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Weight loss as a function of treatment and personality variables

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WEIGHT LOSS AS A FUNCTION OF TREATMENT AND PERSONALITY VARIABLES

by

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Abstract

WEIGHT LOSS AS A FUNCTION OF
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by
Diana Attardo Darlington

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This study investigates weight loss as a function of treatment and personality variables. Hypotheses deal with the relationship to weight loss, weight fluctuation, and attendance of two types of group treatment (Behavioral and Support) and individual differences in eating styles, socially-desirable responding, field independence, verbal ability, and depression.

The participants were 159, primarily middle-class, female volunteers aged 19 to 53, recruited for a 12-week weight loss program. Pretests included the Eating Inventory (Stunkard & Messick, 1988), the Group Embedded Figures Test (Witkin, Oltman, Raskin, & Karp, 1971), the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1967), the vocabulary subscale of the Wechsler Adult Intelligence Scale, Revised (Wechsler, 1981), and the Center for Epidemiologic Studies Depression Scale (Devins & Orme, 1985). Participants were assigned to treatment group by a

random procedure. Because of schedule disruptions, only data for the first eight sessions were analyzed. The analysis of attendance and attrition included 107 participants who attended at least one session; only 48 were eligible for inclusion in the analyses to predict weight loss and weight fluctuation.

Multiple regression analyses revealed that Behavioral treatment resulted in greater weight loss than Support treatment ($p = .03$), and that disinhibited eating style interacted with treatment in the prediction of weight loss ($p = .03$). Field independence was also significantly related to weight loss ($p = .02$). Vocabulary I.Q. predicted continuing in treatment ($p = .002$). None of the other variables was predictive of weight loss or attendance, and no person or treatment variables predicted weight fluctuation.

The results appear to have identified two subgroups of obese persons: those with high field independence scores, who appear to be able to lose weight in either type of treatment, and those with low disinhibition eating style scores, for whom behavioral treatment appears to be clearly more effective.

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This dissertation is dedicated to the memory of my loving parents, Sam and Sarah Attardo. The work would not have been accomplished without the encouragement, caring, and ongoing support of my dear friend, Leonard Sanders; or the patience of Jordan Lubitz.

My greatest debt is to my mentor, Charles P. Smith, whose exacting standards, expert feedback, accessibility, interest in the research, research group meetings, and many hours of personal time facilitated the process.

Suzanne C. Ouellette was a source of inspiration in the early phases of the work. Her constant encouragement and rapid return of submitted writings was deeply appreciated, as was the sharing of her keen understanding of the mechanics of conducting research.

Even before David Rindskopf became a member of the Committee, he made valuable recommendations during two meetings of a statistical consulting seminar. The groups' suggestions facilitated finalizing the research design with reasonable confidence in the appropriateness of the statistics. I am also grateful to David for inviting me to two meetings where I met major obesity researchers, including Albert Stunkard.

During the proposal phase of this study, Samuel Messick served on the Committee. The documents he provided, and his

suggestions and enthusiasm helped launch the work.

Louis J. Gerstman, my masters thesis mentor at City College, generously offered to serve on the Committee when Samuel Messick left the Graduate Center. Lou's statistical expertise was helpful in the original conceptualization of the research design, and he continued to offer help until his untimely death.

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Jean Bresnahan is the person most responsible for making me a teacher of psychology. I appreciated and enjoyed her fine teaching as an undergraduate student. I am particularly in Jean's debt for a through, insightful, and expert reading of my dissertation and for helpful and important comments regarding the randomization procedure.

Due to the complexity of the power analyses, with the approval of my committee, Marc Glassman completed the calculations during the hiatus between statistical experts.

Ronald Ruden, M.D. is acknowledged for a consultation regarding the diet and his approach to treatment.

Finally, I wish to thank my very first psychology mentor, Rita Y. D'Angelo, for setting me on the path.

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Chapter 1

Introduction

This study investigates weight loss as a function of treatment and personality variables. Factors affecting weight loss are of considerable interest because obesity is a major health concern in the United States today (Abraham & Johnson, 1980; Berg, 1993; Bray, 1987; Corbin, Dowell, Lindsey, & Tolson, 1978; Jeffrey, Folsom, Luepker, Jacobs, Gillum, Taylor, & Blackburn, 1984; Jeffrey & Katz, 1977; Stewart & Brook, 1983). According to the National Institutes of Health Consensus Development Conference Statement (1985), "Obesity is an excess of body fat frequently resulting in a significant impairment of health." The Statement reports that 34 million adult Americans are 20% or more over their appropriate body weight and have a higher risk of morbidity or mortality as compared with average-weight Americans. Recognition of the health hazards of obesity has generated considerable interest in the development of both effective methods of weight reduction and maintenance of an appropriate body weight (Abrams & Follick, 1983; Davis & Dawson, 1980; Leon, 1976). It should be noted, however, that certain researchers (see Ernsberger & Haskew, 1987) have stated that the risks of obesity are

not statistically supported, and that there is greater risk in having too much lean muscle tissue than in being overweight.

Problems in the Treatment of Obesity

Obesity is a multifaceted condition in terms of both etiology and treatment. There appear to be many types of obesity and a variety of treatment modalities. Several investigators have suggested that obese persons should be studied in terms of a number of subgroups (Berlinger, 1970; Bruch, 1963; and Dunbar, 1959). Hamburger (1958) and Stunkard and McLaren-Hume (1959) believe obesity may be better explained as a syndrome than as a simple disorder. In a 1959 review of the literature on treatment for obesity over a 30-year period, Stunkard and McLaren-Hume found little success. Leon's (1976) extensive literature review of various treatments found that results are discouraging. However, she concluded that behavioral treatments worked better than other therapies for promoting and maintaining weight loss. Knittle (1972) suggested that obesity is both the simplest and most complex of disorders to treat. The simple aspect is that caloric restriction results in weight loss. However, numerous physiological and psychological factors complicate the process.

