INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

Towards a Theory of Client-Treatment Matching for Obesity:

A Study of Participants in

Overeaters Anonymous and Jenny Craig

A Dissertation

Presented to the Faculty of the Graduate School

of

Yale University

in Candidacy for the Degree of

Doctor of Philosophy

by

Marlene Beth Schwartz

Dissertation Director: Kelly D. Brownell, Ph.D.

May 1996

ABSTRACT

TOWARDS A THEORY OF CLIENT-TREATMENT MATCHING FOR OBESITY:
A STUDY OF PARTICIPANTS IN
OVEREATERS ANONYMOUS AND JENNY CRAIG

Marlene Beth Schwartz

Yale University

1996

In the field of obesity treatment outcome research, there has been a long-standing search for client and treatment factors that are associated with increased weight loss and sustained maintenance; however, few consistent findings have emerged. The wide array of obesity treatments available, in combination with the heterogeneity of the obese population, suggests that a client-treatment matching process may improve success rates. The present study assessed the treatment components of two community programs of quite different philosophies, Overeaters Anonymous (OA) and Jenny Craig (JC). Data from outside raters supported the hypotheses that: (a) the programs endorse different philosophies and (b) OA primarily addresses binge eating and provides social support, while JC primarily promotes an increase in self-efficacy. Individuals who had participated in OA (n=97) or JC (n=127) completed retrospective, self-report questionnaires which measured three categories of variables: (a) demographic and weight history variables, (b) subject attributions of "nonspecific" factors, defined as the degree to which subjects changed their beliefs to those of the program and adhered to the program demands, and (c) subject attributions of "specific" factors, defined as improvements in binge eating, social support, and self-efficacy. The two samples did not differ on basic demographic and weight variables. Both groups reported comparable weight loss and significant improvements in the domains of binge eating, social support and self-efficacy during the course of treatment. When

compared to JC subjects, however, those in OA reported a more severe history of weight cycling, greater struggles with binge eating before treatment, and attributed a greater increase in social support to their participation in the program. Multiple regression analyses were used to measure how well subject attributions of the specific and nonspecific treatment factors predicted outcome. For JC subjects, 30% of the variance in weight loss, 26% of the variance in exercise, and 15% of the variance in healthy eating patterns were accounted for by these variables. In contrast, for the OA group these variables predicted 16% of the variance in weight loss, 2% of the variance in exercise, and 24% of the variance in healthy eating patterns. The findings are interpreted as identifying client and treatment characteristics that could be tested in controlled trials on the matching issue.

Acknowledgments

First, I would like to thank my advisor, Kelly Brownell, for his support over the last four years. I have appreciated his enthusiasm and never-ending encouragement as I have pursued my research goals. He has served as a model for me in his ability to communicate his ideas clearly and understandably, and he has also shown me what it means to create a nurturing academic environment for students. I especially want to thank him for the steady stream of "FYI" articles I have found in my mailbox over the years.

I am very grateful to Alan Kazdin for participating in my training during the last five years, and for teaching outstanding classes in research design in clinical psychology. I feel fortunate to have been able to take classes from the person who wrote the book on clinical research design. In particular, I want to thank him for the time he took to meet with me and help me with my dissertation design.

I am indebted to Steve Reznick for his helpful insights as I worked to design my dissertation, and in particular, his expert advise on statistical matters. I have appreciated his up-to-the-minute information on SAS manuals and his amazing ability to recite Proc statements off the top of his head.

I would like to express my thanks to Robert Kerns for his willingness to participate on my committee. I have appreciated his insightful comments during our meetings.

I would like to thank Denise Wilfley for many things. First, for giving me the opportunity to participate in her research at the YCEWD, which was an invaluable clinical experience and will aid me in my future work doing treatment research. Second, for being a wonderful role model and demonstrating how to be a researcher, clinician, teacher, and supervisor and still have time to go running. Finally, for being a constant source of support and encouragement throughout my time at Yale.

I am indebted to Karin Ludewig, George Collins and Maryanne Koe for getting up early on Saturday mornings to trek to meetings all over the state while listening to Click and Clack on NPR. I am also grateful to the Jenny Craig Corporation and Overeaters Anonymous International for their cooperation with this research endeavor.

Finally, I cannot begin to list the ways in which my husband, Jeffrey Babbin, has helped me through this entire process--from his magnificent proofreading skills, attention to detail, knowledge of our computer software, and willingness to stay up with me until the wee hours of the morning. He helped every step of the way, and I could never have done it without him.

Table of Contents

List of Tables

List of Figures

INTRODUCTION

Recent theoretical papers on the treatment of obesity have proposed that treatment efficiency and outcome would improve if clients were appropriately matched to different weight loss programs (Brownell & Wadden, 1991; 1992; Clark, Ruggiero et al., 1991; Guy-Grand, 1987). The client-treatment matching hypothesis posits that for each valid approach to weight loss, there are certain client characteristics that will predict success with that program.

A large-scale, randomized treatment trial, similar to Project MATCH in the alcoholism treatment field (see Project MATCH Research Group, 1993, for a description), will eventually be appropriate in the obesity treatment field. To date, however, there is little agreement in the literature and among obesity researchers concerning what the specific, predictive client characteristics are for many of the treatments available (Schwartz & Brownell, 1995). An important question, therefore, is whether client characteristics can be used to distinguish those who succeed in one program compared to another. The primary aim of the present study was to begin to address this question by providing data about the characteristics and experiences of two groups of individuals seeking weight loss: those who have chosen a commercial program (Jenny Craig) and those who have chosen a 12-step self-help group (Overeaters Anonymous). These data were collected with the objective of generating hypotheses to be tested in future research.

Identifying client characteristics as predictors of outcome

The treatment of obesity through behavior modification, cognitive-behavioral strategies, and very low calorie diets has an extensive literature spanning the last thirty years (see review by Wilson, 1994). Within this literature, there has been a consistent search for client characteristics that predict attrition, weight loss, and weight maintenance. The variables that have received the most attention include demographic variables (e.g., sex, occupation), eating- and weight-related variables (e.g., initial body mass index (BMI), age of onset of obesity, weight loss history, pre-therapy eating patterns, binge eating), and

psychological variables (e.g., locus of control, self-esteem, self-efficacy, social support, self-evaluation, self-reinforcement, obsessive tendencies, depression, anxiety, perceived well-being, and personality based on MMPI scores).

Reviews of this literature have concluded that studies of psychological characteristics as predictors of weight loss have yielded inconsistent and contradictory findings (Wadden & Letizia, 1992; Wilson, 1985; Wilson & Brownell, 1980). Several explanations for the inconsistencies across the literature have been proposed. One suggestion is that investigators run numerous correlations and do not control for the experiment-wise error rate, leading to chance findings unlikely to be replicated across studies (Wadden & Letizia, 1992). Another possibility is that there is a limited range of weight loss across subjects at the end of a 10- or 20-week treatment, so the chances of finding correlates with outcome are minimized due to limited variance in the dependent variable. A third possibility is that treatment characteristics are interacting with the client characteristics, and this interaction is responsible for the inconsistent relationship between psychological profile and outcome across studies. Even though many of the treatments that have been reviewed are considered behavioral or cognitive-behavioral therapies, there has been considerable variability over the years as treatments have become longer, new concepts have emerged and been incorporated (e.g., Wilson and Marlatt's relapse prevention strategies), and maintenance strategies have been incorporated. Therefore, it may not be appropriate to compare findings across studies where there are considerable differences between the treatments that were delivered.

In reviewing this literature, it is noteworthy that the studies that have found psychological client characteristics that significantly predicted success in a particular treatment examined variables that were theoretically linked to the procedure involved in that program. For example, in examining the role of locus of control, efficacy attribution, and weight loss, Chambliss and Murray (1979) classified 68 women as Internal or External on Rotter's Locus of Control Scale and then gave them placebo "weight loss" pills. After two

weeks, all subjects had lost a small amount of weight (average = 1.8 lbs.), and the subjects in the Self-Efficacy condition were told the pills were placebos and instructed to attribute their weight loss to their own efforts rather than the "medication." In contrast, the subjects in the Drug Efficacy condition were not debriefed and were encouraged to continue attributing their success to the pills. The Control subjects were not given any additional information about their attributions for their weight loss. All subjects were weighed two weeks later and the primary analysis showed that Internals in the Self-Efficacy condition lost significantly more weight than any of the other conditions. If Internals are predisposed to believe that they are responsible for their own weight loss, being told that the pill was a placebo and attributing their initial weight loss to their own efforts should promote continued success due to the congruence between their beliefs and the treatment. For the Externals, finding out that the pill was a placebo was followed by a net gain of weight, perhaps due to their inability to reconcile the facts with their desire to attribute change externally. This study lends support to the position that individuals' beliefs about their ability to make changes and their attributions for success are potential matching variables when the treatments differ in their promotion of self-efficacy.

In another example of this type of research, Carroll, Yates, and Gray (1980) examined the role of a trait they call "self-evaluation" in success in behavioral treatment. In this study, 72 subjects were assigned to either behavioral treatment, non-behavioral treatment, or a delayed treatment control group. The behavioral treatment taught self-monitoring, self-reinforcement of positive changes, and stimulus control for eating. The non-behavioral treatment consisted of social reinforcement and punishment at group weigh-ins and discussions about how it feels to be obese. Subjects were assessed at pre-treatment for the variable "self-evaluation," which was operationalized as how well they rated their accuracy in their own performance at a time interval estimation test. Self-evaluation is conceptualized by these authors as a trait that is related to how well clients will be able to reinforce themselves for positive changes. The findings from this study were that

individuals who were high on self-evaluation lost significantly more weight in the behavioral treatment than in the non-behavioral treatment, while this pattern was reversed for the individuals who were low on self-evaluation. These findings lend support for the hypothesis that self-evaluation is related to one's ability to use behavioral strategies and that individuals can be matched to treatments based on this variable.

The significant findings from both of these studies strengthen the position that research designed to examine how client characteristics can be matched to a treatment approach is more meaningful when the client variable of interest is theoretically linked to the philosophy of the treatments under consideration. Historically, most studies have looked at only one treatment and a lengthy list of client characteristics, thus minimizing the chances of yielding useful results.

Key variables for the present study

In the present study, three key variables were selected after a careful review of the weight loss literature and the two treatments of interest. The three variables were: (a) binge eating, (b) social support, and (c) self-efficacy. These variables were chosen because they appeared to reflect important components of Overeaters Anonymous and Jenny Craig, as well as characteristics of the clients enrolled in the programs. All three of these constructs have been studied within the weight loss and obesity literature, and there is empirical evidence that each variable measured independently as a client characteristic may be related to outcome in a standard cognitive-behavioral weight loss program. The following sections review the most relevant research pertaining to each of these variables.

Binge eating

Binge eating disorder (BED) is a newly defined eating disorder that appears as a research category in the DSM-IV (American Psychiatric Association, 1994). Individuals with BED experience a sense of loss of control during binge episodes, which are defined as rapid consumption of a large amount of food during a discrete period of time. To meet criteria for BED, one must have on average at least two binge episodes per week for a six-

month period (American Psychiatric Association, 1994). Individuals with BED differ from bulimics in that they do not regularly engage in compensatory behaviors, such as vomiting, laxative abuse, fasting, or excessive exercise.

Obese binge eaters appear to be a distinct subset of obese individuals who differ from obese non-bingers in terms of their cognitions, levels of psychopathology, frequency of weight cycling, and treatment outcomes (Marcus, 1993; Yanovski, 1993). Specifically, some studies have found that when compared to non-bingeing, obese individuals participating in a behavioral weight loss program, binge eaters lose less weight (Keefe et al., 1984), are more likely to drop out, and are more likely to regain the weight by a 6-month follow-up (Marcus, Wing, & Hopkins, 1988). Other studies, however, have found that there were no differences between obese binge eaters and non-binge eaters in weight loss (e.g., Marcus, 1990a; Wadden et al., 1992). Yanovski (1993) examines this issue in her review paper and concludes that while differences may not appear in weight loss, attrition and regain rates appear to be more severe among those with BED. She recommends that because "a significant proportion of obese individuals entering weight loss programs are likely to meet criteria for BED, those conducting clinical research should be aware of the distinct subgroup and determine the contribution of BED to outcome measures." To date, the role of BED in weight loss remains an empirical question.

There is currently a growing literature of studies examining cognitive-behavioral therapy (CBT) designed to focus on binge eating rather than weight loss with the BED population (e.g., Smith, Marcus, & Kaye, 1992; Telch et al., 1990; Wilfley et al., 1993). In addition to the CBT approach, interpersonal therapy (IPT) for groups has also shown promising results for treating the BED population (Wilfley et al, 1993). These treatments have grown out of the therapy literature for bulimia, rather than the obesity and weight loss field, and the primary dependent outcome variable is a decrease in binge eating, rather than weight loss. In examining the available evidence, it appears that reducing binge eating will not necessarily result in significant weight loss. Nevertheless, Wilson (1994) outlines

several benefits that can be expected from a reduction in binge eating: (a) a decrease in the associated psychopathology, (b) an increase in the individual's sense of personal control, (c) a decrease in the likelihood of future weight gain, and (d) an increase in the likelihood of successfully engaging in conventional weight loss treatment.

Binge eating is an important variable to consider in the present study for several reasons. First, there are data to indicate that there are individuals with BED in both treatments of interest: the results of a large, multisite field trial indicate that the prevalence rate of BED is 71% in Overeaters Anonymous (Spitzer et al., 1992), and 16% in Jenny Craig (Spitzer et al., 1993). Second, the role of binge eating symptomotology in the process of choosing and engaging in a treatment is not yet understood, and the large percentage of binge eaters expected to be in OA provides the opportunity to examine how individuals view their binge eating over time. Third, because OA bills itself as a treatment for "compulsive overeaters" and Jenny Craig advertises itself as a "lifestyle management program," the degree to which each program addresses binge eating appeared to be a potentially salient difference that would be a relevant matching variable for clients. In sum, the present study builds upon BED literature by comparing the degree to which binge eating is addressed in these two programs and documenting the retrospective self-reported changes in binge eating by clients in each of these programs.

Social support

The relationship between social support and success in behavioral weight loss programs has generally been studied in one of three ways. The first method is to use a self-report questionnaire to assess the patient's level of perceived social support (often ratings of how supportive the patient's spouse and friends are of weight loss efforts) and then see if there is a correlation between level of perceived social support and weight loss. Significant correlations between self-reported perceived social support and weight loss have been found using this method (Prochaska, Norcross, Fowler, Rollick, & Abrams, 1992; Streja, Boyko, & Rabkin, 1982). Finnegan and Suler (1985) also found that

perceived social support was significantly correlated with weight loss; in addition, they directly asked the spouse how supportive the spouse had been, which also correlated significantly with the patient's weight loss.

The second approach for studying the relationship between social support and weight loss has been to involve spouses directly in treatment and compare this couples training to regular treatment. The hypothesis is that by directly teaching the spouse strategies for supporting the patient's behavior change, the spouse will be better able to help the patient employ and maintain his/her new eating and exercise behaviors. The findings from this line of research on the effect of couples treatment on weight loss have been mixed, with several studies finding that the couples intervention significantly improved weight loss, and several other studies finding no effect (see Brownell & Wadden, 1986). One explanation for these mixed findings is that these studies varied in exactly how they involved the spouse (Wing et al., 1991). Another explanation is that there may be mediating variables, such as the quality of the marital relationship and the dieter's ability to accept help from others (Brownell & Wadden, 1986).

The third methodology that has been used to study the influence of social support on weight loss has been to assess the effect of providing social support within the context of the treatment on maintenance. Perri and colleagues (1984, 1986, 1987) have provided post-treatment contacts with both therapists and peers in order to facilitate long-term weight loss. Findings indicate that when therapist and peer support are provided, long-term maintenance is significantly improved (Perri, McAdoo, McAllister, Lauer, & Yancey, 1986; Perri, McAdoo, Spevak, & Newlin, 1984). In another study, Perri and colleagues (1987) dismantled the effects of post-treatment therapist contact versus peer support. They found that at the 7-month follow-up, the therapist contact group maintained a greater weight loss than the peer support group or the behavior therapy-only group. At that time, the post-treatment support sessions ended, and by the 18-month follow-up, there were no

differences among the groups. One conclusion that can be drawn from this study is that in order for social support to be helpful, it has to be currently available.

The findings from these three lines of research provided evidence that weight loss and maintenance can be influenced by social support, so long as the support remains available and is qualitatively positive. The present study builds upon the social support literature by providing objective ratings of the amount of social support that is provided by each program, as well as obtaining a multi-faceted assessment of subjects' experience of social support during their time in treatment from their family, their friends, and the individuals they met through the treatment.

Self-efficacy

Self-efficacy is a person's judgment of his or her ability to cope effectively in a situation. Bandura's self-efficacy theory (1977) indicates that a client's cognitive expectations of self-efficacy will determine his or her behavior in treatment. This theory has been applied to the treatment of obesity, and the construct of self-efficacy has been conceptualized and measured in a variety of ways. For instance, self-efficacy has been determined by clients' confidence that they will be able to: (a) employ particular cognitive-behavioral strategies (Bernier & Avard, 1986); (b) resist eating in certain situations (e.g., visiting friends, watching TV) and while experiencing certain emotional states (e.g., happy, sad, angry) (Forster & Jeffery, 1986; Jeffery et al., 1984); (c) control overeating while experiencing negative affect or in socially acceptable circumstances (Glynn & Ruderman, 1986); (d) resist eating while experiencing negative emotions, food availability, social pressure, physical discomfort, and positive activities (Clark et al., 1991); and (e) adhere to a diet in eating situations, perform various dieting behaviors, and reach their dieting goals (Stotland & Zuroff, 1991). While there are similarities in the types of items used across studies, each research team has used their own self-report measure, and only those by Glynn and Ruderman (1986) and Clark et al. (1991) are published and have reliability and validity data available.

The general findings that have emerged from these studies are: (a) pre-treatment self-efficacy scores can predict weight loss (Bernier & Avard, 1986; Forster & Jeffery, 1986; Jeffery et al., 1984; Stotland & Zuroff, 1991--goal based scale only); (b) self-efficacy scores will increase between pre- and post-treatment (Clark et al., 1991; Forster & Jeffery, 1986; Glynn & Ruderman, 1986; Ruggerio et al., 1991); (c) increases in self-efficacy during treatment correlate with weight loss (Glynn & Ruderman, 1986); and (d) maintenance or further weight loss can be predicted by the increase in self-efficacy during treatment (Bernier & Avard, 1986).

Since OA uses the abstinence model and Jenny Craig uses a cognitive-behavioral relapse prevention model, Marlatt and Gordon's (1985) theory concerning the abstinence violation effect can be used to predict the experience of self-efficacy in these two groups. Marlatt and Gordon (1985) suggest that using an abstinence model (as is done in OA) undermines self-efficacy. According to their theory, if individuals consider abstinence their goal and they have a lapse, their sense of self-efficacy decreases, followed by feelings of guilt and shame about the lapse, and they risk giving up entirely (i.e., the abstinence violation effect). In contrast, the relapse-prevention approach teaches that lapses are part of the learning process, and that each time a lapse occurs, new information is gained about high-risk situations. Then, as these high-risk situations are identified and coped with successfully, self-efficacy increases.

The findings from the literature indicate that self-efficacy plays an important role in the process of weight loss, and Marlatt and Gordon's theory suggests that between these two groups, self-efficacy should increase for Jenny Craig clients and decrease for OA members. The present study addressed these issues by assessing the degree to which self-efficacy is promoted in two treatments and comparing retrospective self-reported changes in self-efficacy across two treatment samples.

Treatment components of each program

While the clinically relevant question is, "For whom does this program work?" there is also the theoretically important question, "How does this program work?" As the underlying therapeutic mechanisms of different treatments for obesity are better understood, this information can be used to inform client-treatment matching decisions. In order to address the question of "how," researchers will first need to identify the specific components of each treatment, and then isolate them in a series of controlled trials in order to systematically test the influence of each of the proposed underlying therapeutic mechanisms.

