.64	
Group	1	.67	1.05
Within Cells	64	.14	
Time	2	1.46	10.71***
Group by Time	2	.38	2.81

***p<.001
n=34

Table 8

Repeated-Measures ANACOVAs for Weight at All 3 Times

Body Weight Source	df	MS	F
Within Cells	28	75.77	
Regression	1	108696.57	1434.48***
Group	1	70.10	.93
Within Cells	58	34.05	
Time	2	472.43	13.88***
Group by Time	2	68.41	2.01

***p<.001
n=31

Percent Overweight Source	df	MS	F
Within Cells	28	.01	
Regression	1	.97	93.65***
Group	1	.01	.76
Within Cells	58	.00	
Time	2	.01	11.63***
Group by Time	2	.00	1.03

* p<.05, ***p<.001
n=31

Table 9

Means and F-Ratios of Program Satisfaction and Relative Weight Loss

Variable	Group 1 LEARN	Group 2 E A T	F Ratio
Satisfaction	3.50	3.44	.06
RWL (Time 2)	.16	.08	1.30
RWL (Time 3)	.13	.06	.62

*p<.05, **p<.01
n=34 (Satisfaction and RWL at Time 3)
n=35 (RWL at Time 2)

Table 10

Repeated-Measures ANACOVA for Weight by Group (Time 1 to Time 2)

Source	df	MS	F
Within Cells	32	30.61	
Regression	1	83195.94	2718.09***
Group	1	74.19	2.42
Within Cells	33	34.00	
Time	1	885.64	26.05***
Group by Time	2	153.15	4.50*

*p>.05, ***p<.001
n=35

Table 11

Means and F-Ratios of Manipulation Check Scales

Variable	Group 1 LEARN	Group 2 E A T	F Ratio
MC1	1.47	3.39	141.55***
MC2	2.07	1.21	34.13***

***p<.001
n=34

Table 12

Significant Chi-Square Tests for Interview Data

Variable	Group 1 LEARN	Group 2 E A T
Why Subjects Lost Weight:		
Commitment (X^2=7.98, df=1, p<.005)		
Mentioned	5 (36%)	0 (0%)
Not Mentioned	9 (64%)	19 (100%)
Meetings (X^2=8.78, df=1, p<.005)		
Mentioned	7 (50%)	1 (5%)
Not Mentioned	7 (50%)	18 (95%)
Tools that Worked:		
Hunger Awareness (X^2=12.16, df=1, p<.001)		
Mentioned	0 (0%)	11 (58%)
Not Mentioned	14 (100%)	8 (42%)
Food Diary (X^2=4.48, df=1, p=.03)		
Mentioned	3 (21%)	0 (0%)
Not Mentioned	11 (79%)	19 (100%)
Count Calories (X^2=6.61, df=1, p=.01)		
Mentioned	4 (29%)	0 (0%)
Not Mentioned	9 (71%)	19 (100%)
Why They Didn't Lose Weight:		
Low Motivation (X^2=4.48, df=1, p=.03)		
Mentioned	3 (21%)	0 (0%)
Not Mentioned	11 (79%)	19 (100%)
Subjects per Group	14	19

Appendix K

Literature Review

Theories and Treatment of Obesity

Theories of Obesity

In order to develop an effective weight loss treatment, one must take into account the etiology of obesity. A natural biological mechanism for the regulation of body weight and the control of food intake has been corroborated by animal studies (Hoebel & Teitetbaum, 1966) and by studies of humans (Keys, Brozek, Henschel, Mickelson, & Taylor, 1950; Stunkard, 1983). These studies indicate that initially nonobese individuals naturally regulate their body weight after having been starved or overfed.