In 1974, Levitz and Stunkard pointed out that neither investigators of the problem of obesity nor investigators of specific therapeutic modalities were able to predict

individual responses to treatment. They proposed that it would be valuable to identify even a small group of persons who can predictably lose weight. Such persons with a hopeful prognosis could then be directed to appropriate professionals. Straw and Terre (1983) attempted individualization of treatment based upon various assessment tools. Forty-nine women participated in a 10-week weight loss program in one of the following three conditions: individually administered standardized treatment, group administered standardized treatment, or individually administered individualized treatment. There were no weight loss differences among treatments for the 42 completers. However, at a nine-and-a-half-month follow-up, subjects in the standardized group and the individualized treatment conditions had continued to lose weight while those in the individually administered standardized treatment gained weight. Prediction of success or failure has become an important line of research (Brownell & Stunkard, 1978; Leon & Rosenthal, 1984). The present study addresses this matter.

Certainly, many people have successfully maintained a significant weight loss, as artfully demonstrated by Schachter (1982), as well as by Jeffrey and Wing (1983). It is those who are unsuccessful on their own who seek help. Nonetheless, the multi-million dollar diet industry has failed to achieve promised weight loss in many persons, or

long-term maintenance in most of those who initially reach a goal weight. On September 25, 1990, Marian Burros reported in The New York Times that the Federal Trade Commission was investigating claims made by a number of diet programs. As of August 21, 1992, there is before the Federal Trade Commission a Petition to Commence a Trade Regulation Rule Proceeding to Establish Advertising Standards for the Weight Loss Industry (Federal Trade Commission, 1992). It is also interesting to note that after conducting four yearspof hearings on the diet industry, the Federal Communications Commission, on October 1, 1993, issued advertising guidelines requiring no claims of dramatic success and no long-term promises.

Part of the reason for the failure of diet treatments is that dieting slows the metabolism from 15 to 30 percent below pre-diet levels, making the body energy efficient, counteracting the effects of reduced caloric intake (Apfelbaum, Bostsarron, & Lacatis, 1971). Dieting usually causes loss of fat and muscle tissue, as fat is "burned" in lean tissue. The metabolic rate is higher in lean than in fatty tissue. Regained weight is more likely to be fat than muscle, impairing a future attempt at weight loss. Fat is then lost more slowly with each succeeding diet and quickly regained, usually resulting in a new record high weight (Wooley, Wooley, & Dyrenforth, 1979).

Exercise can raise the metabolic rate for hours

afterward (Thompson, Jarvie, Lahey, & Cureton, 1982) and is recommended by many obesity research and treatment professionals. Therefore most treatment programs reduce caloric intake, introduce exercise, and teach behavioral techniques for habit change. Generally no attempt is made to fit treatment to the individual.

Unfortunately, adherence to most treatment programs is usually poor (Jeffrey & Coates, 1978; Jeffrey, Wing, & Stunkard, 1978; Lansky, 1981; Leon & Rosenthal, 1984; Sjoberg & Persson, 1979), and there are problems with attendance and attrition as well (Bennett & Jones, 1986; Hagen, Foreyt, & Durham, 1976; Pekarik, Blodgett, Evans, & Wierzbicki, 1984). Abrams and Follick (1983) compared large sized groups which were professionally led and utilized intergroup competition, organizational behavioral techniques, and media feedback. Seventy-five percent of the subjects dropped out. For Stunkard and Brownell (1980), the drop out rate was 31% for volunteer-led groups and 82% for professionally-led groups. Peterson, Abrams, Elder, and Beaudin (1985) experienced a drop out rate of 71% in their professionally-led groups and 48% in volunteer-led groups.

One factor affecting the effectiveness of treatment is the length of a treatment intervention. In a representative group of studies, treatment duration with measurable results ranged from 7 to 16 weeks. For example, Chapman and Jeffrey (1979) used a seven-week treatment program, McReynolds,

Lutz, Paulsen, and Kohrs (1976) treated for eight weeks, Carroll, Yates, & Gray (1980) treated for nine weeks, Stalonis, Johnson, and Christ (1978) and Straw and Terre (1983) conducted 10-week programs, Stalonis and Kirschenbaum (1985) treated for 12 weeks, and Gormally, Rardin, and Black (1980) treated for 16 weeks, all with measurable treatment results. Bennett (1987) reviewed 57 studies with 3,864 participants between 1966 and 1977, and reported mean treatment length to be 11 weeks. Because treatment programs of 12 or fewer weeks were shown to be effective, it was decided that the present research would employ a 12-week weight loss treatment program.

In the studies mentioned above, significant weight loss was demonstrated with relatively small numbers of participants.

Purpose of the Research

Because some individuals benefit from available treatments while many do not, in the interest of saving time, money, frustration, and disappointment, current research should focus upon (a) identifying the characteristics of persons who are likely to benefit from particular interventions, and (b) developing more individualized methods of intervention. It is reasonable to assume that there may be no single, effective treatment for a disorder which may not be a single entity, and that treatments that ignore individual differences are not likely

to be universally effective.

The primary purpose of the present study is to examine whether certain eating styles interact with certain types of group treatment for obesity to facilitate or hinder weight loss. The study will also examine whether field independence, depressed mood, initial weight, and age predict weight loss, weight fluctuation, and attendance at treatment sessions.