The present study moved toward this goal by assessing a subset of the components of OA and Jenny Craig using outside raters, initially unfamiliar with either treatment, who read the treatments' literature and attended a series of six meetings per program. The measures used were designed to address two questions. First, to what degree does each treatment follow two theoretical approaches to the treatment of obesity: (a) the addiction model and (b) the cognitive-behavior relapse prevention model? Second, to what degree does each treatment address three important domains in the treatment of obesity: (a) binge eating, (b) social support, and (c) self-efficacy?

Subjects' attributions for change

Asking clients directly for their perceptions of how they have changed during their time in each program provides an opportunity to examine subjects' attributions for treatment effects. Previous research on subject attributions for obesity treatment has considered this construct to be a measurement of the subject's beliefs about what (or who) is responsible for the subject's weight loss success or failure. The choices are usually measured as: internal, external, or program factors (Goodrick et al., 1992; Jeffery, French, & Schmidt, 1990; Sonne & Janoff, 1979). In the present study, however, subjects' attributions were defined much more broadly and were placed into a treatment-matching model. This model posits that there are both client and treatment factors that "fit

together" in order to effect change. Subjects' attributions of treatment factors are: (a) the therapeutic elements that clients feel were provided (e.g., an explanation as to why they are obese, directions on how to change their behaviors, social support from others in the program), and (b) the degree to which each treatment element was helpful. The client factors are: (a) the ways in which clients have changed their beliefs (e.g., they now believe that compulsive overeating is a disease, they now believe that they can prevent a binge through planning), and (b) the ways in which clients have changed their behaviors (e.g., exercise and eating). In other words, treatment factors are those things that clients feel were provided to them, and client factors are the ways in which they changed in response to treatment. These two sets of variables were considered to capture a more complete picture of subjects' attributions than previous research in this area.

"Nonspecific" treatment factors

The client-treatment matching framework suggests that when a program works well for a particular individual, it is because specific elements of that program met the individual needs of that client. Another view, however, is that there are general, or "nonspecific," elements of treatment that are responsible for the change, and if that client had gone to another program that provided the same amount of nonspecific care, the client would have done just as well. Nonspecific factors have not been studied in the weight loss field, but this line of research has a long history in the psychotherapy literature (see Kazdin, 1986). In describing the process of psychotherapy, Frank and Frank (1991) describe these nonspecific factors as: the rationale to explain the patient's problems (the myth), and the procedures in which the therapist and patient engage (the ritual). Frank and Frank (1991) outline how these elements of treatment "combat demoralization by strengthening the therapeutic relationship, inspiring expectations of help, providing new learning experiences, arousing the patient emotionally, enhancing a sense of mastery or self-efficacy, and affording opportunities for rehearsal and practice" (p. 44).

This view, therefore, is that any weight loss program that provides a myth and a ritual will promote some change, regardless of what exactly the myth and the ritual are. The myth and the ritual of OA and Jenny Craig appear to be very different; however, it is possible that the best predictor of outcome is not any individual client characteristic, or the specific treatment factors of OA and Jenny Craig, but the degree to which the client believes the myth and practices the ritual. This issue was addressed in the present study by measuring nonspecific treatment factors within the broad assessment of subjects' attributions of how they had changed during treatment. This permitted the measurement of the relationship between these nonspecific factors and outcome within these samples.

Specific treatment factors

Once the relationship between treatment outcome and the nonspecific variables is accounted for, it is theorized that there are additional specific client and treatment factors that can be matched for maximum efficacy. As stated earlier, the specific treatment factors considered to be the potential therapeutic mechanisms in the treatments in the present study were: (a) addressing binge eating, (b) providing social support, and (c) increasing self-efficacy. Table 1 illustrates this overall conceptualization of hypothesized variables for subject attributions of client factors and nonspecific and specific treatment factors in the present study.

All three of the specific factors described are expected to be included in both of the two treatments under study; however, the magnitude to which each is provided may differ. Theoretically, if two treatments emphasize a specific therapeutic ingredient in different amounts, clients would be expected to show improvement in that domain that corresponds to the amount of emphasis present in the treatment. This is a relevant concept in client-treatment matching research because clients could potentially be matched to treatments by both type and amount of intervention. There is often overlap across treatments for certain proposed therapeutic ingredients (e.g., providing social support), although treatments may differ in the amount of that ingredient that is provided. If the treatments provide

Table 1
Hypothesized variables for client-treatment matching

	Client Variables	Treatment Variables
Nonspecific Factor: The Myth	Beliefs about eating and weight (client self-report)	Treatment Philosophy Rating Scale (rating of program literature and meetings by observers)
Nonspecific Factor: The Ritual	Level of Involvement and Treatment Compliance (client self-report)	Key Elements of Treatment (what is provided & how helpful?) (client self-report)
Specific Factors:		
Social Support	Pre-Treatment and Current Social Support (client self-report)	Social Support Rating Subscale (rating of program literature and meetings by observers)
Binge Eating	Pre-Treatment and Current Binge eating (client self-report)	Binge Eating Rating Subscale (rating of program literature and meetings by observers)
Self-efficacy	Pre-Treatment and Current Self-efficacy (client self-report)	Self-efficacy Rating Subscale (rating of program literature and meetings by observers)

meaningfully different levels of therapeutic ingredients, this should be reflected in the changes reported by the clients. This concept informed the hypotheses concerning the relationship between the specific treatment factors of binge eating, social support, and self-efficacy and the client-reported changes in each of these domains.

Defining outcome

In nearly all of the research on weight loss, outcome is measured by a single variable--the number of pounds or kilograms lost. More recently, weight loss has been measured by the change in body mass index (BMI = weight in kg / height in meters^2), which controls for differences in height. Using weight loss as the singular outcome measure of treatment overemphasizes the significance of each pound lost, and underemphasizes important behavioral changes regarding eating and exercise that individuals in treatment have made. In the present study, the following three variables were considered indices of treatment outcome: (a) weight loss (measured by change in BMI), (b) increase in physical activity, and (c) increasing healthy eating patterns. This multi-dimensional measure of outcome provided an opportunity to examine how different components of outcome were related to each other and how the treatment and client variables under study were related to each of these aspects of outcome.

Why study Overeaters Anonymous and Jenny Craig?

In the current study, the clients were not randomly assigned to these treatments; rather, the process of self-selection was considered a research question: Who is attracted to each of these programs? What are the differences between these two groups? OA is a self-help, 12-step community based program, that was founded in 1960 for "compulsive overeaters." Jenny Craig is a commercial, cognitive-behaviorally oriented program that provides a prescriptive diet for clients. These programs were chosen for study for several reasons. First, they are each internationally available, widely used programs. OA reports that in 1987 there were 7,000 groups around the world (Overeaters Anonymous, 1987). Jenny Craig reports to have over 750 centers in the United States (Market Data

Observation, 1993-1994), and has 2 million current and former clients (Marketing and Advertising Trends, 1992).

Despite the popularity of these programs, there is very little systematic research on the process and outcome of treatment using these methods. Controlled treatment outcome studies for OA are non-existent. The only published research includes two surveys that examined the impact of OA on bulimia (Malenbaum, Herzog, Eisenthal, & Wyshak, 1988) and on eating disorders in general (Yager, Landsverk, & Edelstein, 1989). Anecdotal evidence and clinical impressions on who benefits from OA are available (Johnson & Sansone, 1993). Research on Alcoholics Anonymous (AA) could be informative, although that body of research too, lacks controlled treatment trials (see Emrick, Tonigan, Montgomery & Little, 1993, for a meta-analysis of the AA literature).

There are equally few data available about Jenny Craig. It was one of the programs included in the Consumer Reports (Losing Weight, 1993) survey of 95,000 readers, where approximately 60% of the respondents who had tried Jenny Craig (N not reported) reported being satisfied with the program overall. The only published report on Jenny Craig clients is a study of the hypothesis that people are more likely to maintain their weight loss if they reached their goal weight while still on the program (Wolfe, 1992).

As a pair, these two programs differ on many different dimensions, including theoretical rationale, cost, structure, and leadership. Since the client-treatment matching hypothesis is that different clients will benefit from different weight loss programs, it made sense to begin by examining two very different treatments. It is important to emphasize, however, that any explanations for differences found between the two groups will remain hypotheses until a controlled treatment trial is done.

Objectives and hypotheses

In sum, there were five objectives and corresponding hypotheses in the present study. The first aim was to identify the treatment components provided by each of these programs. It was hypothesized that OA primarily presents the addiction model and Jenny

Craig primarily presents the cognitive-behavior relapse prevention model. In addition, it was hypothesized that OA primarily addresses binge eating and provides social support, while Jenny Craig promotes self-efficacy.

Second, OA and Jenny Craig participants were measured on demographic and weight related (e.g., current weight, weight cycling history) variables. The purpose was to provide descriptive data on people who choose to participate in these programs. There were no specific hypotheses concerning how the two groups would differ, with the exception of SES. Since Jenny Craig is more costly than OA, it was hypothesized that Jenny Craig subjects would have higher SES scores than OA subjects.

Third, this study assessed subjects' attributions for change in terms of client and treatment factors. Client factors were defined as the ways in which clients have changed in response to the treatment. Treatment factors were defined as what the client feels was provided by the treatment, and how helpful it was. The client factors were divided into: (a) nonspecific factors, i.e., belief in the treatment's theoretical rationale, and compliance with treatment demands, and (b) specific factors, i.e., reported changes in binge eating, levels of self-efficacy, and experience of social support within and outside of the program. The present study operationalized and measured each of these constructs and, based on these data, addressed the fourth and fifth aims.

The fourth aim of the study was to see if it was possible to discriminate between subjects who have been through OA and Jenny Craig by measuring the degree of change reported in the domains of binge eating, social support, and self-efficacy. Since the treatments were hypothesized to differ on the amount of emphasis placed on each of these areas, subject changes for each domain were expected to differ significantly depending on which treatment was used. Specifically, it was hypothesized that OA members would have decreased binge eating and increased social support, while Jenny Craig members would have increased self-efficacy. For each group, it was hypothesized that there would be no significant change in the other domains.

Finally, the present study measured the relationship between the clients' attributions for the nonspecific and specific effects of treatment and outcome, which was defined in three ways: (a) a decrease in BMI, (b) an increase in exercise, and (c) increasing healthy eating patterns. It was hypothesized that for OA, the nonspecific variables would account for a significant amount of the variance in outcome, and that the specific variables of social support and binge eating would account for a significant amount of additional variance. For Jenny Craig, it was hypothesized that the nonspecific variables would also account for a significant amount of outcome variance, and that the specific variable of self-efficacy would have a significant, additional relationship to outcome.

METHOD

Subjects and data collection

The subjects were 224 individuals who were participants in either OA (n=97) or Jenny Craig (n=127). All potential subjects were told that this was a study being done by clinical researchers in the Psychology Department at Yale University and the purpose was to learn about people's experiences with Jenny Craig or OA. Data collection took place at one time and all responses were self-report. For most measures, subjects retrospectively reported changes in their beliefs and behaviors that they consider to have occurred while they were participating in treatment. The questionnaire took approximately 1 hour to complete. Stamped return envelopes were provided, and each subject was sent $10.00 when the questionnaires were returned in the mail. Due to the need to send subjects checks by mail, names and addresses were necessary during data collection; however, individuals were informed that this information would be detached from the questionnaires and replaced with numbers for identification. All participants signed informed consent forms and were given the phone number and address of the investigator and the FAS Committee on Research Involving Human Subjects at Yale University.

Recruitment and response rates. All individuals who attended a Jenny Craig Centre in Connecticut during two weeks in March of 1995 were asked to participate when they attended their weekly appointment. In addition, all clients in Connecticut who were on the maintenance program at that time and came in for monthly weigh-ins were called and told about the study. Every client approached in person or by phone agreed to receive a questionnaire. Three hundred questionnaires were handed out, and the completed questionnaire return rate was 41%.

Overeaters Anonymous members were recruited through announcements made at several meetings throughout Connecticut, New York, Massachusetts, and Florida during the months of March and April 1995. At some meetings questionnaires were handed out, but at other meetings this was not considered acceptable because of the focus on anonymity, and cards were given out to individuals that they could fill out and return to the investigator with their names and addresses. The average percentage of people at each meeting who agreed to take a questionnaire or fill out and return a card with their name and address to the investigator was approximately 60%. Two hundred and seventeen questionnaires were handed or mailed out, and the return rate was 45%.

It is important to note that descriptive data are not available about those individuals from each group who chose not to return the questionnaire, and there may be differences between the two groups regarding reasons for noncompliance. Based on comments made by individuals during meetings, it is reasonable to speculate that the desire for anonymity was a primary reason why some of the OA members did not want to take a questionnaire. Since 100% of the Jenny Craig clients agreed to participate, it does not appear that there was an immediate concern about anonymity. A potential source of bias in the samples from both groups may be that the individuals who took the time to complete the questionnaire were more invested in their treatments and happier with their progress than those people who did not participate.

Treatments

OA: Addiction model. OA is a non-profit self-help organization that accepts no outside contributions and is financially supported by its members. It is built around an addiction model of overeating, and it views food similarly to how AA views alcohol. Regarding eating disorders as addictions has been seriously criticized (see Wilson, 1991 for a review); however, the addiction model currently informs a large number of eating disorder treatment programs in the United States (Wilson, 1991). The purpose of the present study, however, was not to test the validity of the addiction model, but to identify those clients who have found it useful.

In OA, each member defines abstinence for herself, is encouraged to admit that she is powerless over food, and places trust in a "higher power." This higher power is often referred to as God, but it is clearly stated in the OA materials that each person defines her own higher power. Some members believe there are certain foods that they are addicted to (most commonly refined sugar and white flour), and they may choose to abstain from these foods as their definition of abstinence. Other members define abstinence as abstaining from eating compulsively.

The OA theory of how members recover from the disease of compulsive overeating may be best described by the 12 steps (see Appendix A.) Many people find that the 12-step philosophy has religious-like qualities (Johnson & Sansone, 1993, p. 128). The OA literature clarifies that it is not a religion; rather, it addresses the physical, emotional, and spiritual levels of the "illness" (Overeaters Anonymous, 1987).

Jenny Craig: Cognitive-behavioral and relapse prevention. Jenny Craig is a for-profit commercial program. The Jenny Craig program consists of cognitive-behavioral therapy (CBT) strategies, nutrition and exercise education, and a prescribed eating plan of approximately 1,050-1,200 calories per day (Wolfe, 1992). In addition, it includes a maintenance program based on the relapse prevention model (Marlatt & Gordon, 1985). The focus of the relapse prevention model is to help people develop cognitive-behavioral

coping strategies to use when they encounter high-risk situations. Specifically, clients are told to use a 4-step approach: (1) forgive yourself for the lapse; (2) analyze the situation and your response (e.g., where were you, what was going on, what were you thinking to yourself, etc.); (3) plan your strategy (e.g., what can you change about the external triggers?, about your response to them?); and (4) rehearse your plans.

The theory behind a cognitive-behavioral approach for obesity is that individuals are overweight due to maladaptive eating behaviors and problematic food-related cognitions. To change, they need to identify these problematic patterns, change the way they think about food (e.g., "I shouldn't have had this cookie, now I've blown it and I may as well eat the whole box"), and normalize their eating behavior (e.g., eat three meals a day plus snacks).

The feature of Jenny Craig that distinguishes it from many of the university based cognitive-behavioral treatments for obesity is the prescribed eating plan. Providing the clients with food is considered to serve the following two functions. First, clients are relieved of the time, work, and energy involved in making food choices and food preparation, as most of the meals can be prepared in 5-7 minutes. This allows them to concentrate more fully on keeping their food records, learning how to change their eating and exercise behaviors, and learning relevant behavioral strategies (e.g., assertiveness, stress management, stimulus control strategies). Second, clients are provided with the experience of eating a nutritionally balanced, low-calorie, low-fat diet. Therefore, they will get a concrete sense of what eating a nutritionally balanced, portion-controlled diet feels like, which will enable them to continue eating healthfully after they stop eating the Jenny Craig food.

Some of the other dimensions in which OA and Jenny Craig differ are cost, structure, and leadership. These are described in Appendix B.

Raters and Procedure

The programs were evaluated by two research assistants. Both raters were undergraduates at Yale University who had some experience with psychology research, but no specific experience with eating disorders or weight loss treatments. The raters were naive to the study hypotheses; they were simply told that this was a study designed to understand the treatment components of different approaches to weight loss. Neither rater had ever been involved in a weight loss program or a 12-step program. They read through each program's literature and attended six OA and six Jenny Craig meetings over a four-month period. They were trained on the DSM-IV definition of BED, and the investigator was available to answer any questions that arose concerning the literature or meetings. They completed the measures separately, immediately following each reading and meeting. Post-study interviews with the raters revealed that they were not aware of the specific hypotheses of this investigation.

Measures

Program measures. Both the literature and the meetings were rated on a series of scales. First, a "Treatment Philosophy" measure assessed the degree to which each program presented the addiction model and the cognitive-behavior relapse prevention model for the treatment for obesity. Second, a "Treatment Component" measure assessed: (a) the degree of social support provided by the program, (b) the degree to which the program treats binge eating, and (c) the degree to which the program promotes an increase in self-efficacy.

Client measures. Several of the client measures were developed for the present study, and psychometric data were collected in a pilot study. These data are presented in Appendix C.

General Information Questionnaire. This questionnaire was designed for the present study to assess: (1) demographic variables (sex, age, marital status, SES), and (2) weight variables (current weight, desired weight, weight cycling, age of onset of

overweight, age of onset of dieting). SES was calculated using the Hollingshead Index (Hollingshead, 1975). Questions were also asked in order to assess possible contributing factors to weight loss, specifically, illness, medication, and psychotherapy outside of the program used.

Key Elements Questionnaire. This 18-item questionnaire was designed for this study to assess the existence of program components and the degree to which the clients found different program elements helpful. The measure was developed to yield an OA subscale and a Jenny Craig subscale. The internal reliability of these subscales, as measured by Cronbach alphas, was found to be .88 for each (see Appendices C and D).

Beliefs about Eating and Weight Questionnaire. This 18-item questionnaire was designed for the present study in order to assess subjects' belief of the addiction model and the CBT model for the treatment of obesity, and the degree to which these beliefs have changed during the course of treatment. This measure captures what was described by Frank and Frank (1991) as the client's belief in the "myth" of the treatments. The alpha correlations for each of these subscales was .82, and this measure was found to be sensitive to change over time in the pilot study (see Appendices C and E).

Overeaters Anonymous Involvement Questionnaire: Part 1. This 14-item questionnaire was adapted with permission from the AA Involvement Questionnaire that is currently being used in Project MATCH (Scott Tonigan, personal communication, March 1994). It was designed to assess the degree of involvement an individual has with OA (see Appendix F).

Overeaters Anonymous Involvement Questionnaire: Part 2. This 18-item questionnaire was developed for the present study to identify which components of OA individuals use and the importance they attribute to each one. Items were chosen to equally represent the spiritual, social, and food related tasks promoted by OA (see Appendix F).

Jenny Craig Involvement Questionnaire. This 20-item questionnaire was developed for the present study in order to assess the degree of involvement with the primary elements

of the Jenny Craig program. It was found to have adequate internal reliability (Cronbach alpha = .79) (see Appendices C and G).

Social Support

Perceived Social Support by Friends and from Family (PSS-Fr and PSS-Fa; Procidano & Heller, 1983). These two 20-item questionnaires were developed to assess the extent to which an individual perceives that his or her needs for support, information, and feedback are fulfilled by friends and family members. Both measures have been found to have high internal reliability (Cronbach alphas of .88 and .90 respectively) and construct validity (Procidano & Heller, 1983; Sarason, Shearin, Pierce, & Sarason, 1987). These scales were adapted for the present study by including a retrospective pre-treatment column to the PSS-Fa, and dividing the PSS-Fr into friends from outside of the treatment and friends met through treatment.