To account for obesity, Nisbett (1972) has suggested that overweight individuals also regulate their body weight, but, for some reason (genetic predisposition or early experience), the "set-point" about which their weight is regulated is higher than what is accepted by society's standards (statistical normality). Nisbett notes that "overweight individuals behave as if they were always--and inflexibly--hungry" (1972, p. 440). As Schachter (1971) has also found, obese people eat more per meal, they eat more rapidly, and they are more responsive to taste and less responsive to postingestional feeding cues. Nisbett argues that obese individuals may be perpetually physiologically hungry because they exist at a weight level below their "biologically dictated set-points" (p. 441). He proposes that the central nervous system may not defend the most aesthetic and healthful "ideal" weight in all individuals; some people may be

biologically programmed to be obese, or at least larger than society's norm.

Others, however, argue that overweight individuals do not regulate their body weight according to biological mechanisms, as is proposed by the set-point theory. Mavis (1987) dismisses this possibility in that "... an inability to regulate body weight would make mankind unique within the animal kingdom" (pp. 5-6). However, some research has found that laboratory rats will overeat and gain weight when offered a "palatable" diet (consisting of sugars and fats) (Mandenoff, Lenoir, & Apfelbaum, 1982; Rolls, Rowe, & Turner, 1980; Rolls, Van Duijvenvoorde, & Rowe, 1983). Humans have also been found to eat more when presented with a variety of palatable foods in a laboratory setting (Rolls, Rolls, & Rowe, 1982; Rolls, Rowe, Rolls, Kingston, Megson, & Gunary, 1981). Humans may in fact be more likely to overeat and become obese than (non-domesticated or laboratory) animals due to emotional, psychological, and social influences that are not present in animals. (It is possible that laboratory rats that overeat palatable food may be responding to the novely of the food, rather than primarily to the taste. Research has not been done on rats that have been given a palatable diet from birth or even in utero.)

Schachter (1971) argues that, instead of being "always hungry" as Nisbett (1972) suggests, obese people ignore internal cues of hunger and fullness and regulate their eating on the basis of external (environmental) cues. Exclusive

dependence on such external cues can promote long-term weight gain and obesity. Rodin (1980, 1981) agrees that external and cognitive factors, such as the sight and smell of food, the eating behavior of others, perceived caloric value of a preload, and the degree of self awareness while eating, strongly influence eating behavior in humans. In addition, individuals may binge or overeat in response to negative mood states such as anxiety, depression, or hostility (Brownell, Marlatt, Lichtenstein, & Wilson, 1986; Bruch, 1961; Lingswiler, Crowther, & Stephens, 1987), while others may ignore hunger and cognitively restrain their eating behavior to facilitate weight loss. Animals are not taught, as humans are, to eat three meals a day, to "clean their plate," to diet, or to eat to relieve stress or other negative emotions.

Herman and Polivy (1983) propose a "boundary model" for the regulation of eating behavior which integrates the physiological with the more uniquely human influences. In (normal) animals (and normal-eating humans), eating is a biological activity. Organisms start eating when they are hungry; they stop when they are full; and these basic events are controlled by signals emanating from either the brain or the periphery. However, in humans, eating may be controlled by a wide variety of influences, many of which serve no evident biological purpose. These factors include social influences (e.g., eating more when others are eating prodigiously), appetitive factors (e.g., palatability of

food), or cognitive considerations (e.g., restricting intake to lose weight or postponing consumption so as not to "spoil" dinner).

The boundary model involves two separate boundaries, hunger and satiety, implying that these are separate processes rather than opposite sides of the same coin. The area between the two boundaries is what Herman and Polivy (1983) call the "zone of biological indifference" (p. 919), in which aversive biological pressures to eat or stop eating are absent. This zone might also be considered "comfort"--when one feels neither hungry nor full. The amount of food consumed by an individual located in the zone of biological indifference is therefore not constrained or motivated by hunger or satiety. However, consumption within this zone is not simply random; it is influenced by nonphysiological (e.g., social, cognitive, and psychological) factors.