Eating Styles

There has been much debate as to whether there are differences in eating style between obese and non-obese persons. While some studies have failed to document differences (e.g. Mahoney, 1975), Nisbett and Kanouse (1969) found obese persons to be "switchlike" in their eating behavior, either overeating or not eating at all. Others have found differences in the rate of eating, and in responses to taste cues, with obese persons eating faster (Keane, Geller, & Scheirer, 1981), eating more good tasting food as compared with bad tasting food (Decke, 1971; Nisbett & Gurwitz, 1970), and eating more in the presence of external cues (Chavez & Michaels, 1980; Cohen & Alpert, 1978; Kincey 1981; Nisbett, 1968; Saltzer, 1982; Schachter, 1971; Schachter & Gross, 1968). Schachter and Gross (1968) hypothesized that persons of normal weight used internal physiological hunger cues to control food consumption, while obese persons were more responsive to external environmental

cues. Functional deficiencies of the obese eater's hypothalamus were hypothesized to make regulation difficult.

Herman and Mack (1975), in pursuit of differences between obese and non-obese persons, developed a 5-item restraint questionnaire in an attempt to further examine externality as it relates to eating problems. Questions dealt with attitudes toward food and frequency of dieting. They found that unrestrained eaters (persons whose responses suggest that they regulate food intake by eating when they are hungry in response to internal cues) were behaviorally different from those they called restrained eaters (persons who said they used cognitive controls to manage eating under externally stimulating circumstances). As will become apparent, the terms unrestrained and restrained as used by Herman and his associates are confusing.

In their first study, Herman and Mack (1975) gave subjects either nothing to eat or one or two milk shakes as part of what was represented as a taste test. They were then left alone to taste and rate three flavors of ice cream. Subjects were told they could eat as much ice cream as they wished while rating the product. As compared with "restrained" eaters, "unrestrained" eaters compensated for the milk shake preload by eating less of the ice cream. On the other hand, persons who scored high on restraint lost their inhibitions and ate more ice cream. A supporting study by Ruderman and Christensen (1983) also found that

"unrestrained" eaters consumed less ice cream after a milk shake preload while "restrained" eaters consumed more.

Using an 11-item version of the restraint scale which added questions about weight fluctuation, Polivy and Herman (1976a) found depression and anxiety also cause "restrained" eaters to gain weight while causing "unrestrained" eaters to lose weight. Polivy and Herman (1976b) also found the inhibition-releasing effects of alcohol to cause "restrained" eaters to eat more than "unrestrained" eaters. Woody, Costanzo, Liefer, and Conger (1981) found loss of restraint when a milk shake preload was believed to be high calorie, and not when it was believed to be low calorie.

The concept of restraint seemed useful, but the paradoxical behavior of so-called restrained eaters required explanation. Herman and Mack (1975) reasoned that high scorers on dietary restraint may be maintaining their weight below their "biological setpoint" (Nisbett, 1972), causing high restraint persons to be more responsive to external eating cues than low scorers. They argued that restrained eaters, regardless of their weight, exhibited eating behaviors observed in obese persons (see also Polivy & Herman, 1978).

Additionally, the restraint scale did not reflect or predict obesity, as both normal and overweight persons could be found in both categories. As Stunkard and Messick (1985) point out, the Polivy and Herman (1976a) restraint scale

confounded degree of overweight and restraint.

Blanchard and Frost (1983) factor analyzed a final 10-item restraint scale (Herman, Polivy, Pliner, Threlkeld, & Munic, 1978). Two factors were found: concern for dieting and weight fluctuation. It was the weight fluctuation factor that correlated highly with being overweight.

Studies reported internally and externally responsive persons in every weight category (Hibscher & Herman, 1977; Nisbett & Temoshok, 1976; Price & Grinker, 1973; Rodin & Slochower, 1976; Tom & Rucker, 1975). The externality hypothesis was challenged by a number of people (Herman & Polivy, 1980; Kincey, 1983; Leon & Roth, 1977; Rodin, Slochower, & Fleming, 1977), and essentially put to$rest by Rodin (1981). In an important article on the externality hypothesis, Rodin (1981) reviewed previous research, and discussed the role of (a) situational cues which create internal arousal and (b) internal factors which make external cues more salient in many persons regardless of their weight. She illustrated how internal and external cues interact in the regulation of food intake, pointed to the involvement of genetic, metabolic, and psychological factors, and concluded that "...extreme discontinuity between internal-physiological and external-environmental stimuli is wrong." (p. 363). Finally, she called for an integrated model of the processes involved in obesity.

The foregoing restraint scales not only failed to predict obesity, but lacked construct validity in that two versions of the scale were measuring weight fluctuation as well as restraint. They were also confounded by socially-desirable responding and depressed mood (Stunkard & Messick, 1985). Stunkard and Messick (1985) developed an instrument which measures three dimensions of eating behavior. "The Three-Factor Eating Questionnaire to Measure Dietary Restraint, Disinhibition and Hunger" evolved from a combination of (a) Herman et al.'s (1978) 10-item restraint scale, (b) a scale for measuring a similar concept, latent obesity, developed in Germany by Meyer and Pudel (1977), and (c) factorially-appropriate additions and deletions to the combined scales. The published version of the Three-Factor Eating Questionnaire is called the Eating Inventory (Stunkard & Messick, 1988). The Eating Inventory identifies three stable orthogonal factors which relate to the following three eating styles:

> Factor I reflected conscious mechanisms for restraining food intake. Factor II involved a variety of disinhibitors.... Factor III reflected feelings of hunger and its behavioral consequences (Stunkard & Messick, 1988, p. 77).

High scorers on the restraint factor (Factor I) are receptive to information about dieting, and say they try to control eating behavior by being consciously aware of dieting, counting calories, shopping for low calorie foods, eating slowly, stopping eating while still hungry, or taking

small helpings. Stunkard and Messick (1985) suggest that high scorers on the restraint factor would theoretically be good candidates for cognitive techniques for behavior modification, especially if they are relatively low on Factor II.

It is important to note that Stunkard and Messick (1985) are using the term restraint in a different way from Herman and Mack (1975) and Polivy and Herman (1978). Stunkard and Messick separated out a disinhibition factor from the notion of restraint and concluded that it is the disinhibition factor that is involved in eating and weight gain.