Weight Loss Social Support Scale (WLSS; Prochaska et al., 1992). This 19-item questionnaire assesses the degree of social support that subjects perceive is available from significant others, such as friends and family, for losing weight. This experimental scale was developed by Prochaska et al. (1992) and has high internal reliability (Cronbach alpha = .81). Participants indicated their perception of support on a 5-point Likert scale (1 = strongly agree to 5 = strongly disagree). The scale was further adapted in the present study to include retrospective self-report of pre-treatment social support levels.

Self-efficacy

Weight Efficacy Lifestyle Questionnaire (WEL; Clark et al., 1991). This 20-item questionnaire assesses the client's feelings of self-efficacy in controlling overeating under five situations: (1) negative emotions, (2) food availability, (3) social pressure, (4) physical discomfort, and (5) positive activities. Clark et al. (1991) have reported acceptable internal reliability for each subscale (Cronbach alphas = .70 to .90.) The WEL has also been shown to be sensitive to change in treatment in two trials (a CBT treatment trial, as well as a very-low-calorie-diet (VLCD) plus behavior therapy trial; see Clark et al.,

1991). In addition, Clark et al. (1991) found the WEL to have good convergent validity with the Eating Self Efficacy Scale (Glynn & Ruderman, 1986). Specifically, the total scores of the two scales were significantly and negatively (scales are scored in opposite directions) correlated at pretreatment ($r(19) = -.67$, $p < .001$) and posttreatment ($r(19) = -.55$, $p < .01$).

Eating Self-Efficacy Scale (ESES; Glynn & Ruderman, 1986). This 25-item questionnaire measures the client's feelings of self-efficacy in controlling overeating. It is scored so that higher scores reflect lower feelings of self-efficacy. The scale includes two factors: Negative Affect (NA) and Socially Acceptable Circumstances (SA). Glynn and Rudermann (1986) have reported the psychometric properties of the ESES. The ESES has demonstrated good internal consistency for the entire scale (Cronbach alpha = .92) and for each subscale (NA Cronbach alpha = .94; SAC Cronbach alpha = .85). Acceptable test-retest reliability was demonstrated for a 7-week period ($r = .70$, $p < .001$). Construct validity has been demonstrated by a significant positive correlation between the ESES and percent overweight ($r = .15$, $p < .01$), a measure of eating restraint ($r = .47$, $p < .001$), reports of previous dieting ($r = .23$, $p < .0001$), and reports of current dieting ($r = .24$, $p < .001$). In addition, weight loss during treatment was found to be significantly correlated with increases in ESES scores ($r = .35$, $p < .04$).

Binge eating

Binge Eating Scale (BES; Gormally, Rardin, & Black, 1980). This 16-item measure assesses both the behavioral manifestations as well as the feelings and cognitions surrounding a binge episode. This scale has been found to be internally consistent (Gormally et al., 1980) and has been used to provide cut-points for the identification of binge eaters (Marcus et al., 1990b; Marcus, Wing, & Lamparski, 1985).

DSM-IV Criteria Questionnaire. This questionnaire was developed for the present study to reflect the DSM-IV (American Psychiatric Association, 1994) criteria for binge

eating disorder and bulimia (purging and non-purging). It assesses both current and pre-treatment symptoms.

Outcome measures

Eating Patterns Questionnaire. This 10-item measure was designed for the present study to assess healthy eating patterns. Items were chosen to reflect the guidelines provided by a cognitive-behavioral treatment for BED (see Telch & Agras, 1992). The measure assesses both current and pre-treatment levels. It has demonstrated good internal reliability, Cronbach alpha = .82 (see Appendix C).

Lipid Research Clinics Physical Activity Questionnaire (LRC; Ainsworth, Jacobs, & Leon, 1993). This 4-item questionnaire provides a global self-assessment of usual heavy physical exertion habits. There is a four-point scoring system for this measure that categorizes people as (1) high active, (2) moderately active, (3) low active, or (4) very low active. This measure has been found to have high test-retest validity (r = .88), and has been shown to significantly correlate with heart rate, percent fat, and BMI (Ainsworth et al., 1993).

Lifestyle Physical Activity Questionnaire. This questionnaire was developed for the present study based on a model self-report questionnaire presented in Paffenbarger, Blair, Lee, and Hyde (1993). The questions are designed to identify leisure-time activities associated with hypertensive-cardiovasular diseases (Paffenbarger et al., 1993). In the present study, the questions were adapted to allow for a comparison between current activity levels and pre-treatment levels. This scale has been shown to have adequate internal reliability, Cronbach alpha = .72, and good construct validity (see Appendix C.)

RESULTS

Observational ratings of the programs

The first set of analyses evaluated the literature and meeting ratings. These ratings were completed by two undergraduate research assistants. The purpose of these

ratings was twofold: (a) to assess the philosophies of each program, and (b) to assess the degree to which the treatments provide social support, promote self-efficacy, and address binge eating. Four assessment measures were developed for the present study (literature philosophy, meeting philosophy, literature treatment components, and meeting treatment components) and can be found in Appendix H.

Internal reliability of subscales

The internal reliability of each measure was calculated using Cronbach's alpha correlations. For the literature ratings of the philosophies of each treatment, the OA and Jenny Craig philosophy subscale alpha correlations were .96 and .93, respectively. For the meeting ratings of the philosophies of each treatment, the OA and Jenny Craig philosophy subscale alpha correlations were .96 and .86, respectively.

The treatment components measures were checked for internal subscale reliability in a parallel fashion. For the literature ratings of social support, self-efficacy, and binge eating, the subscale alpha correlations were .98, .81, and .96, respectively. For the meetings ratings of social support, self-efficacy, and binge eating, the subscale alpha correlations were .95, .74, and .96, respectively. Due to the strong internal reliability of all of these measures, the remaining analyses of these constructs employed subscale scores based on mean scores of the individual items.

Interrater reliability

Interrater reliability was calculated for each subscale across the four measures using Pearson product-moment correlations. For the literature ratings of the philosophies of each treatment, the interrater reliability was $r = .91$ for the OA philosophy subscale and $r = .96$ for the Jenny Craig subscale. For the meeting ratings, the interrater reliability was $r = .96$ for the OA philosophy subscale and $r = .73$ for the Jenny Craig philosophy subscale. The lower interrater reliability on the Jenny Craig philosophy subscale ratings for the meetings was surprising in light of the fact that the reliability on this subscale based on the literature was $r = .96$. Closer examination of the interrater reliability of each item on this

scale revealed that the lowest agreement occurred on these items: "I can learn to control my eating by rehearsing self-management skills to cope with difficult food situations" (r = .06) and "Moderation and balance are the keys to lifestyle change" (r = .33). This incongruity between raters may indicate that these elements of the Jenny Craig philosophy are clearly present (or absent) in the programs' literature, but are not as clearly evident in the meetings.

The interrater reliability for the treatment components measures was comparable. For the literature ratings of social support, self-efficacy, and binge eating, the interrater reliability was r = .87, r = .87, and r = .76. For the meeting ratings of social support, self-efficacy, and binge eating, the interrater reliability was r = .95, r = .91, and r = .96.

Comparing the treatment philosophies

Two hypotheses were tested using the observational data. The first hypothesis was that the treatment philosophies of OA and Jenny Craig differ significantly. A one-way MANOVA was used to compare the observational ratings of the philosophy presented in the literature, which revealed a significant multivariate effect for type of philosophy, Wilks' lambda = .08, $F(2, 9) = 48.86$; $p < .0001$. Tukey's Studentized Range Test was used to compare the means of each philosophy in each group, and as expected, OA literature had significantly higher ratings for the addiction philosophy (M = 6.5) than did Jenny Craig literature (M = 2.3), and Jenny Craig literature had significantly higher ratings for the CBT philosophy (M = 6.9) than did OA literature (M= 2.3). Similarly, a one-way MANOVA was used to compare the philosophy evident in the meetings, which also revealed a significant multivariate effect for type of philosophy, Wilks' lambda = .01, $F(2, 9)$ = 443.43; $p < .0001$. Tukey's Studentized Range Test indicated that the means were significantly different in the expected directions; for the addiction model, the mean scores for OA and Jenny Craig meetings were M = 7.5 and M = 2.3, respectively, and for the CBT model, OA and Jenny Craig meetings were scored as M = 2.6 and M = 5.9, respectively.

Comparing the presence of specific treatment factors

The second hypothesis concerning the observational data was that OA provides more social support and addresses binge eating more than Jenny Craig, while Jenny Craig promotes self-efficacy to a greater degree than OA. The literature and meeting ratings were analyzed using one-way MANOVAs, which each revealed significant multivariate effects for treatment components, Wilks' lambda = .05, $F(3,8) = 53.06$; $p < .0001$ and Wilks' lambda = .04, $F(3,8) = 58.17$, $p < .0001$, respectively. Tukey's Studentized Range Test was used to compare the means of the three treatment components between the two groups. As illustrated in Figure 1, both the literature and meeting ratings supported the hypothesis that OA provides more social support and addresses binge eating to a greater extent than does Jenny Craig and that Jenny Craig promotes self-efficacy to a greater extent than does OA.

Client Questionnaires

Descriptive data on the client samples

The first series of analyses were designed to assess the demographic and weight history variables for each group and assess between-group differences. Table 2 presents the demographic and weight variables for each group. In these samples, the female/male ratio was greater for the Jenny Craig group than the OA group. Independent-samples t tests were used to measure differences between the groups. There were no differences found for the variables of age, education, and SES. There were also no weight differences between the groups, including their BMIs when joining the program, their current BMIs, or their goal BMIs. There were, however, significant differences between the groups with regard to weight history variables. OA members reported becoming overweight and going on their first diet at a significantly younger age, as well as experiencing a much higher level of weight cycling.

Figure 1
Observational ratings of literature and meetings

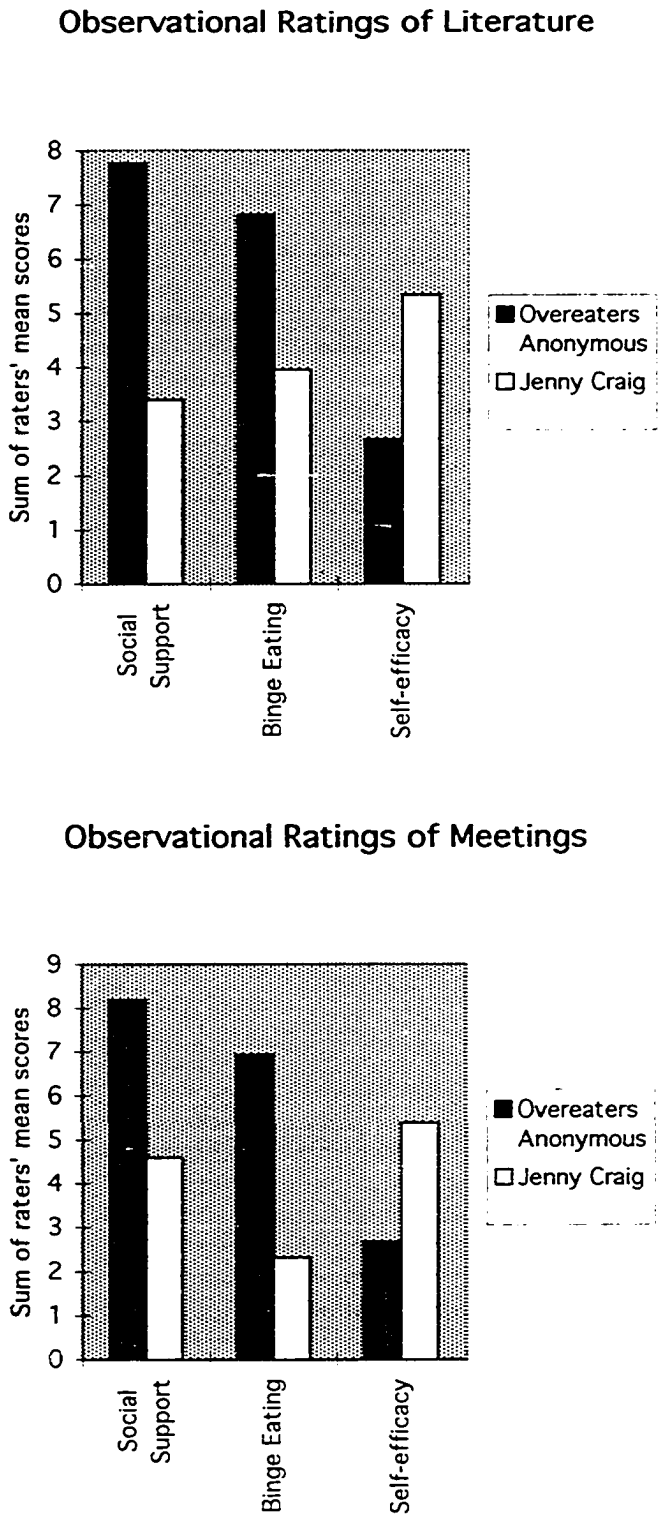


Table 2
Descriptive data on client samples

	OA (n = 97)	Jenny Craig (n = 127)	t	p
Male/Female Ratio	1/6	1/25		
Age (years)	43 (12)	43 (11)	-0.5	.63
Education category	5.7 (1.1)	5.4 (1.2)	-1.4	.13
SES	48.7 (10.2)	47.7 (10.7)	-0.7	.48
Age of onset of overweight (years)	12.5 (9.3)	20.0 (13.2)	4.8	.0001
Age of first diet (years)	15.8 (8.0)	22.7 (10.7)	5.3	.0001
Weight cycling index (lbs.)	393.5 (680.0)	109.3 (121.2)	-4.0	.0001
Time in program (months)	89.7 (77.9)	10.1 (8.7)	-10.0	.0001
Joining BMI	33.5 (10.1)	33.2 (9.6)	-0.3	.81
Current BMI	28.9 (7.5)	28.4 (7.5)	-0.5	.62
Goal BMI	23.5 (3.6)	23.6 (2.8)	0.4	.69
Change in BMI	4.7 (7.7)	4.8 (4.9)	0.2	.88

Length of time in treatment

Length of time in treatment emerged as an important difference between the subjects in the two groups. The OA members had been involved in treatment for much longer than the Jenny Craig members (mean: 89.7 months vs. 10.1 months; median: 65 months vs. 7 months; mode: 15 months vs. 2 months). In order to understand the role of this variable, correlation analyses were used to identify the relationship between length of time in treatment and the three sets of the variables under study: (a) nonspecific factors (belief in the myth and compliance with the ritual for the treatment); (b) specific factors (attributions for change in the domains of binge eating, social support, and self-efficacy; and (c) outcome measures (self-reported changes in weight, exercise, and healthy eating behaviors while in the program). Table 3 presents the correlations between time in the program and each of these other variables for each treatment group. The only significant relationship that emerged from these analyses was between time in treatment and weight loss for the Jenny Craig group; the longer an individual has been in the program, the greater their reported weight loss. None of the other variables appear to have a significant relationship to length of time in the program.

Descriptive data and self-reported changes

Correlation analyses were also used to assess the relationship between the demographic and weight history variables described earlier and the sets of nonspecific, specific, and outcome variables. Tables 4 and 5 present these correlations for the OA and Jenny Craig groups separately.

Since 66 correlations were calculated for each group, the experiment-wise type I error rate was inflated; therefore, only those correlations reaching a significance level of $p < .001$ were considered for interpretation. The strongest relationship that emerged was between weight when joining the program and weight loss, $r = .72$, suggesting that subjects who report being initially heavier also report losing more weight while in the program. In addition, there appears to be a significant relationship between joining weight

Table 3
Correlations between time in treatment and changes in nonspecific, specific, and outcome variables

	Months in Jenny Craig	Months in OA
Nonspecific factors:		
Beliefs (Myth)	.05	.07
Compliance (Ritual)	.13	.19
Specific factors:		
Binge Eating (BES)	.09	.08
Family Social Support	-.02	-.02
Social Support from Friends Met in Treatment	-.05	-.00
Social Support for Weight Loss	.05	-.01
Self-Efficacy (WEL)	-.01	.03
Self-Efficacy (ESES)	.03	.07
Outcome measures:		
Decrease in BMI	.28 **	.05
Increase in Exercise	.15	.03
Increase in Healthy Eating Habits	.05	.13

** $p < .01$

Table 4
OA: Correlations between demographic and weight history variables and changes in nonspecific, specific, and outcome variables

	Age	Education	Age of onset of overweight	Age of first diet	Weight cycling index	Joining BMI
Nonspecific factors:						
Beliefs (Myth)	-.03	-.19	.07	.10	-.09	.19
Compliance (Ritual)	-.06	.03	-.07	-.06	.21 *	.19
Specific factors:						
Binge Eating (BES)	-.16	-.04	-.14	-.12	.08	.18
Family Social Support	.03	-.07	.01	.12	-.08	-.11
Social Support from Friends Met in Treatment	-.21 *	-.25 *	-.07	.01	-.08	.23 *
Social Support for Weight Loss	-.09	-.15	.01	.04	.03	.14
Self-Efficacy (WEL)	-.10	.06	-.08	-.09	.13	.14
Self-Efficacy (ESES)	-.05	.01	-.25 *	-.24 *	.13	.14
Outcome measures:						
Decrease in BMI	-.05	.02	-.28 **	-.24 *	.24 *	.72 ****
Increase in Exercise	.03	-.04	-.10	-.10	.02	.37 ***
Increase in Healthy Eating Habits	-.04	-.11	-.07	-.08	-.04	.01

* $p < .05$
** $p < .01$
*** $p < .001$
**** $p < .0001$

Table 5
Jenny Craig: Correlations between demographic and weight history variables and changes in nonspecific, specific, and outcome variables

	Age	Education	Age of onset of overweight	Age of first diet	Weight cycling index	Joining BMI
Nonspecific factors:						
Beliefs (Myth)	-.08	-.10	-.17	-.10	.13	.09
Compliance (Ritual)	.14	-.05	-.07	-.07	.20 *	.15
Specific factors:						
Binge Eating (BES)	.04	-.24 *	-.27 **	-.22 *	.29 **	.29 **
Family Social Support	.06	-.10	-.17	-.02	-.01	.53 ****
Social Support from Friends Met in Treatment	.12	-.05	.01	-.01	.04	.40 ****
Social Support for Weight Loss	-.12	-.18	-.13	.07	.03	.27 **
Self-Efficacy (WEL)	.10	-.20 *	-.09	-.03	.16	.25 **
Self-Efficacy (ESES)	.14	-.17	-.17	-.05	.16	.31 ***
Outcome measures:						
Decrease in BMI	.09	-.08	-.24 **	-.11	.15	.66 ****
Increase in Exercise	-.05	-.18 *	-.17	-.06	.09	.35 ****
Increase in Healthy Eating Habits	-.05	-.06	-.09	-.17	.09	.17

* $p < .05$
** $p < .01$
*** $p < .001$
**** $p < .0001$

and increase in exercise, $r = .37$. This suggests that the initially heavier clients are likely to report a larger increase in exercise during the program than those who report joining OA at a lower weight.

Within the Jenny Craig group, a strong relationship also emerged between weight when joining the program and weight loss, $r = .66$. Similar to the OA group, a significant relationship between joining weight and an increase in exercise also appeared, $r = .35$. In addition, there seems to be a moderate significant relationship between heavier reported weights when joining the program and greater increases in perceived social support from family, $r = .53$, and from friends made in the program, $r = .40$. Finally, clients who report heavier joining weights also report greater increases in self-efficacy, $r = .31$.

Subject attributions of change

As stated earlier, within the client-treatment matching model of subject attributions of change, there are both client factors and treatment factors. Treatment factors refer to those elements of treatment that individuals feel were provided, and how helpful they were. Client factors are those ways in which individuals have changed their beliefs and behaviors. These can be both nonspecific (i.e., belief in the myth, compliance with the ritual) and specific (i.e., changes in binge eating, the perception of social support, and self-efficacy).