Herman and Polivy (1983) also propose individual differences in "boundary placement." They found that dieters seem to have a lower hunger boundary but a higher satiety boundary than non-dieters. Dieters also seem to have a "diet boundary," which is entirely cognitive and represents the dieter's self-imposed quota for consumption on a given occasion. The satiety boundary for dieters often seems displaced to the right, allowing for occasional prodigious consumption (overeating). I would argue, instead, that dieters simply <u>ignore</u> signals of satiety to a degree, when they have eaten beyond their diet boundary, which has been

called "disinhibition" of restraint. Bingers (and I would add, overeaters) transgress the satiety boundary completely and eat to "capacity" (physical discomfort). Since dieters and overeaters eat in response to something other than the body's demands, they are bound to become less sensitive to the physiological pressures that might otherwise help regulate consumption, in agreement with Schachter (1971). Herman and Polivy (1983) suggest that if the dieter gives up dieting, normal hunger and satiety pressures would reassert themselves. Similarly, I suggest that if the overeater (or anyone) can stop responding to nonphysiological cues to eat, normal hunger and satiety signals would become salient, and the body would regulate its weight naturally and appropriately, as in most animals.

Treatment of Obesity

Behavior modification. Behavioral treatment of obesity concentrates on the teaching of self-management skills to control non-physiological cues to eating (e.g., environmental and emotional cues) and minimize their influence on eating behavior (Jeffery, 1987). At the center of the behavioral model is the evaluation of the antecedents and consequences of behavior. Treatment is geared toward modifying the situations that promote eating behavior, and the consequences or events that follow eating. Proponents of the behavioral approach to weight loss claim that the better behavioral programs produce weight losses in the range of 25 to 30 pounds, and that such losses have been maintained at one- and two-year follow-up

(Brownell & Kramer, 1989).

It is generally acknowledged that behavioral programs are effective in promoting short-term clinically significant weight losses. However, the most important criticism of current behavioral treatment methods is poor maintenance of weight loss over time. In his review, Jeffery (1987) reports that among follow-ups beyond one year, recidivism approximating 75% to 100% regain of initial weight losses is common, and as a rule, the more careful the methodology, the worse the results. External control of one's eating behavior, as suggested in behavioral treatments, appears difficult (if not impossible) to maintain over long periods of time without relapse or the eventual relinquishing of control.

Laboratory research on eating behavior has found that restrained eaters (dieters) eat more ad libitum icecream following a milkshake preload than they do after no preload (e.g., Herman & Mack, 1975). This "counterregulation" is not observed in non-restrained subjects; instead, they eat less following a preload, as would be expected in individuals who respond to feelings of hunger and satiety . This "preload paradigm," which has been replicated dozens of times since the original study, has two interesting implications: First, it suggests that dieters or restrained eaters do <u>not</u> eat according to interoceptive cues of hunger or satiety. Second, this paradigm illustrates the occurance of counterregulation and disinhibition of restraint, which are common pitfalls for the dieter.

Recent research on restraint has begun to identify some negative consequences of restrained eating. Heatherton, Polivy, and Herman (1991) found that two factors of Herman and Polivy's Restraint Scale were significant predictors of weight variability, suggesting that exaggerated weight fluctuations may be the consequence of a cycle of dieting and overeating. These results reinforce the belief that restrained eating cannot be maintained indefinitely, but will be "counterregulated" by periods of overeating (or at least, unrestrained eating). This cycle of eating behavior will likely minifest itself physically in the form of weight fluctuations, which are stressful on the body.

Another study by Heatherton, Polivy, and Herman (1989) found that restrained individuals were characterized by unresponsiveness to internal hunger state and an overreliance on external cognitive cues. In other studies, dieting and restrained eating style have been implicated as a risk factor in the development of clinical eating disorders like Anorexia Nervosa and Bulimia (see Smead, 1991). Such research on the effects of restrained eating suggests that behavioral weight loss programs which encourage and teach restraint (in the form of calorie counting, dieting, restricting carbohydrates, fat, and cholesterol, following a "balanced diet," "controlling" one's eating, etc.) (Brownell, 1988) may be counterproductive and even harmful.