In studies using the Herman and Mack (1975) and Polivy and Herman (1978) scales, restrained eating was related to weight gain and unrestrained eating to weight loss in depressed persons (Zielinski, 1978). Restrained eating was also correlated with binge severity (Gormally, Black, Daston, & Rardin, 1982). Stunkard and Messick (1985) found it is the <u>disinhibition</u> factor, not restraint, that predicts weight change. Further, they state, "...Factor II changed from an initial focus on behavioral and weight lability to a more general dimension of disinhibited eating" (p. 79).

High scorers on the disinhibition factor (Factor II) appear to be those persons who seem <u>addicted</u> to food or are <u>emotional</u> eaters. They easily lose their resolve to diet when they smell, see, or taste tempting food, after the

ingestion of alcohol, or when they are in the presence of others who are overeating. They also eat when they are depressed, anxious, lonely, or even when stimulated by pleasant social events. They are likely to continue eating when not hungry, tend to eat sparingly in public and splurge privately, and show frequent weight fluctuations.> Stunkard and Messick have clarified the terminological confusion by identifying persons who easily lose restraints as high scorers on the disinhibition factor.

Stunkard and Messick (1985) have relabeled Herman and Mack's (1975) unrestrained eaters as "free eaters." Stunkard and Messick's surveys of free eaters of normal weight suggest that in such persons behaviors reflected on Factor II result from need satisfaction and not disinhibition. For example, both a person high in disinhibition and a free eater might eat in various situations. For the person high in disinhibition the behavior might reflect a loss of control, for the free eater the behavior might reflect a true physiological hunger. Stunkard and Messick (1985) report, "Evidently some free eaters, who apparently eat whatever they want whenever they want (the description of unrestrained eaters on the earlier scales), do not want to eat very much very often" (p. 75). Stunkard and Messick have called for "continuing appraisal" of the disinhibition factor (p. 79), as the concepts of disinhibition and free eating need further clarification.

The present study will concentrate upon elaborating Stunkard and Messick's (1985) suggested treatments for high scorers on restraint and disinhibition. Stunkard and Messick suggested that high scorers on disinhibition might benefit from either (a) working with Marlatt's (1978) model for treatment of alcoholism and other addictions, or (b) a support group approach that deals with emotional disinhibitors. In the present study, the emotional support group alone and not the behavioral management techniques of Marlatt (1978, 1985) is employed in order to make a clear distinction between the two types of treatment.

Of possible relevance to the distinction between high scores on disinhibition (and low scores on restraint) and high scores on restraint (and low scores on disinhibition) is the concept of field dependence. To the extent that high scorers on disinhibition are more field dependent than high scorers on restraint, support group treatment might be effective. Field dependent persons and high scorers on disinhibition both appear to rely on environmental influences to a greater extent than field independent persons and high scorers on restraint.

Factor III identifies high scorers on hunger, persons who eat frequently, have difficulty stopping eating, and are rarely satiated. They are also more likely to be very obese and have the most physiological complications. Stunkard and Messick (1985) suggest long-term appetite suppressant

medication and attributional techniques for dealing with feelings of hunger. Because high scorers on Factor III are rare, the current study will not focus on this factor, but hunger scores will be obtained and their relation to other variables will be reported.

Social Desirability

The matter of socially desirable responding on the Eating Inventory is a matter of concern according to Samuel Messick (personal communication, March 17, 1988). Messick recommended the use of the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1967) as a covariate to control for the tendency in some people to respond positively to questions regarding restraint and to falsify answers to disinhibition questions, thus raising restraint scores and lowering disinhibition scores. Consequently, the role of social desirability will be examined in this study.

Hypotheses

For the sake of clarity, all hypotheses concerning eating styles and treatment groups will be stated in correlational terms. Following this they will be restated in multiple regression terms.

Predictions regarding eating styles. The foregoing discussion regarding eating style scores and food related behaviors, suggested the following predictions regarding: (a) weight loss, (b) weight fluctuation, and (c) attendance.

With respect to weight loss:

1. For all participants, (i.e. for treatment groups combined), restraint scores should be positively correlated with weight loss. That is, the higher the restraint score, the greater the expected weight loss, other things being equal.

2. For all participants, disinhibition scores should be negatively correlated with weight loss. That is, the lower the disinhibition score, the greater the expected weight loss, other things being equal.

With respect to weight fluctuation:

3. For all participants, restraint should be negatively correlated with weight fluctuation. That is, the higher the restraint score, the smaller the expected number of directional changes.

4. For all participants, disinhibition should be positively correlated with weight fluctuation. That is, the higher the disinhibition score, the larger the number of expected directional changes.

With respect to attendance:

5. For all participants, restraint should be positively correlated with attendance. That is, the higher the restraint score, the greater the expected number of sessions attended.

No prediction is made regarding the relationship of disinhibition scores to attendance. On the one hand,

failure to lose weight, or weight fluctuation, may be discouraging to persons with high disinhibition scores causing them to miss meetings or drop out. On the other hand, if persons with high disinhibition scores are more field dependent, they may be comfortable with and need the external supports of the group situation and attend meetings even if they are not losing as much weight as they would like.

Treatment groups. One purpose of this research is to examine different types of weight loss programs. The foregoing literature review suggests the use of two types of treatment. Both treatments will be in group meetings, which have precedent for the treatment of obesity (Hagen, 1974; Yano, Shabert & Alexander, 1979; Zakus, Chin, Keown, Herbert, & Held, 1979). One treatment group will utilize cognitive behavioral techniques. There is considerable precedent for using behavioral techniques for weight loss (Abramson, 1982; Bellack, Hersen, & Kazdin, 1982; Leon, 1976; Zakus et al. 1979). Behavioral techniques include assessment and self-assessment techniques for determining environmental stimuli, thoughts, emotions and physiological feelings that elicit eating behavior, keeping a record of types and amounts of food eaten, and discovering the reinforcements that perpetuate maladaptive eating habits. These assessment tools bring automatic behaviors to consciousness and are usually the first intervention

techniques used. A basic nutrition and exercise education program is often included. Finally, techniques are taught for controlling eating behavior by creating self-reinforcing thoughts and behaviors.