Treatment factors

The Key Elements of Treatment measure was used to measure the elements that clients felt were provided by each program and how helpful they were. The frequencies of use are presented in Table 6 and the level of importance is presented in Table 7. These results indicated that while the programs are distinct in certain areas, there is also considerable overlap, particularly for items such as "teaching me how to identify my high-risk emotions," "teaching me specific ways to change my eating habits," and "taught me to forgive myself when I make a mistake." Interestingly, these items were originally taken

Table 6
Key Elements of Treatment:
Percentage of individuals who endorsed item as part of their treatment

	Jenny Craig	OA
1. Helped me admit I am powerless over food	15%	97%
2. Provided trained counselors to guide my way	97%	7%
3. Helped me discover foods that I must avoid	64%	78%
4. Taught me that I can control my eating	86%	38%
5. Provided meetings where I shared my thoughts and feelings	71%	97%
6. Taught me how to identify my high-risk emotions	72%	77%
7. Helped me turn my will over to my Higher Power	12%	94%
8. Provided educational workshops on how to change	72%	29%
9. Encouraged me to use prayer/meditation	2%	98%
10. Taught me specific ways to change my eating habits (e.g., eat 3 meals a day, slow down my eating)	98%	80%
11. Provided a sponsor who has had similar struggles	10%	39%
12. Taught me that my urge to binge will pass if I can distract myself and delay giving in to it	72%	79%
13. Taught me that I cannot control my eating and I must turn it over to my Higher Power	5%	90%
14. Taught ways to cope when others urge me to eat	75%	69%
15. Taught me how to use the phone, writing, and literature as tools to help myself	29%	96%
16. Taught me that I can analyze the situation around a lapse, and plan strategies to improve next time	81%	75%
17. Provided the opportunity to make friends who I spend time with outside of meetings	7%	74%
18. Taught me to forgive myself when I make a mistake	86%	95%

Table 7
Key Elements of Treatment:
Importance attributed to items by those endorsing the component

	Jenny Craig	OA
1. Helped me admit I am powerless over food	4.2 (0.9)	4.8 (0.5)
2. Provided trained counselors to guide my way	4.2 (1.0)	3.9 (0.7)
3. Helped me discover foods that I must avoid	4.2 (0.9)	4.2 (0.8)
4. Taught me that I can control my eating	4.4 (0.9)	4.4 (0.8)
5. Provided meetings where I shared my thoughts and feelings	3.4 (1.3)	4.6 (0.7)
6. Taught me how to identify my high-risk emotions	3.9 (0.9)	4.2 (0.8)
7. Helped me turn my will over to my Higher Power	4.4 (0.6)	4.7 (0.7)
8. Provided educational workshops on how to change	3.5 (1.3)	3.4 (1.0)
9. Encouraged me to use prayer/meditation	2.3 (1.2)	4.4 (0.8)
10. Taught me specific ways to change my eating habits (e.g., eat 3 meals a day, slow down my eating)	4.1 (0.9)	4.1 (0.9)
11. Provided a sponsor who has had similar struggles	4.3 (0.9)	4.4 (0.8)
12. Taught me that my urge to binge will pass if I can distract myself and delay giving in to it	3.9 (0.9)	4.1 (0.9)
13. Taught me that I cannot control my eating and I must turn it over to my Higher Power	4.7 (0.5)	4.6 (0.7)
14. Taught ways to cope when others urge me to eat	3.9 (1.0)	3.9 (0.9)
15. Taught me how to use the phone, writing, and literature as tools to help myself	3.7 (1.0)	4.3 (0.9)
16. Taught me that I can analyze the situation around a lapse, and plan strategies to improve next time	4.0 (0.9)	4.1 (0.9)
17. Provided the opportunity to make friends who I spend time with outside of meetings	3.9 (1.5)	3.7 (1.1)
18. Taught me to forgive myself when I make a mistake	4.0 (0.9)	4.3 (0.9)

from the CBT model for the treatment of obesity, so it appears that the addiction model is not exclusive of many principles of the CBT approach.

Client nonspecific factors

The myth. The degree to which clients believe the myth was operationalized by the Beliefs About Eating and Weight measure, which assesses client's current beliefs in terms of the addiction model (OA) and the CBT relapse prevention model (Jenny Craig), as well as the client's retrospective self-report of her beliefs before entering treatment. This measure yields four scores for each subject: (a) current addiction model acceptance, (b) pre-treatment addiction model acceptance, (c) current CBT model acceptance, and (d) pre-treatment CBT model acceptance. A two-way ANOVA with repeated measures for acceptance of the addiction model was used to test how the clients from both groups reported their acceptance of the addiction model over time. A significant Group X Time interaction was found, $F(1,221) = 466.14$, $p = .0001$. To interpret this interaction, the means were examined and post-hoc tests for simple effects were calculated.[1] These analyses showed that OA members reported a significant increase in their acceptance of the addiction model over time (from $M = 2.4$ to $M = 4.7$), $F(1,95) = 459.24$, $p = .0001$, while Jenny Craig clients reported a significant decrease in their acceptance of this philosophy (from $M = 3.3$ to $M = 2.8$), $F(1,126) = 32.20$, $p = .0001$.

In a parallel fashion, a two-way ANOVA with repeated measures for acceptance of the cognitive-behavioral model was used to test how clients from both groups reported their acceptance of this model over time. A significant Group X Time interaction was found, $F(1,221) = 25.39$, $p = .0001$. Examination of the means and post-hoc tests for simple effects for time and group indicated that there was not a significant difference between the groups' levels of acceptance of the CBT model before treatment, $F(1,221) =$

[1] Since post-hoc tests increase the experiment-wise probability of a type 1 error, the significance level was divided by the number of tests conducted; therefore, only results where $p < .0125$ were considered significant. This strategy was used in interpreting all of the post-hoc tests following significant interaction terms throughout the paper.

2.92, $p < .08$. Both groups reported significant increases over time, with Jenny Craig clients increasing from $M = 3.1$ to $M = 4.3$, $F(1,126) = 235.45$, $p < .0001$, and OA clients increasing from $M = 2.9$ to $M = 3.4$, $F(1,95) = 19.23$, $p < .0001$. However, the Jenny Craig clients showed a significantly greater current level of acceptance of the CBT model than did the OA clients, $F(1,221) = 115.55$, $p = .0001$.

These findings confirmed that subjects generally reported an increased acceptance of the philosophy of the treatment they participated in; however, it appears that while acceptance of the addiction model is a belief that decreases if not in a 12-step program, acceptance of the CBT model can increase, even to a modest extent, in an addiction model-based program. This may imply that elements of the CBT model can be incorporated into an addiction model-based program, while the reverse may not be possible.

The ritual. The second component of the nonspecific client factors was the ritual, or level of participation in each program.

Jenny Craig participation. In order to assess the degree to which people participated in the elements of the Jenny Craig program, the Jenny Craig Involvement Questionnaire was used. A total participation score was obtained by summing the number of strategies used. Table 8 presents the percentage of people who reported using each of the strategies, and how helpful they found each one. The five most helpful components are in bold.

OA participation. For the purpose of comparative analyses, an overall OA involvement score was obtained by adding the standardized scores from the two Overeaters Anonymous Participation Scale measures. The findings concerning the frequency of use and importance of different aspects of OA are presented in Table 9. The five most important components are in bold.

Differences between the treatments

One of the central questions in the present study concerned whether the measurement of the three specific factors of social support, binge eating, and self-efficacy

Table 8
Jenny Craig Involvement Questionnaire results

		% Used	Rating
1.	Kept a food diary	81.9	3.1 (1.8)
2.	**Drank 8 glasses of water per day**	**92.9**	**4.2 (1.4)**
3.	Attended Jenny Craig workshops	65.1	2.2 (1.9)
4.	Made eating dinner last at least 15 min.	79.5	3.0 (1.8)
5.	Read Jenny Craig program materials	96.1	3.6 (1.2)
6.	**Increased my physical activity level naturally** (e.g., parked far away, took stairs)	**91.2**	**4.0 (1.5)**
7.	Planned ahead for a restaurant or party	78.0	3.2 (1.9)
8.	Measured out portions of foods	79.4	3.3 (1.8)
9.	**Read labels for calorie and fat information**	**96.9**	**4.4 (1.1)**
10.	**Met with a Jenny Craig counselor**	**100.0**	**4.3 (0.9)**
11.	Shared my experiences in Jenny Craig workshops	53.5	1.9 (2.0)
12.	Forgave myself after an overeating episode	90.5	3.3 (1.5)
13.	Analyzed the situation surrounding a binge or overeating episode	79.5	3.1 (1.8)
14.	Slowed down my eating (e.g., put down fork between bites, paused mid-meal)	66.7	2.5 (2.0)
15.	Ate only in "eating places" (e.g., kitchen or dining room table)	58.3	2.1 (1.9)
16.	Planned a strategy for dealing with a difficult eating situation.	81.0	3.2 (1.8)
17.	Rehearsed my plans for dealing with a difficult eating situation ahead of time	71.7	2.7 (1.9)
18.	Did not finish everything on my plate	67.5	2.5 (1.9)
19.	Used Jenny Craig audio/videotapes	77.0	2.8 (1.8)
20.	**Visualized myself at my goal weight**	**88.2**	**3.7 (1.7)**

Table 9
Overeaters Anonymous Involvement Questionnaire results

		% Used	Rating
1.	**Attending meetings**	**99.0**	**4.5 (1.0)**
2.	**Praying**	**95.9**	**4.3 (1.2)**
3.	Following a food plan	76.3	3.5 (2.0)
4.	Calling a sponsor	80.2	3.4 (1.7)
5.	Writing in a journal	56.7	2.2 (1.8)
6.	Calling other OA friends	88.7	3.3 (1.4)
7.	**Eating abstinently**	**93.8**	**4.4 (1.3)**
8.	Reading OA literature	93.7	3.6 (1.3)
9.	Sharing at a meeting	96.9	3.9 (1.1)
10.	Reaching out to newcomers	84.5	3.2 (1.6)
11.	Doing a tenth step	72.2	3.1 (2.0)
12.	Sponsoring	60.8	2.7 (2.1)
13.	**Avoiding certain foods**	**90.7**	**4.1 (1.6)**
14.	Meditating	80.4	3.3 (1.7)
15.	Weighing and measuring food	54.6	2.3 (2.1)
16.	**Turning problems over to a Higher Power**	**94.8**	**4.4 (1.3)**
17.	Giving away food to a sponsor	48.5	2.1 (2.0)
18.	Eating a balanced diet	91.8	3.9 (1.5)

would discriminate between the two treatment groups. The observational data collected by the independent raters supported the hypothesis that the two programs are providing different amounts of these therapeutic elements, and the subjects' attributions of change in these domains were examined to see if there was evidence of a differential response by treatment group.

In order to test the hypothesis that change scores reported by the subjects in each of the three domains of interest would form a different pattern in each group, a one-way MANOVA between-groups design was used. This analysis revealed a significant multivariate effect for group membership, Wilks' lambda = .62, $F(6,195) = 19.69$; $p < .0001$. The means and standard deviations for each measure, and the corresponding ANOVA tests for significant differences between groups, are presented in Table 10.

Examination of these means reveals that two of the three hypotheses were upheld; subjects reported: (a) a greater decrease in binge eating in OA than in Jenny Craig; (b) a greater increase in social support from family and from people met through treatment in OA than in Jenny Craig; but (c) a greater increase in self-efficacy in OA than in Jenny Craig, which was opposite of the expected direction. In order to better understand this pattern of subjects' attributions of change, each domain was examined separately using repeated measures analyses for both ratings reported, rather than change scores.

Binge eating

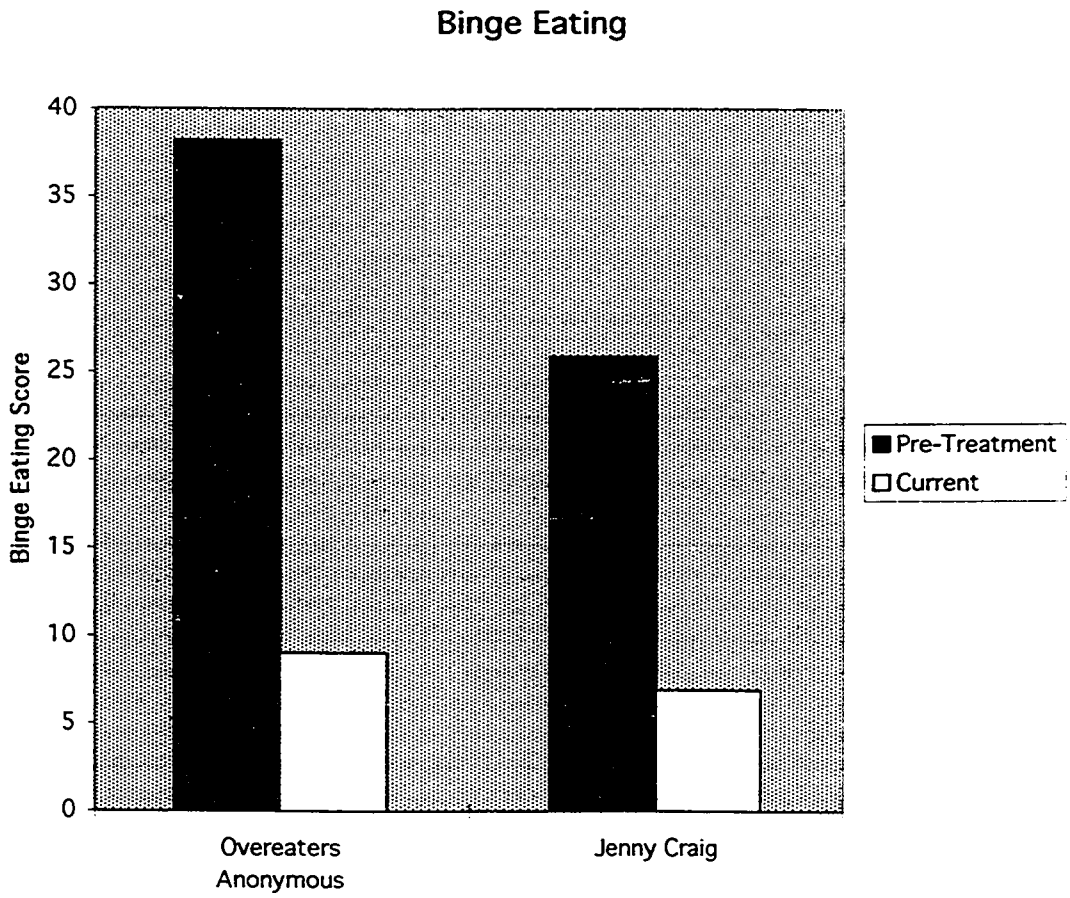
It was hypothesized that the OA group would report a greater decrease in binge eating than the Jenny Craig group from pre-treatment to current levels. A two-way ANOVA with repeated measures for binge eating, as measured by the Binge Eating Scale (BES) was used to test this hypothesis. A significant Group X Time interaction was found, $F(1,203) = 57.8$, $p = .0001$. Examination of the means (illustrated in Figure 2) and post-hoc tests for simple effects revealed that individuals in both OA and Jenny Craig reported significant decreases in binge eating over time, $F(1, 87) = 748.8$, $p < .0001$, and $F(1,116) = 467.8$, $p < .0001$. However, the OA group reported significantly higher pre-

Table 10
Self reported changes for binge eating, social support, and self-efficacy: Univariate results

	Jenny Craig		OA		F(1,200)
CHANGE SCORES IN:	M	(SD)	M	(SD)	
Binge Eating (BES)	18.9	(9.5)	29.6	(9.8)	60.5 ****
Family Social Support	0.9	(1.7)	2.8	(4.5)	18.1 ****
Social Support from Friends Met in Treatment	0.2	(0.9)	3.5	(4.5)	58.5 ****
Self-Efficacy (WEL)	59.0	(51.7)	102.9	(54.6)	34.0 ****
Self-Efficacy (ESES)	54.7	(35.3)	75.6	(44.7)	13.8 ***
Social Support for Weight Loss	0.6	(0.6)	0.9	(0.8)	10.8 **

** $p < .01$
*** $p < .001$
**** $p < .0001$

Figure 2
Changes in binge eating scores



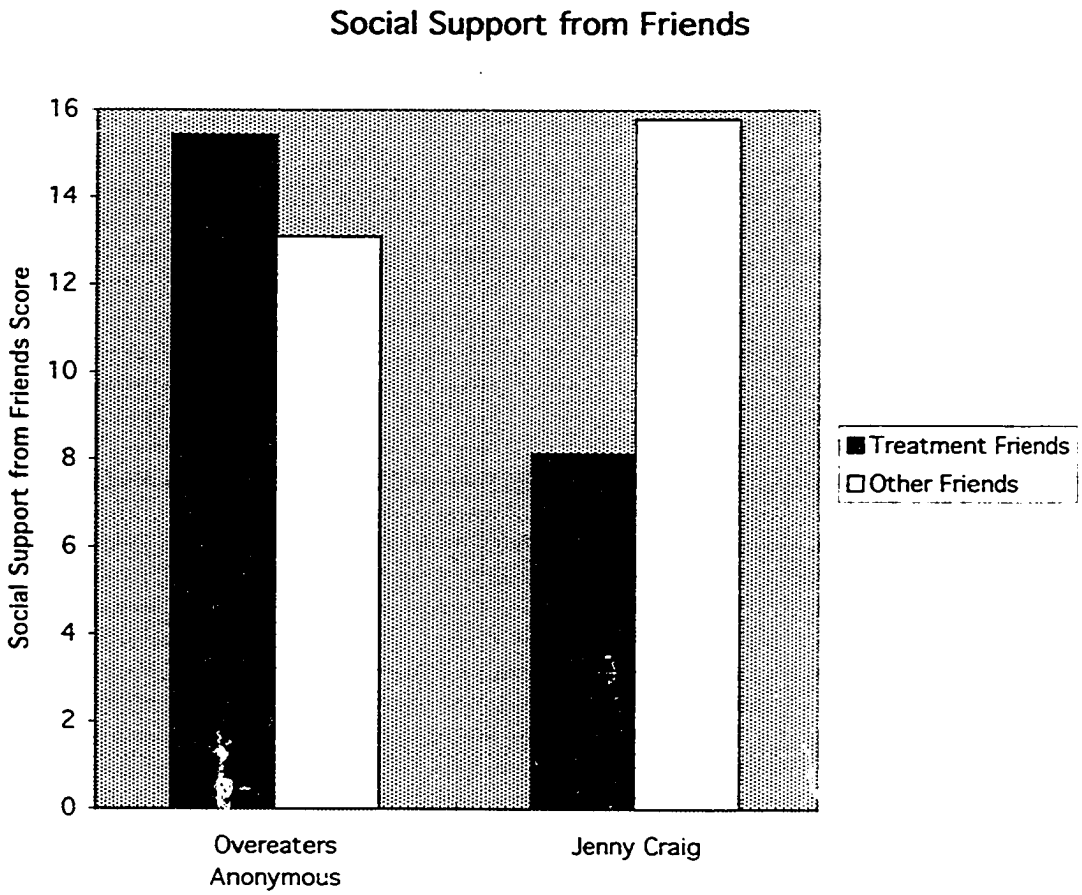
treatment binge eating scores than did Jenny Craig subjects, $F(1,207) = 15.7$, $p < .0001$. There was not a significant difference between the two groups' current levels of binge eating.

In addition to the continuous binge eating scores provided by the BES, a questionnaire was designed to assess all of the elements of the DSM-IV criteria for binge eating disorder (BED). The pattern of results from this measure was consistent with those from the BES. Among the Jenny Craig subjects, 15% reported that before they began treatment they met criteria for BED; in contrast, 52% of the OA subjects reported that they met criteria for BED. This measure was also used to determine whether or not subjects currently met criteria for BED. These results indicated that only 1% of Jenny Craig subjects and 9% of OA subjects currently met full criteria for BED.