Non-restrictive approaches. In light of the high relapse rate after behavioral treatment and the possible dangers of

restrained eating, it seems prudent to consider other weight loss methods. An alternate approach to treatment would be to focus on increasing an individual's responsiveness to internal cues of hunger and satiety, rather than trying to control and minimize external influences on eating. Such an approach has been outlined in several self-help books (Breithaupt & Agnew, 1983; Groger, 1983; Hirschmann & Munter, 1988; Orbach, 1978; Roth, 1984; Schwartz, 1990; Wardell, 1985) and presented in the form of seminars led by paraprofessionals. These non-restrictive program teach overweight or dieting individuals how to identify interoceptive signals relating to hunger and fullness. Participants are told that if they respond to these internal signals, by eating when hungry and stopping when comfortable, they will lose weight until their body reaches its "natural" weight. These non-restrictive programs assume that once hunger and fullness signals become easily identifiable, the participants will choose and be able to respond to them instead of to external or emotional cues to eating and thereby lose weight and maintain this weight loss by continuing to eat according to the body's needs.

Unfortunately, behavioral programs have monopolized the research on weight loss treatment. Other than this current study, there has been no academic research done on the above-mentioned non-restrictive programs. The most similar study is one by Ciliska (1990) examining the effects of Beyond Dieting, a "non-dieting" approach, presented in an "educational" and an "experiential" format as compared to a control group.

Subjects in the experiential format of the program showed the greatest improvement at post-treatment and 6-month follow-up in self-esteem, body image, restraint, depression, and other variables. However, weight and percent average weight did not change in a statistically significant way for any of the groups.

Ciliska's study (1990) has been lauded as being "the first real test of a new approach to dieting--helping people to stop." However, I would argue that her program, Beyond Dieting, is not a "non-dieting" approach! In Week 4, participants are told to return to "normal" eating, which, according to Ciliska, entails giving up dieting and

> Eat(ing) three meals per day, initially, to retrain the recognition of hunger and satiety. The regular pattern seems to induce conditioning of the physiological signals of hunger to occur at mealtimes. If meals are more than three hours apart, a fruit or juice snack between meals is helpful to keep from arriving at the next meal famished. . .(p. 61).

Interestingly, these instructions contradict the non-restrictive approach as described earlier: Participants are given external information about when and what to eat. They are told when to eat (three times a day and a snack between meals) instead of eating when their body wants to eat (when it's hungry). Second, subjects are told what to eat--fruit or juice as a snack--instead of eating what their body may want at any given time. Third, participants are taught to avoid

being "too" hungry and to eat to prevent hunger. Finally, there are no specific instructions or techniques on how to recognize hunger or satiety other than "Tune into your body and allow yourself to recognize hunger" (p.61). The best non-restrictive programs explicitly deal with what is hunger, how to recognize it, fear of hunger, resistance, etc. Beyond Dieting does not adequately teach hunger awareness and instead teaches social convention (eating three meals a day and between-meal snacks), which may not be appropriate for an individual's body at a given time. I assert that although Ciliska's approach is less restrictive than traditional behavioral or dieting methods, it is not a truly non-restrictive or "non-dieting" program. Therefore, her study cannot be considered an evaluation of the non-restrictive approach.

Future directions. Clearly, more research is needed to study the effects of a truly non-restrictive weight loss treatment. As Ciliska (1990) suggests, it would be especially useful to compare a diet versus non-diet approach. Perhaps the problem of high relapse and poor maintenance of weight losses after treatment is indicative of an overreliance on one treatment philosophy, namely, the behavioral approach, which may not be the best (or even a good) way to treat obesity. Further research on the non-restrictive approach (or others) may find that obesity need not be a chronic problem, and that permanent weight loss and changes in behavior are possible with the appropriate treatment.

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