The second type of treatment involves the use of social and psychological support. This approach represents a structured version of Jean Nidetch's (1970/72) coffee klatch support group which was the beginning of the popular and effective Weight Watchers Diet Program. Allon's (1975) paper entitled "Latent Social Services in Group Dieting" elucidates the support group. Overeaters Anonymous, and numerous other programs use the support group approach. Garetz (1972), summarizing conclusions from various studies, writes:

> Dieting is a lonely and difficult task, and overweight people are often already experiencing isolation and loneliness. Joining a group which can offer emotional support in the dieting process as well as a more general social outlet can therefore be a powerful factor in losing weight. The group also is able to act as a censor for people who have low self-motivation to diet. (Garetz, 1972, p. 674)

Predictions regarding treatment groups.

With respect to weight loss:

6. On the basis of Leon's (1976) conclusion that behavioral interventions are most effective, it is expected that there will be greater weight loss in the Behavioral group than in the Support Group.

There appears to be no rationale for predictions regarding differences between treatment groups with respect to weight fluctuation or attendance.

Treatment by eating styles interaction. In view of the fact that persons with high restraint scores say they engage in cognitively-controlled eating, they might be expected to perform assigned cognitive behavioral tasks better than persons with high disinhibition scores. In contrast, persons with high disinhibition scores, as emotional eaters, should be more responsive to interpersonal support and assistance with emotional issues.

Therefore, with respect to weight loss:

7. The positive correlation between restraint and weight loss should be greater in the Behavioral Group than in the Support Group. That is, persons with higher restraint scores are expected to lose more weight in the Behavioral Group than in the Support Group.

8. The negative correlation between disinhibition and weight loss should be greater in the Behavioral Group than in the Support Group. That is, persons with high disinhibition scores should lose less weight in the Behavioral Group than in the Support Group.

With respect to weight fluctuation:

There appears to be no clear basis for making a prediction about an interaction between treatment and eating styles.

With respect to attendance:

9. The positive correlation between restraint and attendance should be greater in the Behavioral Group than in the Support Group. That is, persons with high restraint scores are expected to attend a greater number of sessions in the Behavioral Group than in the Support Group.

Hypotheses restated in multiple regression terms. To test hypotheses regarding weight loss, weight fluctuation, and attendance, multiple regression.analyses will be employed. For weight loss as the dependent variable, the following predictor variables will be entered: restraint + disinhibition + treatment group (0,1) + restraint x treatment group + disinhibition x treatment group. The foregoing predictions imply that all regression coefficients will be significant. Similar multiple regressions using the same predictor variables will be carried out to predict weight fluctuation and attendance, even though specific hypotheses are not made for all of the predictor variables.

It should be noted that hypotheses couched in regression terms may not result in the same outcome as hypotheses stated in correlational terms. However, such a difference is not expected in the present research.

Field independence-field dependence. Research by Witkin and his associates (Witkin, Lewis, Hertzman, Machover, Meissner, & Wapner, 1954; Witkin, Dyk, Faterson,

Goodenough, & Karp, 1962) has identified the bipolar cognitive styles of field independence-field dependence. The characteristic modes of functioning associated with these styles are relevant to the topic of obesity and weight loss (Karp & Pardes, 1986).

In their initial work, two perceptual styles were identified. Field independent persons were relatively better at using bodily cues for locating the upright while field dependent persons relied upon external visual referents. Individual differences in perception of the upright in space were found to be reasonably self-consistent across measuring instruments. The perceptual differences were also related to the relative ability to disembed a simple figure from a complex one in the Embedded-Figures Test (Witkin et al., 1954/1972), and The Group Embedded Figures Test (Witkin, Oltman, Raskin, & Karp, 1971), the measure used in the present study. Field independence was then conceptualized as a relative disembedding and restructuring ability in perception and in intellectual activities as well.

Individuals with more articulated (field independent) or more global (field dependent) cognitive styles were also found to differ from each other with respect to their sense of separate identity. In those with articulated cognitive styles, the self is experienced as segregated from others. Internal frames of reference are more developed and

available as guides for self-definition (Witkin, 1965). The self is more structured and psychologically differentiated relative to those with a more global cognitive style, who tend to experience a greater connection with others.

Witkin et al. (1962) theorized that the development of obesity is more likely among persons who are less psychologically differentiated and more field dependent:

> Their inadequately developed sense of separate identity makes it plausible that under stress they would seek comfort in oral activities that had been an important source of gratification in the period of close unity with the mother. As a technique of defense for dealing with anxiety, eating is a non-specialized defense. It is applied indiscriminately in a wide range of stressful situations, and it does not act in a specific, directed manner on the source of the stress. (Witkin et al., 1962, p. 326)

Autonomy of functioning appears to be the hallmark of field independence, and interpersonal competencies that of field dependence. Field dependent persons tend to rely upon external sources for information and definition of their attitudes about themselves and the world (Witkin, 1965; Witkin & Goodenough, 1977).

One might expect an association between field dependence and a disinhibited eating style, because persons with high disinhibition scores appear to be more affected by their surroundings than persons with low disinhibition scores. If persons with high disinhibition scores are field dependent, there is an even stronger case for the efficacy of a social support treatment group because both high scorers on disinhibition and field dependent persons seem to

lack internal structures and therefore rely upon external guidance. In the present study, the treatment groups were designed with this cognitive style in mind as well as Stunkard and Messick's (1985) suggestions for treatment. The Behavioral Group will work in a formal classroom setting, involving both group and individual work. The Behavioral Group should appeal to the field independent. The Support Group will have a less formal, supportive atmosphere, which would presumably be more to the liking of the field dependent.