Social support

In order to assess social support, three measures were used and these were each analyzed individually. First, to assess the degree of additional support individuals received from people they had met though their program, subjects rated their level of perceived support from friends through OA or Jenny Craig and from other friends outside their program. The hypothesis was that OA individuals would report a greater level of social support from people they had met through OA than from their other friends, while Jenny Craig individuals would not show any differences between their Jenny Craig friends and their other friends. A 2 x 2 factorial ANOVA was used to test these hypotheses using group (OA vs. Jenny Craig) and type (within-program friends vs. outside-program friends) as factors. A significant Group X Type interaction, $F(1,447) = 82.6$, $p = .0001$ was found. The means are illustrated in Figure 3. Post-hoc tests for simple effects indicate that the OA subjects perceived significantly more support from their OA friends than from their outside friends, $F(1,96) = 16.7$, $p < .0001$; whereas, for Jenny Craig clients, the opposite was true, $F(1,126) = 120.2$, $p < .0001$. This supported the hypothesis that OA members perceive greater social support from individuals they have met through treatment

Figure 3
Social support from friends within and outside treatment



than from their outside friends. It was hypothesized that Jenny Craig subjects would perceive comparable social support from their treatment and non-treatment friends, and the findings revealed that they perceive greater social support from their non-treatment friends, further emphasizing the contrast with the OA groups.

A second measure examined the amount of social support individuals perceive from their families. Perceived family support was assessed for both current levels and pre-treatment levels. This provided another measure for the hypothesis that OA members perceive less social support from their outside lives than Jenny Craig members. No changes over time were expected. A two-way ANOVA with repeated measures for family social support was used and a significant Time X Group interaction was found, $F(1,222) = 23.5$, $p = 0001$, and the means are illustrated in Figure 4. Post-hoc tests for simple effects for time and group found that both OA and Jenny Craig clients perceive significant increases in social support from their families since beginning treatment, $F(1,96) = 42.8$, $p < .0001$ and $F(1,126) = 32.6$, $p < .0001$. However, at both pre-treatment and currently levels, OA members perceive significantly lower levels of social support from their families than do Jenny Craig clients, $F(1,222) = 42.0$, $p < .0001$ and $F(1,222) = 12.7$, $p < .0004$. These findings support the hypothesis that OA members perceive consistently lower levels of social support from their families than do Jenny Craig clients.

The third measure of social support was designed to assess the amount of support individuals experienced from those around them specifically for their weight loss efforts. Subjects reported their current perceived support from others for their weight loss efforts, as well as the amount of this type of support they experienced before they began their programs. It was hypothesized that in comparing pre-treatment to current levels of this type of support, both groups would report an increase. A two-way ANOVA with repeated measures for social support for weight loss was used to test this hypothesis. A significant Group X Time interaction was found, $F(1, 219) = 12.1$, $p = .0001$; the means are illustrated in Figure 5. Post-hoc tests for simple effects for time and group were calculated.

Figure 4
Changes in family social support

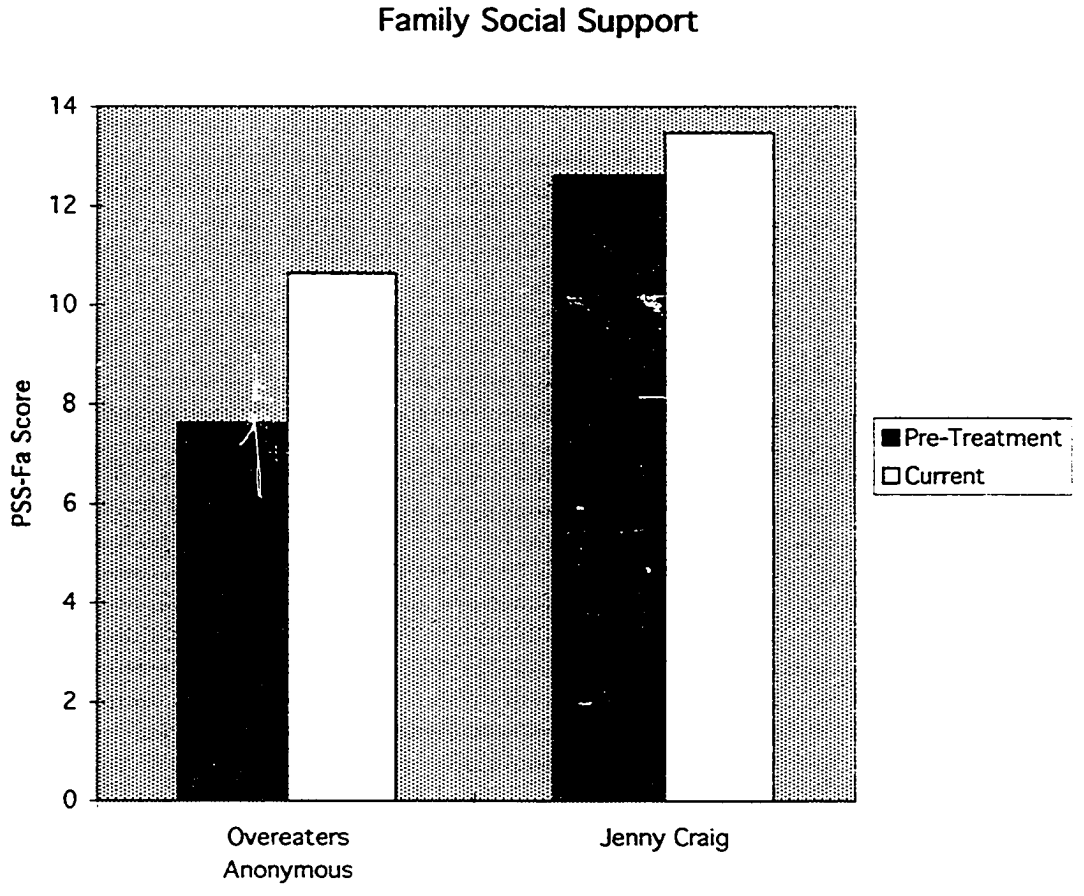
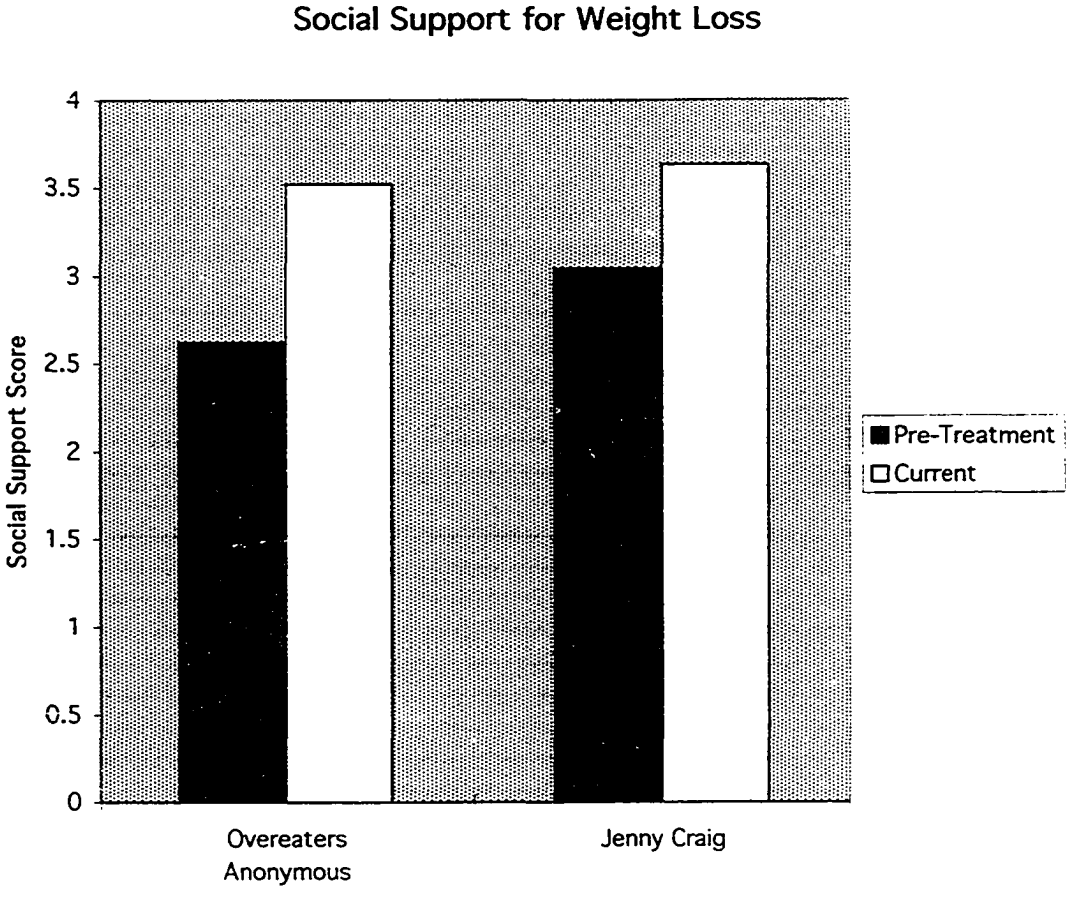


Figure 5
Changes in social support for weight loss efforts



When compared with the Jenny Craig subjects, the OA subjects reported significantly lower levels of social support for weight loss before treatment, $F(1,219) = 21.4$, $p < .0001$. However, both OA and Jenny Craig subjects showed a significant increase in social support from their pre-treatment levels to their current levels, $F(1,94) = 132.5$, $p < .0001$ and $F(1,125) = 103.1$, $p < .0001$ and when comparing the reported current levels between the two groups, they were not significantly different, $F(1,220) = 1.6$, $p = .21$. This supports the hypothesis that both groups perceive an increase in social support for weight loss during the course of their time in treatment. It also appears that Jenny Craig clients perceive a higher initial level of social support for weight loss than do OA members.

To summarize, the social support measures all revealed a similar pattern: OA members reported a lower level of social support before they began treatment than did Jenny Craig members, and subsequently reported a large increase in social support that was attributed to their participation in OA. While Jenny Craig members reported starting off with higher initial levels of social support than did OA members, they too reported a significant increase in support from their pre-treatment to their current levels.

Self-efficacy

Two instruments were used to measure self-efficacy among the two groups, and each assessed both current levels of self-efficacy and pre-treatment levels. The first measure, the Weight Efficacy Lifestyle Questionnaire (WEL), yields five subscales of different types of situations that pose challenges for controlling one's eating: (a) negative emotions, (b) availability of food, (c) social pressure, (d) physical discomfort, and (e) positive activities. It was hypothesized that both OA and Jenny Craig subjects would report low initial levels of self-efficacy, with Jenny Craig clients reporting a significant increase and OA members reporting no change. In order to assess the variability between the two treatment groups and measure changes from pre-treatment to current levels for all five types of situations, two-way ANOVAs with repeated measures for each situation were used.

The results from these five ANOVAs are reported in Table 11. For all five of the situations, there were significant Group X Time interactions. Post-hoc tests for simple effects were conducted and the pattern of findings was consistent across the five situations: OA members reported significantly lower levels of self-efficacy than Jenny Craig members at pre-treatment, then both groups' scores increase significantly, and the current levels are not significantly different. Therefore, the hypothesis regarding the differential effects of each treatment on self-efficacy was only partially supported; Jenny Craig clients did report a significant increase in self-efficacy; however, OA members reported starting at very low levels initially and experiencing a very large increase to high levels that were comparable to the Jenny Craig group.

A second measure, the Eating Self-Efficacy Scale (ESES), was used to assess global changes in self-efficacy as well as subscale scores in the domains of (a) negative affect and (b) eating during socially acceptable circumstances. A series of two-way ANOVAs with repeated measures for self-efficacy was used to assess differences between the groups and reported changes over time. It was originally hypothesized for the ESES, as it was for the WEL, that both OA and Jenny Craig subjects would report low levels of pre-treatment self-efficacy, followed by Jenny Craig subjects reporting a significant increase and OA members staying the same over time.

For self-efficacy while experiencing negative affect, a significant Group X Time interaction, $F(1,222) = 16.2$, $p = .0001$ was found. Similarly, a significant Group X Time interaction was also found for self-efficacy during socially appropriate circumstances, $F(1,222) = 6.9$, $p = .0095$. The means for each of these scores and the post-hoc tests for simple effects are reported in Table 12. With the ESES, the negative affect subscale scores reflected the same pattern as was found with the WEL: (a) OA members reported significantly lower pre-treatment levels of self-efficacy than Jenny Craig clients; (b) both groups reported significant increases during treatment; and (c) the reported current levels for the two groups are not significantly different. The socially appropriate circumstances

Table 11
Comparison of WEL subscale scores:
ANOVAs with repeated measures for each situation

	Negative Emotions	Available Food	Social Pressure	Physical Discomfort	Positive Activities
OA current	26.8 (8.0)	28.3 (7.0)	30.2 (6.6)	28.2 (7.3)	29.6 (6.4)
OA pre-tx	6.1 (6.5)	6.3 (7.3)	8.6 (8.8)	9.4 (8.4)	9.8 (8.4)
Jenny Craig current	27.0 (8.1)	26.2 (7.6)	28.6 (8.0)	29.0 (8.0)	29.0 (7.7)
Jenny Craig pre-tx	15.4 (10.6)	11.5 (8.8)	16.1 (9.7)	20.3 (9.8)	18.0 (9.0)
Time x group interaction	$F(1,220) = 34.6$ $p < .0001$	$F(1,219) = 21.2$ $p < .0001$	$F(1,220) = 29.7$ $p < .0001$	$F(1,220) = 46.0$ $p < .0001$	$F(1,220) = 32.2$ $p < .0001$
Simple effect for time (OA)	$F(1,95) = 338.0$ $p < .0001$	$F(1,95) = 360.8$ $p < .0001$	$F(1,95) = 318.3$ $p < .0001$	$F(1,95) = 264.1$ $p < .0001$	$F(1,95) = 275.6$ $p < .0001$
Simple effect for time (Jenny Craig)	$F(1,125) = 116.6$ $p < .0001$	$F(1,124) = 178.5$ $p < .0001$	$F(1,125) = 121.1$ $p < .0001$	$F(1,125) = 78.6$ $p < .0001$	$F(1,125) = 116.5$ $p < .0001$
Simple effect for group (pre-tx)	$F(1,220) = 58.0$ $p < .0001$	$F(1,220) = 22.5$ $p < .0001$	$F(1,220) = 35.5$ $p < .0001$	$F(1,220) = 76.6$ $p < .0001$	$F(1,220) = 48.0$ $p < .0001$
Simple effect for group (current)	$F(1,220) = 0.0$ $p = .89$	$F(1,219) = 4.5$ $p = .03$	$F(1,220) = 2.6$ $p = .11$	$F(1,220) = 0.5$ $p = .49$	$F(1,220) = 0.4$ $p = .52$

Note: Higher scores indicate higher levels of self-efficacy

Table 12
Means and simple effects of ESES scores

	Negative Affect	Socially Acceptable Circumstances
OA current scores	46.1 (24.3)	28.9 (13.8)
OA pre-tx scores	90.6 (18.6)	59.6 (10.7)
JC current scores	42.9 (22.4)	31.0 (13.3)
JC pre-tx scores	73.5 (27.2)	56.2 (12.0)
Simple effects for time (OA)	$F(1,96) = 225.7$ $p < .0001$	$F(1,96) = 310.3$ $p < .0001$
Simple effects for time (Jenny Craig)	$F(1,126) = 229.0$ $p < .0001$	$F(1,126) = 402.7$ $p < .0001$
Simple effects for group (Pre-tx scores)	$F(1,222) = 28.3$ $p < .0001$	$F(1,222) = 4.9$ $p < .028$
Simple effects for group (Current scores)	$F(1,222) = 1.0$ $p = .32$	$F(1,222) = 1.3$ $p = .26$

Note: Higher scores indicate lower levels of self-efficacy

subscale showed a slightly different pattern: both groups increased significantly over time, but the OA group was not significantly lower on self-efficacy in this domain at pre-treatment or currently.

Outcome variables

In the present study, outcome was assessed using both weight change and changes in eating and exercise patterns. As presented earlier with the demographic data in Table 2, there were no significant differences between OA and Jenny Craig subjects for any of the reported weight variables. These results indicated that when comparing the two groups, OA and Jenny Craig subjects reported starting out at similar weights, having similar goal weights, and currently weighing the same amount.

Changes and levels of healthy eating patterns were measured using a two-way ANOVA with repeated measures for eating patterns. A significant Group X Time interaction was found, $F(1,222) = 15.4$, $p = .0001$. The means, reported in Table 13, and post-hoc tests for simple effects indicated that both OA and Jenny Craig subjects reported significant improvement in their eating over time, $F(1,96) = 218.6$, $p < .0001$ and $F(1,126) = 444.6$, $p < .0001$. The two groups' pre-treatment scores for healthy eating were not significantly different, $F(1,222) = 0.1$, $p = .80$, but the Jenny Craig subjects reported significantly higher current scores in this domain, $F(1,222) = 46.9$, $p < .0001$.

Changes in exercise were similarly measured using a two-way ANOVA with repeated measures for exercise. A significant Group X Time interaction was found, $F(1,203) = 13.3$, $p = .0003$. The means (which were based on standardized scores) are reported in Table 14. Post-hoc tests for simple effects found that the groups did not report significantly different pre-treatment levels of exercise, $F(1,205) = 0.3$, $p < .59$. Over time, the Jenny Craig group reported significantly increasing their exercise behaviors, $F(1,117) = 8.2$, $p < .004$, while the OA group reported actually decreasing their exercise behaviors (though not to a significant degree using the more conservative threshold for post-hoc

Table 13
Changes in healthy eating patterns

	Current Healthy Eating		Pre-treatment Healthy Eating	
	M	(SD)	M	(SD)
Overeaters Anonymous	56.6	(9.0)	36.6	(12.6)
Jenny Craig	64.5	(8.2)	37.0	(12.4)

Note: Means are based on standardized scores

Table 14
Changes in exercise

	Current Exercise		Pre-treatment Exercise	
	M	(SD)	M	(SD)
Overeaters Anonymous	-1.5	(4.4)	0.1	(5.7)
Jenny Craig	1.1	(3.8)	-0.3	(4.2)

Note: Means are based on standardized scores

tests), $F(1,86) = 5.3$, $p < .02$. The Jenny Craig group reported significantly higher current levels of exercise than the OA subjects, $F(1,208) = 21.9$, $p < 0001$.

A multivariate model to predict outcome

Within each group, it was hypothesized that outcome would be related to both nonspecific (degree of involvement and acceptance of the philosophy) and specific factors of the programs (binge eating and social support for OA, self-efficacy for Jenny Craig). Multiple regression analyses were used to test this hypothesis; however, correlations among the relevant variables were conducted first to measure the independent relationships among all the change variables.

Nonspecific client factors and outcome. These analyses used the subjects' current beliefs (acceptance of the myth of their treatment) and reported compliance (engagement in the ritual). For both groups, there was a significant positive relationship between beliefs and compliance (Jenny Craig: $r = .35$, $p < .0001$ and OA: $r = .21$, $p < .05$). This relationship suggests that both of these variables are indices of how generally responsive the individual was to the treatment.

The correlations between the nonspecific variables and the outcome variables for each group are presented in Table 15. In the Jenny Craig sample, significant relationships emerged between belief in the philosophy and an increase in exercise, as well as compliance with the treatment and all three outcome measures. In contrast, in the OA group, only compliance with the treatment related significantly to a decrease in BMI. In order to test the significance of the differences between the correlations found in each group, Fisher's r to z transformations were calculated. These analyses revealed that the correlations between beliefs and exercise ($z = 2.0$, $p < .05$) and compliance and exercise ($z = 2.8$, $p < .01$) were significantly stronger in the Jenny Craig group than among the OA participants.