In addition, Messick (personal communication, March 17, 1988) wondered whether persons with high restraint scores have a more articulated cognitive style than low scorers, and whether persons with high disinhibition scores would have a more global approach than low scorers. An association between field independence and restrained eating style and between field dependence and disinhibition would support his speculations.

Again for the sake of clarity, all hypotheses concerning field independence will be stated first in correlational terms, then in multiple regression terms.

Predictions regarding field independence. Because field independence will be assessed in the present research by means of the Group Embedded Figures Test, the higher the score, the more field independent the person.

With respect to weight loss:

10. For all participants (i.e. for treatment groups combined), field independence should be positively correlated with weight loss.

With respect to weight fluctuation:

11. For all participants, field independence should be negatively correlated with weight fluctuation.

With respect to attendance:

No prediction is made regarding the relationship between field independence and attendance for reasons similar to those given in the discussion of the possible relationship between disinhibition and attendance. On the one hand, failure to lose weight, or weight fluctuation, may be discouraging to the more field dependent participants, causing them to miss meetings or drop out. On the other hand, relatively field dependent people tend to be comfortable with and may need the external supports of the group. They may attend meetings even if they are not losing as much weight as anticipated.

Treatment by field independence interaction.

With respect to weight loss:

12. The positive correlation between field independence and weight loss should be greater in the Behavioral Group than in the Support Group.

There are no interaction hypotheses concerning weight fluctuation and attendance.

Hypotheses restated in multiple regression terms. Stated in multiple regression terms, field independence, treatment group, and field independence x treatment group should all be significant predictors of weight loss. Separate regressions with the same predictor variables will examine their relationship to weight fluctuation and attendance.

Depression

Research has shown a strong relationship between depression and the eating-disorders anorexia nervosa and bulimia (Ben-Tovim, Marliov, & Crisp, 1979; Eckert, Goldberg, Halmi, Casper, & Davis, 1982). Antidepressant medication has been used in the treatment of both disorders (Pope & Hudson, 1984).

Depression has been implicated in obesity (Baucom & Aiken, 1981; Cooper & Bowskill, 1986), difficulty in losing weight, and in fluctuation of weight (Herman & Polivy, 1975; Polivy & Herman, 1976a&b; Stunkard & Messick, 1985; Stunkard & Rush, 1974; Wolman, 1982). Stunkard and Messick (1985) found that disinhibition predicted weight gain during depression. What complicates the picture, however, is that depression may either precede or follow weight gain. This matter will not be addressed in the present study. The Center for Epidemiologic Studies Depression Scale (CESD) (Devins & Orme, 1985) will be used to determine the relative depression of participants, as well as to eliminate any

volunteers whose scores suggest they would not be good candidates for group treatment in the present study.

While the effects of depression scores will be examined, no predictions are made regarding their relation to the outcome variables.

Chapter 2

Method

Overview

Participants (female volunteers) were randomly assigned to two treatment groups (Cognitive Behavioral or Social Support). Data were obtained on eating styles, other personality variables, and outcome variables including weight loss, weight fluctuation, attendance, and attrition.

The original plan was to have a Control Group in addition to the two treatment groups. However, it became clear that it would be difficult to recruit enough participants to include a Control Group. In view of the fact that relevant comparisons to test the hypotheses can be made between two treatment groups (Basham, 1986), it was decided to dispense with the Control Group. Of course, the ability to address whether treatment is more effective than no treatment is not possible without a Control Group.

Subjects

It would be desirable to include both males and females in a study of this kind. However, because sex differences would be expected in variables such as height, weight, rate of weight loss, and field independence, the inclusion of both sexes would double the number of participants required. Furthermore, if males and females were assigned to the same

treatment groups, the presence of males might be expected to affect group dynamics as compared with groups consisting only of females (Bales, 1969; Bales & Cohen, 1979; Yalom, 1975). For these reasons, it was decided to have only females as participants.

The study of females would be of special interest in any event because obesity is more of a cosmetic as well as a health problem for women than for men and because women have been reported to be proportionately more obese than men (Abrahams & Johnson, 1980).

Criteria for inclusion. The age range of 20 to 48 inclusive was chosen to avoid adolescent metabolism and post-menopausal metabolic changes involving the loss of lean muscle mass and increase of adipose tissue (Forbes & Reina, 1970; Hassager, Gotfredson, Jansen, & Christiansen, 1986). Ley, Lees, and Stevenson (1992), however, found excess stomach fat, but did not find a loss of lean tissue after menopause. There was no attempt to record race or ethnicity.

Overweight eligibility was conceptualized as 15 pounds over the midpoint for the person's height, using the range for medium frame women on the 1983 Metropolitan Height & Weight Tables (Metropolitan Life and Affiliated Companies, 1983). In 1983 the Metropolitan Tables' weight ranges were increased by 10 to 15 pounds. Many people find these tables reflect much higher normal weights than is culturally

desirable. Although the Metropolitan Tables are not necessarily the best basis for determining excess adipose tissue, they are conservative, and the eligibility requirements for the study provide some assurance that volunteers indeed had some excess weight.

Power analyses. The number of participants necessary for the original multiple regression design (which included a control group) was determined by power analyses to be 186. Three power analyses were carried out to determine the sample size for the treatment effect, the eating styles effect, and the interaction effect. The final sample size for the proposed research was determined by the largest resultant number. For each power analysis, the sample size for the regressions was determined by the following parameters:

(1) an alpha level of $p = .05$, two-tailed.

(2) a power level of .80.

(3) a small to medium effect size $f^2 = .085$, half-way between "small" and "medium" effect sizes (Cohen, 1988, pp. 477-478).