To examine the relationship among the outcome variables, correlations were calculated. For the Jenny Craig subjects, all three measures were significantly related: (a)

Table 15
Correlations between nonspecific treatment factors and outcome measures by group

	Decrease in BMI	Increase in Exercise	Increase in Healthy Eating Habits
Jenny Craig			
Beliefs (Myth)	.11	.24 **	.10
Compliance (Ritual)	.27 **	.32 ***	.23 *
Overeaters Anonymous			
Beliefs (Myth)	.17	-.05	-.00
Compliance (Ritual)	.32 **	-.08	-.01

* $p < .05$
** $p < .01$
*** $p < .001$

weight loss and exercise, $r = .45$, $p < .0001$; (b) weight loss and healthy eating, $r = .24$, $p < .01$; and (c) exercise and healthy eating, $r = .35$, $p < .0001$. For the OA group, weight loss and exercise were significantly related, $r = .22$, $p < .05$, but healthy eating habits did not significantly relate to either weight loss, $r = -.02$, or exercise, $r = .12$. In order to compare the correlations between the two groups, Fisher's r to z transformations were calculated; none of the correlations among the outcome variables for the Jenny Craig group was significantly different from those found among the OA members.

Specific client factors and outcome. Correlations were conducted among the specific treatment factors and the three outcome measures for both groups. The results are presented in Table 16. For the Jenny Craig subjects, all of the specific factors were significantly related to a decrease in BMI, and all but one were significantly related to an increase in exercise. Only a decrease in binge eating was significantly correlated with an increase in healthy eating patterns. For the OA subjects, decreases in binge eating and increases in self-efficacy significantly correlated with weight loss, none of the specific variables significantly correlated with an increase in exercise, and a decrease in binge eating and increases in social support and self-efficacy (in three of the five measures) significantly correlated with healthy eating patterns.

Fisher's r to z transformations were used to compare the correlations found in the two groups. These analyses revealed that the following positive relationships were significantly stronger for the Jenny Craig clients than for OA members: (a) the relationship between weight loss and family social support, $z = 3.9$, $p < .01$; and (b) the relationships between exercise and binge eating ($z = 2.8$, $p < .01$), additional support from friends met in treatment ($z = 4.0$, $p < .01$), social support for weight loss ($z = 2.8$, $p < .01$), and self-efficacy ($z = 3.8$, $p < .01$). On the other hand, the relationship between healthy eating and additional support from friends met in treatment was significantly stronger for the OA group than for Jenny Craig clients, $z = 2.7$, $p < .01$.

Table 16
Correlations among specific treatment factors and outcome measures by group

Jenny Craig	Outcome Measures		
	BMI	Exercise	Healthy Eating Habits
1. Binge Eating (BES)	.36 ****	.39 ****	.32 ***
2. Family Social Support	.46 ****	.30 ***	.17 *
3. Additional Support from Friends Met in Treatment	.23 **	.06	-.08
4. Social Support for Weight Loss	.32 ***	.45 ****	.14
5. Self-Efficacy (WEL)	.25 **	.34 ***	.15
6. Self-Efficacy (ESES)	.38 ****	.40 ****	.17

Overeaters Anonymous	Outcome Measures		
	BMI	Exercise	Healthy Eating Habits
1. Binge Eating (BES)	.32 **	-.01	.35 ***
2. Family Social Support	-.04	.09	.14
3. Additional Support from Friends Met in Treatment	.09	-.13	.28 **
4. Social Support for Weight Loss	.19	-.08	.37 ***
5. Self-Efficacy (WEL)	.29 **	-.05	.33 ***
6. Self-Efficacy (ESES)	.30 **	-.13	.14

* $p <= .05$
** $p <= .01$
*** $p <= .001$
**** $p <= .0001$

Multivariate regression analyses

With a sense of how these variables correlated with each other independently, multiple regression analyses were used to test how well the combination of nonspecific and specific treatment variables predicted outcome in each of these groups. One regression was done for each of the outcome variables: (a) decrease in BMI, (b) increase in exercise, and (c) increase in healthy eating patterns. The predictor variables were philosophy acceptance, treatment compliance, binge eating, social support, and self-efficacy. In order to reduce redundancy among the independent variables, the constructs measured with multiple instruments were represented by composite scores consisting of the sum of the standardized scores of all of the measures of that construct. Due to missing data, only 101 Jenny Craig subjects and 83 OA subjects were included in these analyses. The results from these regression analyses are presented in Table 17.

Jenny Craig multiple regression analyses. All three of the multiple regressions on outcome for the Jenny Craig group were statistically significant; however, the amount of variance accounted for by the entire model ranged from $R^2 = .30$ for decrease in BMI, and $R^2 = .26$ for increase in exercise, to $R^2 = .15$ for healthy eating. Using the t tests of the beta weights as indicators of a particular variable's contribution to the equation, only an increase in social support contributed significantly to the model for change in BMI, contrary to the hypotheses for this treatment. As the incremental R^2 values indicate, the nonspecific variables were responsible for less than 10% of the variance accounted for by the model.

Overeaters Anonymous multiple regression analyses. Of the three outcome variables predicted, decrease in BMI and increase in healthy eating were significant for the entire model; change in exercise was not. The most variance was accounted for in the healthy eating model, where $R^2 = .24$. The variance accounted for by the model for BMI was $R^2 = .16$. Social support alone contributed a significant amount to the predictive value of the model for healthy eating, which supported the hypotheses for this group. While

Table 17
Multiple regression analyses: Variance in outcome accounted for by full and reduced models

Jenny Craig	Outcome Measures: BMI		Exercise		Eating	
	Beta	R^2	Beta	R^2	Beta	R^2
Acceptance of philosophy	-.16	.00	.02	.03	-.14	.00
Level of involvement	.10	.07	.14	.10	.20	.08
Decrease binge eating	.09	.16	.19	.20	.15	.13
Increase social support	.35 ***	.27	.20 *	.24	.14	.15
Increase self-efficacy	.20	.30	.16	.26	.10	.15

Overeaters Anonymous	BMI		Exercise		Eating	
	Beta	R^2	Beta	R^2	Beta	R^2
Acceptance of philosophy	.11	.02	-.04	.00	-.08	.01
Level of involvement	.20	.09	-.03	.00	-.27 *	.01
Decrease binge eating	.15	.13	.13	.00	.14	.11
Increase social support	-.12	.15	-.00	.00	.39 ***	.23
Increase self-efficacy	.16	.16	-.16	.02	.12	.24

level of involvement with OA appeared to have significant predictive value in this model as well, based on the t test of the beta weight, the R^2 did not increase, perhaps due to its significant correlation with change in beliefs.

DISCUSSION

The present study was designed to move the field of client-treatment matching research for obesity forward by identifying a set of variables that might be relevant for the matching process. Prospective randomized trials are necessary to test hypotheses concerning which treatments are most effective for particular individuals. The aim of this study was to identify variables and generate hypotheses for future research. The variables that were assessed were the nonspecific variables of changing beliefs and complying with treatment, and the specific variables of decreasing binge eating, increasing social support, and increasing self-efficacy.

Who chooses OA and Jenny Craig?

A primary question addressed in this study concerned who is attracted to each program. It was found that respondents who were in OA reported an earlier onset of obesity, earlier dieting behavior, and a more extreme history of weight cycling than those who were in Jenny Craig. They also reported higher pre-treatment levels of binge eating and lower levels of social support and self-efficacy than did the Jenny Craig subjects. These data form an overall picture of the OA group as reporting more distress and a lengthier and more severe struggle with obesity. What is perhaps most striking about these data is that despite the OA group's self-described profile of having more distress and a longer history of obesity, their reported weights before treatment, current weights, and desired weights were no different than those provided by the Jenny Craig subjects.

One possible interpretation of these data is that the OA members are biased towards overreporting distress. Perhaps, the very experience of being in OA increases members' perceptions of themselves as having had a severe history of difficulties with eating and

weight. For example, members usually introduce themselves at every meeting by saying, "Hello, my name is _____ and I am a compulsive overeater." It is possible that repeating this self-statement at each meeting increases the salience of individuals' self-perceptions as overeaters, thus influencing the severity with which they rate their problems in this area. Another aspect of OA that may influence individuals' views of themselves as having a pervasive problem with overeating is the acceptance of the first step, which states, "We admitted we were powerless over food--that our lives had become unmanageable." Perhaps by "admitting powerlessness," individuals reconstruct the memory of their pre-treatment self-efficacy and report it to be at the lowest level. In contrast, individuals in Jenny Craig who have not admitted powerlessness may be less likely later to minimize their levels of pre-treatment self-efficacy.

Another interpretation of these data is that OA members are accurately representing a higher level of distress, despite weighing the same as the Jenny Craig group. If this is the case, one implication is that among overweight individuals who are in the same weight group, there are subgroups who are struggling more psychologically with regard to their obesity, and this is not necessarily correlated with being heavier. This finding can be understood within the risk-factor framework outlined by Friedman and Brownell (1995), where it is theorized that there are risk factors that place certain obese individuals in danger of experiencing psychological distress, rather than a general rule that obesity is or is not related to psychological functioning. The findings from this study would suggest that several variables may cluster together to form a high risk group: an early age of onset of obesity and dieting, a significant history of weight cycling, the perception of little social support, struggles with binge eating, and the perception of little self-efficacy. There are several potential hypotheses concerning how these variables relate to each other. One possibility is a causative explanation, suggesting that one or more of these variables occurred first in the individual and created an increased likelihood for the others to follow (e.g., earlier age of onset of obesity leads to earlier dieting which then causes binge eating

disorder to develop). Another possibility is that all of these variables could be related to another independent variable which is responsible for causing these difficulties to develop through some genetic or psychological mechanism (e.g., having a parent who is an obese binge eater). Longitudinal research will be necessary to determine the etiology of psychological distress associated with obesity.

Apart from work to understand the etiology of these risk factors, future research could address the relationship between client distress and ability to engage in different treatments. A randomized treatment trial that measured these client characteristics at baseline and assigned individuals to either OA or a cognitive-behavioral treatment could provide information about attrition from each program and evaluate who was able to stay in each treatment. Based on the findings from the present study, one could hypothesize that individuals who are in greater distress would be more likely to stay in OA than in Jenny Craig. The subsequent study could then follow these individuals over time and evaluate how well they do in each treatment.

The role of length of time in treatment

One significant difference between the two groups was the length of time individuals had been in treatment. The median length of time in OA was 65 months, while the median in Jenny Craig was only 7 months. While the subjects that chose to be in the study cannot be assumed to be a representative sample from each group, these data suggest the hypothesis that OA is a treatment that many people stay in for years, while Jenny Craig is a treatment that is generally used for less than a year. Time spent in the program is a feature of both client choice and the design of the programs; for example, the Jenny Craig program materials are designed to be completed within a year, while one could theoretically spend a lifetime "working the 12-steps."

Given the finding that the OA members had on average been in treatment eight times as long as the Jenny Craig clients had, questions arise concerning how to interpret the differences reported by the groups. In reporting their retrospective data, OA members are

being asked to remember their beliefs and behaviors from a much earlier time than the Jenny Craig group. This creates three possible rival hypotheses for why the OA group reported significantly greater changes than the Jenny Craig clients: (a) due to the lengthier time period under question, the OA subjects' memories may not be as accurate as the Jenny Craig subjects' memories, (b) OA members may be influenced by the fact that they have invested so much time in the program and therefore want to report correspondingly impressive changes, or (c) if clients who are successful stay in therapy longer, the OA subject group may be made up primarily of the most successful clients (because the others have dropped out), whereas the Jenny Craig subject group may not be comparably biased.

While none of the above rival hypotheses can be ruled out in the present study, some understanding of the relationship between time in treatment and clients' self-report of changes was obtained through correlational analyses of each group. These findings did not support the position that individuals report greater changes if they have been in treatment longer. Among the OA subjects, length of time in treatment had practically no predictive value for any other reported changes. In fact, the only significant result in either group was that Jenny Craig clients reported weight loss amounts that corresponded to length of time in treatment. A future study of the records maintained by Jenny Craig of client weight loss and time in treatment would shed light on whether this was an accurate representation or a biased report based on the desire to report changes commensurate with time and money invested in treatment.

Nonspecific treatment effects

The findings regarding nonspecific treatment effects (i.e., the acceptance of the treatment philosophy and compliance with treatment demands) indicated that these effects account for a similar amount of variance in each group for weight loss, but more variance in the Jenny Craig group than in the OA group for exercise and eating changes. The actual amount of variance accounted for by nonspecific treatment effects was fairly small; it was approximately 8% for both groups for weight loss. This suggests the hypothesis that the

influence of being in a program, no matter what the program is, will account for 8% of the subjects' weight loss. In order to test this hypothesis, the measures developed in the present study could be used to assess the nonspecific treatment effects in either of these programs in a controlled treatment trial in order to see if the relationship between these variables with outcome remains consistent.

In looking at the nonspecific and specific treatment factors together, the most effective models were the Jenny Craig models for BMI and exercise and the OA model for changes in eating. These models accounted for between 24% and 30% of the variance. While this is a statistically significant amount of variance, there remains much variance in outcome that is not explained by either the nonspecific or specific variables included in this study. However, given that these are all psychological variables, and the role of biology and genetics was not measured, these relationships can be interpreted as providing meaningful information about key psychological constructs that can be used to develop further hypotheses in understanding the effectiveness and processes of change associated with weight loss treatments.

Specific treatment factors

Observational ratings by research assistants supported the hypotheses that OA provides social support and addresses binge eating to a greater extent than Jenny Craig, and that Jenny Craig promotes self-efficacy to a greater extent than OA. The corresponding changes reported by program participants for these three domains supported the hypothesis that OA members would show greater improvements in social support and binge eating than Jenny Craig clients. However, the hypothesis regarding self-efficacy was only partially supported; Jenny Craig subjects did show significant improvements, but OA subjects showed even larger changes.

The original study hypotheses focused on the differences between the groups with the aim of identifying variables for matching clients to treatments. This remains an important direction for future research, but the self-selection of the subjects in each group

makes interpretation of the findings comparing the treatments difficult. However, the findings from within each group provide many ideas for research on each of these treatments individually, as well as potential strategies for matching.

Social support

The potential relevance of social support for weight loss is documented in the literature, and the present study suggests some specific hypotheses addressing the role of social support. In the current study, OA members reported lower levels of social support at pre-treatment than Jenny Craig clients, and also reported greater perceived support from friends inside the program than from friends outside the program, whereas for Jenny Craig clients the pattern was reversed. One hypothesis generated by these findings is that individuals who are low in social support from their family and friends can use the program's support in a compensatory manner, and this can in turn aid them in making the changes in their eating and exercise behaviors that promote weight loss. This hypothesis could be tested by using a dismantling design to isolate the impact of social support in weight loss programs. As described in the introduction, some studies of this type have been done by Perri and colleagues, who have demonstrated the importance of social support for weight loss maintenance (1984, 1986, 1987). A potential study could assess individuals' initial levels of social support from family and friends, and then randomly assign them to a standard treatment or a "social support" treatment that includes additional social support by therapists and peers. Researchers could then measure the degree to which individuals who are low in external social support are able to use the support from the treatment in a compensatory manner, and the subsequent correlates of this use with outcome.

The findings in the present study that subjects from both Jenny Craig and OA reported increases in social support from their own friends and families during the course of treatment suggests the hypothesis that eliciting social support from friends and families can be taught. If this were possible, it would be a particularly helpful component of

treatment for individuals who have little social support. Using the same design of randomly assigning individuals to a standard versus social support treatment, this hypothesis could be tested by explicitly teaching individuals how to elicit support from their friends and families in the social support condition, and avoiding such discussions in the standard condition.

Since the increases in social support as reported in the present study were particularly striking for the OA group, another strategy for future research would be to focus specifically on OA and assess the role of social support in this program over time. People could be assessed at pre-treatment and followed over time to evaluate the quality and changes in their relationships with individuals in the program and their outside friends and families. For a study of this type, it would be helpful to have a control group, but it is difficult to isolate the social support component of OA and create a control treatment. One possible idea would be to use all of the OA literature and create a bibliotherapy based on the addiction model and provide that as the comparison condition for sending people to OA meetings.

The assumption behind all of the research on social support in obesity treatments is that social support somehow helps people to lose weight; however, the way in which social support translates into greater weight loss is not obvious. In the present study, within the OA group, the additional social support received from OA friends, and the support perceived for weight loss efforts, was significantly correlated with increasing healthy eating patterns, but not with weight loss or exercise. The additional social support Jenny Craig members received from treatment was significantly related to weight loss, but not to changes in eating or exercise. However, family social support and social support specifically for weight loss efforts in the Jenny Craig group significantly correlated with weight loss and exercise. Future research could assess the particular ways in which individuals feel supported, and identify subscales such as instrumental support for eating better and exercising (i.e., having someone to run with, having a spouse who shops and

cooks healthy food) and emotional support (which theoretically could aid in decreasing binge eating behavior that stems from interpersonal difficulties). Then the relationship between the type and amount of support perceived and changes in behaviors and weight could be assessed.

Binge eating

The primary finding on binge eating in the present study was that both OA members and Jenny Craig clients reported significant decreases in binge eating over time; however, the OA group reported significantly higher pre-treatment levels of binge eating. This finding generates the hypothesis that there is a natural selection process occurring, where individuals who have severe problems with binge eating are more likely to become and remain members of OA than Jenny Craig. This could be tested by assessing individuals for binge eating and then randomly assigning them to OA or Jenny Craig and evaluating the subsequent attrition rates.

Another hypothesis that is generated from these findings is that OA may actually be a potentially helpful treatment for individuals with BED. While this study cannot speak to the actual effects of OA on BED, the finding that OA members report these changes supports the position that OA may be worth exploring further. As stated earlier, there is much interest now in developing treatments for BED which focus on decreasing binge eating as well as (and sometimes instead of) weight loss. It would be helpful to conduct a study where individuals with BED were randomly assigned to OA or a standard CBT or IPT treatment for BED. Outcome could then be evaluated in terms of attrition, decreases in binge eating, and weight loss.

In the present study, the reported relationship between binge eating and outcome was fairly straightforward--both groups demonstrated a significant relationship between decreasing their binge eating, losing weight, and increasing their healthy eating patterns. For the Jenny Craig group, decreases in binge eating were also correlated with increases in exercise. These findings imply that addressing binge eating is an important part of any

weight loss program, because even obese individuals who do not meet criteria for BED may have had some subclinical experiences with binge eating that could undermine weight loss efforts. In the Jenny Craig group, only 15% of the individuals met criteria for BED (compared with 52% for OA), yet the significance of the relationship between clients' report of decreasing binge eating and weight loss suggests that even among non-bingeing individuals there is a benefit from decreasing binge eating behaviors and cognitions.

In a similar manner to the proposed dismantling design for studying social support, the importance of addressing binge eating could also be studied in a randomized treatment trial where the treatments are identical except that one provides information and strategies for coping with binge eating, while the other does not (a treatment like Jenny Craig could be adapted in this way since the binge eating component is relatively confined). Clients' pre-treatment scores would be assessed, and the degree to which clients decrease their binge eating and the relationship between that and outcome would be measured.

Self-efficacy

In the present study, subjects from both groups reported significant increases in self-efficacy. While this was expected in the Jenny Craig group, it was not predicted for the OA subjects. Marlatt and Gordon's (1985) theory about the abstinence violation effect would predict that OA would undermine self-efficacy, but the data do not support this. This finding illustrates the need for future research to reconceptualize the role of self-efficacy in OA. The issue of control in 12-step programs is complicated, as reflected by the paradoxical message that you must "give up control," yet remain completely abstinent (i.e., in complete control).

One noteworthy finding from the present study was that OA members reported starting out at a much lower level of self-efficacy than did Jenny Craig clients, implying that when they joined OA they felt no confidence at all in their ability to control their eating. As discussed earlier, it is possible that the experience of being in OA and "admitting powerlessness" in accord with the first step influences individuals' beliefs about their pre-

treatment self-efficacy as they look back. This could be tested by assessing self-efficacy before subjects attend their first OA meeting, and then asking them to rate their pre-treatment self-efficacy retrospectively after they have "worked" the first step.

Another hypothesis that emerges from this finding is that OA members actually may have extraordinarily low pre-treatment levels of self-efficacy. In fact, this could make it easier to accept the basic premise of OA (i.e., "we admitted we were powerless"), for these individuals already feel they are powerless. In contrast, perhaps individuals who decide to stay in Jenny Craig have initially higher levels of self-efficacy, which enables them to utilize the strategies taught. The idea here is that the programs build upon the individuals' current perceptions of themselves, rather than trying to change them. The OA model concurs with the individuals' perception that they have no control over their eating, while the CBT model appeals to those individuals who believe that they can control their eating. This hypothesis could be tested by assessing self-efficacy and assigning individuals to either OA or a standard CBT for weight loss. Attrition and outcome then could be used to see if people are naturally attracted to programs that fit their view of their own self-efficacy, and whether that fit relates to better outcome.

Future research on self-efficacy in 12-step programs specifically should also use measures that are specially designed to address the question of whether people feel that they are in control, or that their higher power is. The difficulty in using the standard measures of self-efficacy that do not make these distinctions emerged in the present study when five of the OA subjects wrote that they do not control their eating, their higher power does, and answered that they had decreased their self-efficacy while in OA. Two other subjects wrote that they were answering the questionnaire as if speaking for the control that their higher power and they shared together. In order to more accurately assess this construct, the subjects' attributions for who controls their eating (themselves, their higher power, or both) need to be teased apart and assessed more accurately in order to obtain meaningful results.

Methodological limitations and interpreting the results

It is important to emphasize that the retrospective, self-report nature of the data collected in the study, combined with the fact that there were no control groups included and all subjects were self-selected, prohibits any inference that the changes reported by clients actually did occur and are due to the treatment. To date, there has been no research documenting the effectiveness of Jenny Craig or OA, and the purpose of the present study is hypothesis generating, rather than providing evidence determining how helpful or harmful these programs are. One important question that remains concerns the strength and nature of the relationship between the changes that clients self-report to have occurred while in treatment and the degree of change that would have been assessed by objective measures over time. One possible bias may be that subjects report greater changes in order to enhance their own feelings of success in the program. This may explain why the 25 pound mean weight loss reported by these subjects is twice as large as the 12 pound weight loss typically reported in the literature at follow-up (Wilson, 1993). However, even if subjects were perfectly accurate in their reporting of their own weight loss, the fact that subjects were self-selected from each group introduces the bias that those subjects who had succeeded in their weight loss endeavors may be more likely to still be in treatment (i.e., did not drop out) and willing to participate in the study. While it is impossible to speculate on how accurately subjects have reported their beliefs and behaviors, it is proposed that their attributions of change remain useful because they can be used to identify relevant variables for the continued study of these programs.

Conclusions

The findings from the present study support the hypothesis that OA and Jenny Craig provide philosophically and procedurally different treatments and that there are differences in how clients report changing their beliefs and behaviors based on which treatment they chose. Many hypotheses were generated and discussed based on the findings from this study. The initial focus of future research should be to evaluate each of

these programs separately to determine whether either proves helpful in treating obesity. Then, the specific variables of social support, binge eating, and self-efficacy can be studied both in terms of their direct effects on outcome and their usefulness as matching variables. It may be most useful to begin with separate studies that are designed to tease apart the influence of social support, binge eating, and self-efficacy on attrition and outcome. Once these are better understood, matching studies can be done that address the hypotheses that treatments may be more effective if they compensate for a deficit (i.e., provide social support), address a specific problem that not all clients have (i.e., binge eating), or provide a treatment philosophy that is congruent with the clients' current beliefs (i.e., the addiction versus CBT model matched to level of self-efficacy). In terms of planning matching studies, it is important to note that the differences between the groups evidenced in the present study were almost always a matter of degree and not direction. For example, even though social support and binge eating appear to be a greater focus in OA than in Jenny Craig, changes in these domains were still significantly related to reported changes in outcome in Jenny Craig, suggesting that these treatment elements remain important parts of this program. Therefore, as hypotheses are tested on the matching issue for obesity, clinical trials will need to have adequate power to measure subtle differential effects.

REFERENCES

Ainsworth, B. E., Jacobs, D. R., & Leon, A. S. (1993). Validity and reliability of self-reported physical activity status: The Lipid Research Clinics questionnaire. Medicine and Science in Sports and Exercise, 25, 92-98.

American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, D. C.: Author.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. Psychological Review, 84, 191-215.

Bernier, M. & Avard, J. (1986). Self-efficacy, outcome, and attrition in a weight-reduction program. Cognitive Therapy and Research, 10, 319-338.

Brownell, K. D., & Wadden, T. A. (1986). Behavior therapy for obesity: Modern approaches and better results. In Brownell, K. D. & Foreyt, J. P. (Eds.), Handbook of Eating Disorders: Physiology, Psychology, and Treatment of Obesity, Anorexia, and Bulimia (Chapter 9, pp. 181-197). New York: Basic Books.

Brownell, K. D. & Wadden, T. A. (1991). The heterogeneity of obesity: Fitting treatments to individuals. Behavior Therapy, 22, 153-177.

Brownell, K. D. & Wadden, T. A. (1992). Etiology and treatment of obesity: Understanding a serious, prevalent, and refractory disorder. Journal of Consulting and Clinical Psychology, 60, 505-517.

Carroll, L. J., Yates, B. T., & Gray, J. J. (1980). Predicting obesity reduction in behavioral and nonbehavioral therapy from client characteristics: The self-evaluation measure. Behavior Therapy, 11, 189-197.

Chambliss, C. A., & Murray, E. J. (1979). Efficacy attribution, locus of control, and weight loss. Cognitive Therapy and Research, 3, 349-353.

Clark, M. M., Abrams, D. B., Niaura, R. S., Eaton, C. A., & Rossi, J. S. (1991). Self-efficacy in weight management. Journal of Consulting and Clinical Psychology, 59, 739-744.

Clark, M. M., Ruggiero, L., Pera, V., Goldstein, M. G., & Abrams, D. B. (1991). Assessment, classification, and treatment of obesity: behavioral medicine perspective. Behavioral Medicine, 43, 903-926.

Emrick, C. D., Tonigan, J. S., Montgomery, H., & Little, L. (1993). Alcoholics anonymous: What is currently known? In B. S. McCrady & W. R. Miller (Eds.), Research on Alcoholics Anonymous: Opportunities and Alternatives (pp. 41-76). New Jersey: Rutgers Center of Alcohol Studies.

Finnegan, D. L. & Suler, J. R. (1985). Psychological factors associated with maintenance of improved health behaviors in postcoronary patients. Journal of Psychology, 119, 87-94.

Foreyt, J. P., Mitchell, R. E., Garner, D. T., Gee, M., Scott, L. W., & Gotto, A. M. (1982). Behavioral treatment of obesity: Results and limitations. Behavior Therapy, 13, 153-161.

Forster, J. L. & Jeffery, R. W. (1986). Gender differences related to weight history, eating patterns, efficacy expectations, self-esteem, and weight loss among participants in a weight reduction program. Addictive Behaviors, 11, 141-147.

Frank, J. D. & Frank, J. B. (1991). Persuasion and healing. Baltimore and London: Johns Hopkins University Press.

Friedman, M. A., & Brownell, K. D. (1995). Psychological correlates of obesity: Moving to the next research generation. Psychology Bulletin, 117, 3-20.

Glynn, S. M. & Ruderman, A. J. (1986). The development and validation of an eating self-efficacy scale. Cognitive Therapy and Research, 10, 403-420.

Goodrick, G. K., Raynaud, A. S., Pace, P. W., & Foreyt, J. P. (1992). Outcome attribution in a very low calorie diet program. International Journal of Eating Disorders, 12, 117-120.

Gormally, J., Rardin, D., & Black, S. (1980). Correlates of successful response to a behavioral weight control clinic. Journal of Counseling Psychology, 27, 179-191.

Griffiths, R. A., & Holliday, J. (1987). An evaluation and follow-up investigation of a behavioral group progamme for obesity. Psychotherapy and Psychosomatics, 48, 157-164.

Guy-Grand, B. (1987). A new approach to the treatment of obesity: discussion. Annals of New York Academy of Sciences, 313-317.

Hartz, A. J., Kalkhoff, R. K., Rimm, A. A., & McCall, R. J. (1979). A study of factors associated with the ability to maintain weight loss. Preventive Medicine, 8, 471-483.

Hollingshead, A. B., & Redlich, F. C. (1958). Social class and mental illness. New York: Wiley.

Jeffery, R. W., Bjornson-Benson, W. M., Rosenthal, B. S., Lindquist, R. A., Kurth, C. L., & Johnson, S. L. (1984). Correlates of weight loss and its maintenance over two years of follow-up among middle-aged men. Preventive Medicine, 13, 155-168.

Jeffery, R. W., French, S. A., & Schmid, T. L. (1990). Attributions for dietary failures: Problems reported by participants in the hypertension prevention trial. Health Psychology, 9, 315-329.

Jeffery, R. W., Wing, R. R., & Stunkard, A. J. (1978). Behavioral treatment of obesity: The state of the art in 1976. Behavior Therapy, 9, 189-199.

Johnson, C. L., & Sansone, R. A. (1993). Integrating the twelve-step approach with traditional psychotherapy for the treatment of eating disorders. International Journal of Eating Disorders, 14, 121-134.

Kazdin, A. E. (1986). Research designs and methodology. In S. L. Garfield & A. E. Bergin (Eds.), Handbook of psychotherapy and behavior change (3rd ed., pp. 23-68). New York: Wiley.

Keefe, P. H., Wyshogrod, D., Weinberger, E. & Agras, W. S. (1984). Binge eating and outcome of a behavioral treatment of obesity: a preliminary report. Behavior Research and Therapy, 22, 319-321.

Lavery, M. A., & Loewy, J. W. (1993). Identifying predictive variables for long-term weight change after participation in a weight loss program. Journal of the American Dietetic Association, 93, 1017-1024.

Losing Weight: What works. What doesn't. (1993). Consumer Reports, June, pp. 347-357.

Malenbaum, R., Herzog, D., Eisenthal, S., & Wyshak, G. (1988). Overeaters anonymous: Impact of bulimia. International Journal of Eating Disorders, 7, 139-143.

Marcus, M. D. (1993). Binge eating in obesity. In C. G. Fairburn & G. T. Wilson (Eds.) Binge Eating. New York: Guilford Press.

Marcus, M. D., Wing, R. R., Ewing, L., Kern, E., Gooding, W., & McDermott, M. (1990a). A double-blink, placebo-controlled trial of fluoxetine plus behavior modification in the treatment of obese binge eaters and non-binge eaters. American Journal of Psychiatry, 147, 876-881.

Marcus, M. D., Wing, R. R., Ewing, L., Kern, E., Gooding, W., & McDermott, M. (1990b). Psychiatric disorders among obese binge eaters. International Journal of Eating Disorders, 9, 69-77.

Marcus, M. D., Wing, R. R., & Hopkins, J. (1988). Obese binge eaters: Affect, cognitions, and response to behavioral weight control. Journal of Consulting and Clinical Psychology, 56, 433-439.

Marcus, M. D., Wing, R. R., & Lamparski, D. M. (1985). Binge eating and dietary restraint in obese patients. Addictive Behaviors, 10, 163-168.

Market Data Observation. (1993-1994). The Diet Business Bulletin, 2, 12-13.

Marketing and Advertising Trends. (1992). The Diet Business Bulletin, 1, 13.

Marlatt, G. A., & Gordon, J. R. (Eds.). (1985). Relapse prevention. New York: Guilford Press.

Mount, R., Neziroglu, F., & Taylor, C. (1990). An obsessive compulsive view of obesity and its treatment. Journal of Clinical Psychology, 46, 68-78.

Murphy, J. K., Williamson, D. A., Buxton, A. E., Moody, S. C., Absher, N., & Warner, M. (1982). The long-term effects of spouse involvement upon weight loss and maintenance. Behavior Therapy, 13, 681-693.

Nir, Z. & Neumann, L. (1991). Self-esteem, internal-external locus of control, and their relationship to weight reduction. Journal of Clinical Psychology, 47, 568-575.

Overeaters Anonymous (1987). To the Newcomer. Torrance, California: OA World Service Office.

Paffenbarger, R. S., Blair, S. N., Lee, I. & Hyde, R. T. (1993). Measurement of physical activity to assess health effects in free-living populations. Medicine and Science in Sports and Exercise, 25, 60-70.

Perri, M. G., McAdoo, W. G., McAllister, D. A., Lauer, J. B., Jordan, R. C., Yancey, D. Z., & Nezu, A. M. (1987). Effects of peer support and therapist contact on long-term weight loss. Journal of Consulting and Clinical Psychology, 55, 615-617.

Perri, M. G., McAdoo, W. G., McAllister, D. A., Laurer, J. B., & Yancey, D. Z. (1986). Enhancing the efficacy of behavior therapy for obesity: Effects of aerobic exercise and a multicomponent maintenance program. Journal of Consulting and Clinical Psychology, 54, 670-675.

Perri, M. G., McAdoo, W. G., Spevak, P. A., & Newlin, D. B. (1984). Effect of a multicomponent maintenance program on long-term weight loss. Journal of Consulting and Clinical Psychology, 52, 480-481.

Prochaska, J. O., Norcross, J. C., Fowler, J. L., Follick, M. J., & Abrams, D. B. (1992). Attendance and outcome in a work site weight control program: Processes and stages of change as process and predictor variables. Addictive Behaviors, 17, 33-45.

Procidano, M. A. & Heller, K. (1983). Measures of perceived social support from friends and from family: Three validation studies. American Journal of Community Psychology, 11, 1-24.

Project MATCH Research Group (1993). Project MATCH: Rationale and methods for a multisite clinical trial matching patients to alcoholism treatment. Alcoholism: Clinical and Experimental Research, 17, 1130-1145.

Rosensky, R. H. & Bellack, A. S. (1976). Individual differences in self-reinforcement style and performance in self and therapist-controlled weight reduction programs. Behavior Research and Therapy, 14, 357-364.

Ruggerio, L., Raciti, M. A., Abrams, D. B., Steinberg, J., Kahn, C., & Eaton, C. A., (1991). Significant-other support versus individual self-help approaches to weight loss and its maintenance in obese individuals with Type II diabetes. Manuscript submitted for publication. As cited in Clark, M. et al., 1991.

Saltzer, E. B. (1981). Cognitive moderators of the relationship between behavioral intentions and behavior. Journal of Personality and Social Psychology, 41, 260-271.

Sarason, B.R., Shearin, E. N., Pierce, G. R., & Sarason, I. G. (1987). Interrelations of social support measures: Theoretical and practical implications, Journal of Personality and Social Psychology, 52, 813-832.

Schwartz, M. B., & Brownell, K. D. (1995). Matching individuals to weight loss treatments: A survey of obesity experts. Journal of Consulting and Clinical Psychology, 63, 149-153.

Smith, D. E., Marcus, M. D., & Kaye, W. (1992). Cognitive-behavioral treatment of obese binge eaters. International Journal of Eating Disorders, 12, 257-262.

Sonne, J. L. & Janoff, D. (1979). The effect of treatment attributions on the maintenance of weight reduction: A replication and extension. Cognitive Therapy and Research, 3, 389-397.

Spitzer, R. L., Devlin, M. J., Walsh, B. T., Hasin, K., Wing, R., Marcus, M. S., Stunkard, A., Wadden, T., Yanovski, S., Agras, S., Mitchell, J., & Nonas, C. (1992) Binge eating disorder: A multisite field trial of the diagnostic criteria. International Journal of Eating Disorders, 11, 191-203.

Spitzer, R. L., Yanovski, L., Wadden, T., Wing, R., Marcus, R. D., Stunkard, A., Devlin, M., Hasin, D., & Horne, R. L. (1993). Binge eating disorder: Its further validation in a multisite study. International Journal of Eating Disorders, 13, 137-153.

Stotland, S. & Zuroff, D. C. (1991). Relations between multiple measures of dieting self-efficacy and weight change in a behavioral weight control program. Behavior Therapy, 22, 47-59.

Streja, D. A., Boyko, E., & Rabkin, S. W. (1982). Predictors of outcome in a risk factor intervention trial using behavior modification. Preventive Medicine, 11, 291-303.

Telch, C. F. & Agras, W. S. (1992) Group cognitive-behavioral therapy for binge eating disorder therapist manual. Unpublished manuscript, revised by D. E. Wilfley; available at Yale Center for Eating and Weight Disorders.

Telch, C. F., Agras, W. S., Rossiter, E. M., Wilfley, D., & Kenardy, J. (1990). Group cognitive-behavioral treatment for the nonpurging bulimic: An initial evaluation. Journal of Consulting and Clinical Psychology, 58, 629-635.

Wadden, T. A., Foster, G. D., Letizia, K. A. (1992). Response of obese binge eaters to treatment of behavioral therapy combined with very low calorie diet. Journal of Consulting and Clinical Psychology, 60, 808-811.

Wadden, T. A. & Letizia, K. A. (1992). Predictors of attrition and weight loss in patients treated by moderate and severe caloric restriction. In T. A. Wadden & T. B. Vanltallie (Eds.), Treatment of the Seriously Obese Patient (pp. 383-411). New York: Guilford Press.

Wilfley, D. E., Agras, W. S., Telch, C. F., Rossiter, E. M., Schneider, J. A., Cole, A. G., Sifford, L., & Raeburn, S. D. (1993). Group cognitive-behavioral therapy and group interpersonal therapy for the nonpurging bulimic: A controlled comparison. Journal of Consulting and Clinical Psychology, 61, 296-305.

Wilson, G. T. (1985). Psychological prognostic factors in the treatment of obesity. In J. Hirsh & T. B. Vanltallie (Eds.), Recent advances in obesity research: IV. Proceedings of the Fourth International Congress on Obesity (pp. 301-311). London: John Libbey. As cited in Wadden & Letizia, 1992.

Wilson, G. T. (1991). The addiction model of eating disorders: A critical analysis. Advances in Behaviour Research and Therapy, 13, 27-72.

Wilson, G. T. (1994). Behavioral treatment of obesity: Thirty years and counting. Advances in Behaviour Research and Therapy, 16, 31-75.

Wilson, G. T. & Brownell, K. D. (1980). Behavior therapy for obesity: An evaluation of treatment outcome. Advances in Behaviour Research and Therapy, 3, 49-86.

Wing, R. R., Marcus, M. D., Epstein, L. H., & Jawad, A. (1991). A "family-based" approach to the treatment of obese type II diabetic patients. Journal of Consulting and Clinical Psychology, 59, 156-162.

Wolfe, B. L. (1992). Long-term maintenance following attainment of goal weight: A preliminary investigation. Addictive Behaviors, 17, 469-477.

Yager, J., Landsverk, J., & Edelstein, C. K. (1989). Help seeking and satisfaction with care in 641 women with eating disorders: Patterns of utilization, attributed change, and perceived efficacy of treatment. The Journal of Nervous and Mental Disease, 177, 632-637.

Yanovski, S. Z. (1983). Binge eating disorder: Current knowledge and future directions. Obesity Research, 1, 306-324.

APPENDIX A

The Twelve Steps of Overeaters Anonymous

1. We admitted we were powerless over food--that our lives had become unmanageable.

2. Came to believe that a Power greater than ourselves could restore us to sanity.

3. Made a decision to turn our will and our lives over to the care of God as we understood him.

4. Made a searching and fearless moral inventory of ourselves.

5. Admitted to God, to ourselves, and to another human being the exact nature of our wrongs.

6. Were entirely ready to have God remove all these defects of character.

7. Humbly asked Him to remove our shortcomings.

8. Made a list of persons we had harmed, and became willing to make amends to them all.

9. Made direct amends to such people wherever possible, except where to do so would injure them or others.

10. Continued to take personal inventory and when we were wrong, promptly admitted it.

11. Sought through prayer and meditation to improve our conscious contact with God as we understood Him, praying only for knowledge of His will for us and the power to carry that out.

12. Having had a spiritual awakening as the result of these steps, we tried to carry this message to compulsive overeaters and to practice these principles in all our affairs.

APPENDIX B

Differences between OA and Jenny Craig

Cost. The cost of OA is a small ($1.00) contribution during each meeting in order to offset the cost of using the building (often a school, church, or community center). Other program items, such as books, pamphlets, and tapes are available at meetings, and the approximate cost of the primary books used is $20.00.