Assuming 28% of the dependent variable variance will be explained by the independent variables, the eating styles, treatment, and interaction variables were translated into "percentage of variance explained" terms. Assuming that approximately 13% of the 28% variance should be explained by these variables (i.e. 4% by eating styles, 4% by treatment,

and 5% by the interaction), the remaining variables are assumed to explain the remaining 15% of the variance. One hundred eighty-six participants are required for the eating styles, treatment, and interaction effects to be detected.

Of the additional 15% of the variance to be explained by the other independent variables, two thirds (10%) of the variance should be uniquely attributable to two or three of the variables. The sample size must be large enough to detect an effect size for these predictors which is equivalent to a squared semipartial coefficient of (.10/2.5 =) .04. This value equals an effect size of (f^2 =) .055. One hundred fifty-six cases are required to detect these effects for variables other than eating styles. Therefore, with all of the assumptions mentioned above, approximately 186 participants were determined to be sufficient for a three group study.

The original power analyses were carried out assuming that there would be two treatment groups and a control group. After the decision to eliminate the control group, power analyses for multiple regression based upon the same parameters determined that approximately 140 cases should be sufficient to detect the effects of interest.

Recruitment and prescreening. Participants were recruited by advertising in four college newspapers and by posting flyers at eight other college campuses in the Bronx, Manhattan, Queens, and Yonkers, New York. Advertisements

were also placed in The New York Times, Village Voice, Irish Echo, The Riverdale Press, and five other neighborhood newspapers.

The women who responded to the recruitment drive were questioned about their age, height, weight, what they believed they should weigh, and whether they were taking over-the-counter or prescription drugs, particularly any substance related to weight change. Of the 357 women with whom prescreening telephone interviews were conducted, 238 made appointments for pretreatment testing, and 183 actually attended group pretesting sessions (between October 4, 1990 and January 31, 1991). Of these 183, 24 participated in one or another of two pilot studies. This left 159 "Pretest Takers" to participate in the main program. However, after assignment to treatment group, four more women dropped out.

Missing data. Some data were missing because participants did not complete all materials at the pretesting session, and some data were missing because participants did not come to all treatment sessions. For purposes of data analysis, it was decided that pairwise deletion of missing data was the most appropriate method for handling the problem. With pairwise deletion, if a score is missing on one measure, comparisons are not made for that measure for that participant. Pairwise deletion of missing data maximizes all of the available data.

Materials

Of the following instruments used, all are standardized tests or in the public domain, except for the first three.

1. Consent to Participate (Appendix A)

2. Demographic Questionnaire>(Appendix B)

3. Medical History Form (included to provide a basis for screening out persons with serious pathology, such as diabetes, or major mental disorders) (Appendix C)

4. Eating Inventory (scored for three factors: restraint, disinhibition, and hunger) (Stunkard & Messick, 1988)

5. Marlowe-Crowne Social Desirability Scale (MCSDS) (Crowne & Marlowe, 1967)

6. Group Embedded Figures Test (GEFT) (to assess field independence-field dependence) (Witkin et al., 1971)

7. Vocabulary subscale of the Wechsler Adult Intelligence Scale-Revised (WAIS-R,V) (Wechsler, 1981). The subscale was administered as a written test. (Because field independence is positively correlated with intelligence (Guilford, 1980; Witkin et al., 1954), a measure of intelligence was used to control for any effects of intelligence in the relationships between field independence and the dependent variables.)

8. The Center for Epidemiologic Studies Depression Scale (CESD) (Devins & Orme, 1985)

Participants were weighed at each meeting on a Seca

Personal Scale, a precision scale made in Germany. Weight was recorded in pounds to make the data comparable to that of most other studies in the United States. Weights recorded at each session provided a basis for calculating the following outcome variables:

1. Weight loss. This variable was originally conceptualized as the first measured weight minus the last measured weight. However, the final measure used was proportional weight loss, the first weight minus the last weight, divided by the first weight. It was discovered during data analysis that overweight eligibility for participation in the program, which was calculated during prescreening telephone interviews, was not supported by weight-in data at pretest for seven volunteers. Although these women weighed less than 15 pounds over the midpoint on the Metropolitan Tables, it was decided to retain them in the study because of the high rate of attrition.

2. Weight fluctuation. Following attendance at three or more sessions, it could be determined whether directional changes had occurred with respect to weight loss or gain. By directional changes, I mean that if weight decreased from session one to session two and increased from session two to session three, there was a change from a decrease to an increase in weight. The number of directional changes from session to session, determined the weight fluctuation score.

The remaining outcome variables are attendance and attrition. The term attendance will be used to refer to the number of treatment sessions attended, and attrition will be defined as the last session attended. Appendix D shows attendance and attrition by treatment session and date.

Both treatment groups used the same diet, Eat to Lose Weight. This food plan was developed by the New York City Department of Health, Bureau of Nutrition, and was based upon The Prudent Diet, a balanced diet distributed to all City employees in the 1970's and which was given a four star rating by Consumer Guide in 1974. A copy of the diet will be found in Appendix E.

Procedure

In both the prescreening telephone interview, and in the consent to participate form signed at the pretest, participants were told:

> Through a random process you will be assigned to one of two treatment groups or a control group. Both types of treatment have been shown to be effective. Please do not discuss your treatment with anyone outside of your group. At the end of the research all of your questions will be answered. Results on standardized tests will then be provided. If you are assigned to the control group, you will also be invited to three post-research treatment sessions and receive information on dieting and weight loss.

Pretreatment testing. At initial pretreatment group testing sessions, the purpose of the research was again explained, questions were answered, and participants were asked to complete the instruments described above.

During the pretreatment testing period, it was decided that a control group was not necessary for the primary purposes of the research. Therefore, each person was told by telephone that a control group would not be needed and that all volunteers would be randomly assigned to one of two treatment groups.