Jenny Craig is a much more expensive program. There is a start-up fee, the cost of the materials (videotapes, audiotapes, and a notebook of "modules" that cover information on nutrition, emotional eating, exercise, etc.), and the cost of food each week. The costs vary depending on how much weight the person wants to lose, but the range is estimated at $500 - $1000.

Structure. OA members attend group meetings, which are held at the same time and place on a weekly schedule. Members generally have a "home" meeting, which they attend most regularly, and from which they choose a sponsor. The sponsor is an OA member who has completed the 12 steps and who provides guidance and support for the new member. In addition to the home meeting, members may go to other meetings during the week. In larger metropolitan areas, there are many meetings throughout the day and evening, 7 days a week (Johnson & Sansone, 1993).

Jenny Craig operates through centers which are generally located in shopping plazas and are open daily from 7 am to 8 pm (except Sunday). During the first visit, clients set a goal weight. It is recommended that Jenny Craig clients attend the weight loss center twice weekly; once for an individual weigh-in and consultation, and once to attend a workshop with other members where there is a topic videotape and a group discussion. Members follow a 1,050-1,200 calorie plan (this can be adjusted for individual needs) and buy their food from Jenny Craig during the weight loss phase of the program.

Once they are half-way to their goal weight, clients begin to plan their own meals. They then eat Jenny Craig food for 5 days/week and their own food for 2 days/week until they reach their goal. Once their goal is reached, they decrease the number of days of Jenny Craig food gradually over a two-month "stabilization" period. At the end of this time, monthly weigh-in visits are recommended.

Leadership. OA is a strictly peer led organization. At each meeting, one member takes the role of facilitator.

Jenny Craig centers are run by paraprofessionals who are trained by the organization. The Jenny Craig program, however, has been designed by professionals (primarily nutritionists and psychologists). The nutritional balance provided by the food and the validity of the recommended cognitive-behavioral strategies are presented to the client with reference to those professionals who consult with Jenny Craig.

APPENDIX C

Pilot psychometric data for self-made measures

Due to the necessity of developing several measures for the present study, a pilot study was conducted in order to obtain psychometric information about the measures before the primary data collection.

Method

Sample and Procedure. Subjects were 65 Jenny Craig clients. All subjects were recruited during December 1994 and returned their survey by mail. Four Jenny Craig centers were given 50 surveys each and were instructed to hand them out to each person who came in during the next two weeks. The response rate for the Jenny Craig group was 33%.

Measures. Each of the following measures assessed both current and retrospective pre-treatment levels of the construct.

Eating Patterns Questionnaire. This 10-item questionnaire was designed to assess healthy eating patterns.

DSM-IV BED Questionnaire. This 14-item questionnaire was designed to assess whether or not an individual met criteria for BED.

Physical Activity Questionnaire. This 14-item questionnaire was designed to assess physical activity levels. It combined the LRC Physical Activity Questionnaire with questions from a sample survey published by Paffenbarger, Blair, Lee, and Hyde (1993).

Beliefs About Eating and Weight. This 18-item questionnaire was designed to assess the degree to which individuals believed the philosophies of the addiction model and cognitive-behavioral relapse prevention model of obesity treatment.

Key Elements of Treatment. This 18-item questionnaire was designed to assess the elements of treatment found in each program, and the degree to which the client finds them important.

Jenny Craig Strategies Questionnaire. This 20-item questionnaire was designed to assess the particular strategies of the Jenny Craig program that clients used, how often they used them, and how helpful they found them.

Results

Demographic and weight data. The Jenny Craig sample consisted of 63 women and 2 men. The mean age was 42.3 years (SD = 12.4 years). The average length of time in the program was 8.6 months (SD = 8.1). Their mean weight when starting the program was 203 lbs. (SD = 50.4), their mean current weight was 175 lbs. (SD = 42.0), their mean lowest weight obtained while on the program was 172 (SD = 42.0), and their mean goal weight was 145 lbs. (SD = 20.0).

Eating Patterns Questionnaire. The original 10 items did not reach acceptable levels of internal reliability (alpha = .28), so the items were reevaluated for content and correlation with the total and three were dropped, leaving a 7-item scale with an alpha of .81. For the final survey, three new items were added, and the alpha level was .82.

DSM-IV BED Questionnaire. The primary difficulty with this questionnaire in its original form was missing and inconsistent data. The format was changed to clarify the questions and provide more structure to the respondent.

Physical Activity Questionnaire. One of the questions required reporting the number of hours per day spent at different levels of activity, and despite clear indication that the total number of hours needed to add up to 24 per day, only 77% of the samples' data did so. This item was therefore dropped. The alpha for the remaining items was .70. For the final survey, a new item was used to assess the number of times per week rather than the number of hours per day spent at different activity levels, and the item assessing the number of minutes walked through the day was dropped due to missing data. The alpha was .72 for the final scale.

Beliefs About Eating and Weight. The overall alpha for the entire scale was .67. The alpha for the CBT subscale was .82, and the alpha for the Addiction subscale was .82.

Using only the Jenny Craig clients, a repeated measures MANOVA was done to measure how clients' acceptance of the CBT and Addiction models changed over time. Significant main effects were found for time, F (1, 52) = 37.0, $p < .0001$, type of model, F (1, 52) = 41.9, $p < .0001$, as well as a significant time X type interaction, F (1, 52) = 104.8, $p < .0001$. The mean scores on each subscale reflected the expected changes; Jenny Craig clients increased their belief in the CBT model from M = 28.6 (SD = 6.9) to M = 40.2 (SD = 4.1), while they decreased their belief in the Addiction model from M = 29.3 (SD = 7.8) to M = 26.8 (SD = 7.9). The questionnaire was not changed for the final survey.

Key Elements of Treatment. The overall alpha for the entire scale was .81, while the subscales were each .88. Because there is overlap between the elements provided by each treatment, this was found acceptable, and no changes were made for the final survey.

Jenny Craig Involvement Questionnaire. The overall alpha for the entire scale in terms of the number of times strategies were used was .79. Frequencies revealed that each item on the scale assessed a treatment element that was used by the majority, but not all, of the clients. No changes were made in the measure.

Relationship among measures. In order to assess how the measures related to each other, correlation analyses were used. Weight loss and increasing exercise was significantly correlated, $r = .57$, $p = .0001$, while weight loss and an increase in healthy eating patterns showed a mild relationship, $r = .21$, $p = .08$. There was not a significant relationship between changes in eating or exercise and time in the program. The degree to which clients believed in the CBT model correlated significantly with an increase in healthy eating patterns, $r = .24$, $p < .06$, and an increase in exercise, $r = .33$, $p < .02$.

Discussion

The pilot study results guided changes in some of the measures and supported the use of the other measures for the final study. The direction of the intercorrelations among the measures suggests they were adequately assessing the constructs of interest.

APPENDIX D

Key Elements of Treatment Questionnaire

Different weight loss methods provide different types of guidance and help. Listed below are aspects of a number of different weight loss methods. Some of these will apply to Overeaters Anonymous and others will not. Please circle "YES" for all of the treatment components that are part of your experience in Overeaters Anonymous and rate how important you have found each of these characteristics to be in your involvement in OA. If the described treatment component was not part of your experience, please circle "NO" and skip the rating of importance.

Please use this scale to rate the importance of each component for YOU:

1	2	3	4	5
not important	slightly	moderately	very	extremely

	IN OA?		IMPORTANCE				
1. Helped me admit I am powerless over food	YES	NO	1	2	3	4	5
2. Provided trained counselors to guide my way	YES	NO	1	2	3	4	5
3. Helped me discover foods that I must avoid	YES	NO	1	2	3	4	5
4. Taught me that I can control my eating	YES	NO	1	2	3	4	5
5. Provided meetings where I shared my thoughts and feelings	YES	NO	1	2	3	4	5
6. Taught me how to identify my high-risk emotions	YES	NO	1	2	3	4	5
7. Helped me turn my will over to my Higher Power	YES	NO	1	2	3	4	5
8. Provided educational workshops on how to change	YES	NO	1	2	3	4	5
9. Encouraged me to use prayer/meditation	YES	NO	1	2	3	4	5
10. Taught me ways to change my eating habits (e.g., eat 3 meals a day, slow down my eating)	YES	NO	1	2	3	4	5
11. Provided a sponsor who has had similar struggles	YES	NO	1	2	3	4	5
12. Taught me that my urge to binge will pass if I can distract myself and delay giving in to it	YES	NO	1	2	3	4	5
13. Taught me that I cannot control my eating and I must turn it over to my Higher Power	YES	NO	1	2	3	4	5
14. Taught ways to cope when others urge me to eat	YES	NO	1	2	3	4	5
15. Taught me how to use the phone, writing, and literature as tools to help myself	YES	NO	1	2	3	4	5
16. Taught me that I can analyze the situation around a lapse, and plan strategies to improve next time	YES	NO	1	2	3	4	5
17. Provided the opportunity to make friends who I spend time with outside of meetings	YES	NO	1	2	3	4	5
18. Taught me to forgive myself when I make a mistake	YES	NO	1	2	3	4	5

APPENDIX E

Beliefs About Eating and Weight Questionnaire

Please rate the degree to which you agree with the following statements right now, and thinking back, the degree to which you would have agreed with each statement before you joined Overeaters Anonymous.

I AGREE:	1 not at all	2 a little	3 somewhat	4 quite a lot	5 very strongly

	CURRENTLY	BEFORE OA
1. Compulsive overeating is an addiction, like alcoholism.	____	____
2. The key to weight loss is eating a healthy, nutritionally balanced diet.	____	____
3. There are certain "bad" foods I should not eat.	____	____
4. Compulsive overeating is a disease.	____	____
5. I can control my eating behaviors.	____	____
6. Moderation and balance are the keys to lifestyle change.	____	____
7. I will always be a compulsive overeater.	____	____
8. In order to lose weight, I must increase my level of exercise.	____	____
9. I can turn lapses (mistakes) into effective coping strategies.	____	____
10. I have an addictive personality.	____	____
11. I can learn to control my eating by rehearsing self-management skills to cope with difficult food situations.	____	____
12. I am/was overweight because I am a compulsive overeater.	____	____
13. I am powerless over food.	____	____
14. Only a Power greater than myself can help me recover from compulsive overeating.	____	____
15. There are certain addictive foods that I must avoid.	____	____
16. I can learn methods that will empower me to control my eating completely on my own.	____	____
17. I can eat anything I want, in moderation.	____	____
18. I can learn valuable lessons from my mistakes.	____	____

APPENDIX F

OA Involvement Measures

Overeaters Anonymous Involvement Questionnaire

1. Have you ever attended an OA meeting? YES NO

2. Have you attended an OA meeting in the last year? YES NO

3. Have you ever considered yourself to be a member of OA? YES NO

4. Have you ever gone to "90 meetings in 90 days"? YES NO

5. Have you ever celebrated an OA abstinence birthday? YES NO

6. Have you ever had an OA sponsor? YES NO

7. Have you ever had a spiritual awakening or conversion experience since your involvement in OA? YES NO

8. Have you ever been in an eating disorders treatment program (inpatient or outpatient) YES NO

9. Which of the 12 steps of OA have you "worked"? (circle all that apply)

0 (none)

1 2 3 4 5 6 7 8 9 10 11 12

10. How many OA meetings do you typically attend per week? _____

11. How many OA meetings have you attended in the last year? Please enter your best estimate below. If you did not attend any OA meetings, enter "0".

_____

12. What is the total number of OA meetings that you have ever attended? Please enter your best estimate below.
If you have never attended any meetings, enter "0".

_____

13. Are there certain foods you avoid entirely? (e.g., refined sugar, white flour)

YES NO

What are they?

_____

14. How do you define "abstinence?"

Overeaters Anonymous Participation Scale

Please indicate which of these activities are currently part of your OA program, and then rate how important they are to your recovery today using the following scale:

1 -- This activity is **not important** for my recovery today.
2 -- This activity is **somewhat meaningful** for my recovery today.
3 -- This activity is **important, but not essential** for my recovery today.
4 -- This activity is **important** to my recovery today.
5 -- This activity is **a central, key aspect** of my recovery today.

After you have rated the OA activities that you participate in, please go through and rank the five activities that are most important for your recovery today. Please assign the most important activity "1," the second most important, "2," etc.

Activity	Participate?		Rating of Importance	Rank
1. Attending meetings	YES	NO	1 2 3 4 5	_____
2. Praying	YES	NO	1 2 3 4 5	_____
3. Following a food plan	YES	NO	1 2 3 4 5	_____
4. Calling a sponsor	YES	NO	1 2 3 4 5	_____
5. Writing in a journal	YES	NO	1 2 3 4 5	_____
6. Calling other OA friends	YES	NO	1 2 3 4 5	_____
7. Eating abstinently	YES	NO	1 2 3 4 5	_____
8. Reading OA literature	YES	NO	1 2 3 4 5	_____
9. Sharing at a meeting	YES	NO	1 2 3 4 5	_____
10. Reaching out to newcomers	YES	NO	1 2 3 4 5	_____
11. Doing a tenth step	YES	NO	1 2 3 4 5	_____
12. Sponsoring	YES	NO	1 2 3 4 5	_____
13. Avoiding certain foods	YES	NO	1 2 3 4 5	_____
14. Meditating	YES	NO	1 2 3 4 5	_____
15. Weighing and measuring food	YES	NO	1 2 3 4 5	_____
16. Turning problems over to a Higher Power	YES	NO	1 2 3 4 5	_____
17. Giving away food to a sponsor	YES	NO	1 2 3 4 5	_____
18. Eating a balanced diet	YES	NO	1 2 3 4 5	_____

APPENDIX G
Jenny Craig Involvement Questionnaire

Please check each of the items below that you have done during your time in Jenny Craig. It is likely that some of these items will not apply to you; just circle "NO" if they do not. For each item that you have done, rate how often per week you did it, and how helpful it was for you overall:
(1) not helpful (2) a little helpful (3) moderately (4) very helpful (5) extremely

	Used?		# times / week	How helpful?
1. Kept a food diary	Yes	No	_____	1 2 3 4 5
2. Drank 8 glasses of water per day	Yes	No	_____	1 2 3 4 5
3. Attended Jenny Craig workshops	Yes	No	_____	1 2 3 4 5
4. Made lunch and dinner last at least 20 minutes	Yes	No	_____	1 2 3 4 5
5. Read Jenny Craig program materials	Yes	No	_____	1 2 3 4 5
6. Increased my lifestyle physical activity level	Yes	No	_____	1 2 3 4 5
7. Planned ahead for a restaurant or party	Yes	No	_____	1 2 3 4 5
8. Measured out portions of foods	Yes	No	_____	1 2 3 4 5
9. Read labels for calorie and fat information	Yes	No	_____	1 2 3 4 5
10. Met with my Jenny Craig counselor	Yes	No	_____	1 2 3 4 5
11. Shared my experiences in workshops	Yes	No	_____	1 2 3 4 5
12. Had an overeating episode	Yes	No	_____	1 2 3 4 5
13. Forgave myself after an overeating episode	Yes	No	_____	1 2 3 4 5
14. Had a full-blown binge.	Yes	No	_____	1 2 3 4 5
15. Forgave myself after a binge.	Yes	No	_____	1 2 3 4 5
16. Analyzed the situation surrounding a binge or overeating episode	Yes	No	_____	1 2 3 4 5
17. Made hunger my primary reason for eating	Yes	No	_____	1 2 3 4 5
18. Ate only in "eating places"	Yes	No	_____	1 2 3 4 5
19. Planned a strategy for dealing with a difficult eating situation.	Yes	No	_____	1 2 3 4 5
20. Rehearsed my plans ahead of time	Yes	No	_____	1 2 3 4 5
21. Took vitamin supplements.	Yes	No	_____	1 2 3 4 5
22. Used Jenny Craig audio/videotapes	Yes	No	_____	1 2 3 4 5

APPENDIX H

Measures for Observational Ratings

Treatment Philosophy Rating Scale

Please rate the degree to which these statements are representative of the attitudes and beliefs expressed in the meeting that you just attended.

1	2	3	4	5
not at all	a little	moderately	very much	extremely

1.	Compulsive overeating is an addiction, like alcoholism.	1 2 3 4 5
2.	The key to weight loss is eating a healthy, nutritionally balanced diet.	1 2 3 4 5
3.	There are certain "bad" foods I should not eat.	1 2 3 4 5
4.	Compulsive overeating is a disease.	1 2 3 4 5
5.	I <u>can</u> control my eating behaviors.	1 2 3 4 5
6.	Moderation and balance are the keys to lifestyle change.	1 2 3 4 5
7.	I will always be a compulsive overeater.	1 2 3 4 5
8.	In order to lose weight, I must increase my level of exercise.	1 2 3 4 5
9.	I can turn lapses (mistakes) into effective coping strategies.	1 2 3 4 5
10.	I have an addictive personality.	1 2 3 4 5
11.	I can learn to control my eating by rehearsing self-management skills to cope with difficult food situations.	1 2 3 4 5
12.	I am overweight because I am a compulsive overeater.	1 2 3 4 5
13.	I am powerless over food.	1 2 3 4 5
14.	Only a Power greater than myself can help me recover from compulsive overeating.	1 2 3 4 5
15.	There are certain addictive foods that I must avoid.	1 2 3 4 5
16.	I can learn methods that will empower me to control my eating completely on my own.	1 2 3 4 5
17.	I can eat <u>anything</u> I want, in moderation.	1 2 3 4 5
18.	I can learn valuable lessons from my mistakes.	1 2 3 4 5

Treatment Components Scale

In the meeting you just attended, please rate the degree to which these statements represent the statements that people made and the atmosphere of the meeting.

1	2	3	4	5
not at all	a little	moderately	very much	extremely

1.	An important part of this program is the support group members have received from others.	1 2 3 4 5
2.	By joining this program, people do not feel alone anymore.	1 2 3 4 5
3.	People in this program are willing to listen to each other.	1 2 3 4 5
4.	You can count on people in this program for help in dealing with food and eating difficulties.	1 2 3 4 5
5.	People in this program call each other for support.	1 2 3 4 5
6.	People in this program really get to know others who struggle with the same problems they do.	1 2 3 4 5
7.	People in this program encourage each other.	1 2 3 4 5
8.	People in this program motivate each other.	1 2 3 4 5
9.	People feel supported by the others they meet in this program.	1 2 3 4 5
10.	Rate the degree to which the meeting contained <u>specific</u> information and guidance concerning how someone could control their eating and avoid overeating in the following situations:	
	a) when there are many foods available	1 2 3 4 5
	b) when they are being pressured to eat by other people	1 2 3 4 5
	c) when they are experiencing physical discomfort (e.g., a headache, feeling tired or run down)	1 2 3 4 5
	d) when they are engaged in positive activities (e.g., (e.g., watching T.V., just before bed, reading).	1 2 3 4 5

1 not at all	2 a little	3 moderately	4 very much	5 extremely

11.	The meeting provides practical suggestions to help people make the changes they desire.	1 2 3 4 5
12.	The meeting addressed the problem of specific, out of control, overeating episodes (binge eating episodes).	1 2 3 4 5
13.	People talked about the problem of eating an unusually large amount of food.	1 2 3 4 5
14.	People talked about the feeling of being out of control of your eating.	1 2 3 4 5
15.	People talked about feelings of shame or guilt after binge eating episodes.	1 2 3 4 5
16.	This meeting would help people feel less alone with their experience of binge eating.	1 2 3 4 5
17.	People talked about how binge eating has impacted their lives.	1 2 3 4 5
18.	People talked about how binge eating has impacted their view of themselves.	1 2 3 4 5
19.	People talked about things they had done to avoid gaining weight after binge eating (i.e., vomit, laxatives, diuretics, fasting, exercising excessively)	1 2 3 4 5
20.	People discussed the ways in which they have been able to stop their binge eating.	1 2 3 4 5
21.	The meeting focused on people's struggles with binge eating.	1 2 3 4 5