Pilot studies. Participants for a pilot study were obtained from volunteers who pretested at Iona College, which was originally chosen as one of three treatment locations. However, because there were few volunteers for the Iona College location, it was decided to eliminate Iona College as a treatment site and offer a four-session consolation program to the 15 women who had volunteered to participate. The Support Group program was tested at Iona College.

Participants for a second pilot study were women who reported their ages as older or younger than the advertised age range during telephone prescreening. They were invited to attend four treatment sessions in a trial of the Behavioral Group program at the Graduate School and University Center of The City University of New York (hereafter referred to as the Graduate Center).

Twenty-four women attended at least one treatment session in the pilot trials. The run-throughs were to help determine whether there would be measurable weight loss, and whether there were any problems with the treatment programs.

The few participants who actually attended at both locations were able to follow the procedures, and of the nine participants who attended at least three sessions, all nine had a lower weight at the last session than at the first session. It was decided that only minor adjustments needed to be made in the treatment programs. No changes appeared to be necessary in the food plan that formed the basis of the diet.

Delay in treatment program commencement. Advertising began in September, 1990, and pretesting was conducted between October, 1990, and January, 1991. Initially, the prmtesting was to occur in October and the program was to begin in November. The experience of having many women make and not keep pretesting appointments stretched the pretesting period into the holiday season. Those who did not keep an appointment were called and given a second opportunity to attend a pretesting session. Many made a second appointment and again did not appear. Only those who called in advance and requested a third opportunity were given another appointment. Because the Christmas/Hanukkah season was not an auspicious time to begin a diet program, it was decided to begin after the New Year. All volunteers were called and apprised of the delay. There were few

complaints although two women said they might do something else. Pretesting was extended through the winter semester break and the program began with the new semester in February 1991.

Assignment to treatment group. After initial group testing, participants were assigned to either the Behavioral Group or the Support Group by means of a randomization procedure. Participants were ranked from the highest weight to the lowest weight. On a coin flip, the highest weight person was assigned to one group, the second ranked was assigned to the other. The coin flip was repeated until all participants had been assigned to a group. A separate coin flip determined that one group would receive Behavioral treatment and the other would be the Support Group. A coin was again flipped to determine which type of treatment group would meet first. This assignment procedure is the procedure that would be used to create matched groups, which creates statistical dependency between the two groups. Steps taken to deal with the fact that the groups are not independent with respect to initial weight are described in connection with the report of the statistical analyses.

Before the first treatment session, four women who had been assigned to the Support Group dropped out. Therefore,

the number of women scheduled to participate in the Behavioral Group was 80, and the number in the Support Group was 75.

Sixteen treatment subgroups were formed. The type of treatment beginning each day was alternated to minimize any time of day effects. Four daytime and four evening treatment sessions met on Mondays or Thursdays at Lehman College of the City University of New York (hereafter referred to as Lehman College) and four daytime groups and four evening treatment sessions met on Tuesdays or Wednesdays at the Graduate Center. The treatment schedule is given in Appendix F.

Although participants were randomly assigned to treatment groups, they were allowed to select a meeting time and either of two meeting locations, Lehman College or the Graduate Center, and a confirming letter was sent to each person. Of the 155 volunteers who were scheduled to participate in the program, 107 actually attended at least one treatment session. This group of 107 is hereafter referred to as the "Starters." Of these, 47 Starters met at Lehman College and 60 met at the Graduate Center. Of those who completed the program (hereafter referred to as the "Finishers"), 23 met at Lehman College and 25 met at the

Graduate Center.

Treatment sessions. Treatment sessions were held once a week, with the exception of disruptions to be described later, for a period of 12 weeks between February and May 1991. Participants were provided with letters for their physicians' signatures stating that they were not taking any prescription drug related to weight changes, and were in good health. However, this requirement was abandoned when in spite of repeated reminders, only 59 women had submitted physicians' letters by the third meeting.

In the Behavioral Group, a formal classroom setting was used with note-taking recommended. The investigator worked with the group as a whole and with individual members, but there was minimal interaction among group members. Both in the classroom and by means of homework assignments, participants engaged in behavior modification exercises, including cognitive restructuring exercises intended to correct maladaptive thoughts and perceptions regarding food and eating. Such exercises included assessment and intervention techniques such as recording food eaten and feelings before and after eating. Calorie and nutritional information was provided as well. Other lessons included strategies for raising one's awareness level with respect to

stimuli that precede eating, as in classically conditioned eating responses to watching television or reading, stimuli that perpetuate the act of eating, including eating without awareness, or eating with a friend who habitually overeats. Also offered were techniques for self-reinforcement of desired eating behaviors, such as being aware of and appreciating the self for making good food choices, delaying gratification, or planning a self-reward schedule for marking successive goal attainment. Some of the behavioral treatment techniques that were used are listed in Appendix G.

The setting for the Support Group was informal, with circular seating and much give and take among the participants and investigator. Dieting and any related matters of concern were briefly addressed at the beginning of meetings. Then the investigator introduced a topic for discussion. Each week, members considered and offered solutions for a commonly shared source of disinhibition. Motivation, depression, anxiety, lack of assertiveness, relationships, loneliness and boredom, sex-role issues, sex, self-esteem, stress, parenting (children, parents, and others), loss (relating to changes with aging, changes in families, friendship, job-related losses, and death) were

considered. The investigator offered research findings, including possible solutions when such information was available. Relevant research on certain topics was cited by the investigator and references for further reading were offered, but reading was not required. The schedule of topics for the Support Group appear in Appendix H.

An important part of any sound weight loss program is exercise. The approach to exercise in the Support Group would have been permissive. Support Group members would have discussed what they did or did not do with the recommended exercise program, the reasons they did or did not exercise, and how group members might motivate each other to begin or do more. However, behavioral techniques for introducing, increasing, and supporting an exercise program might have resulted in considerably more exercise (and weight loss) in the Behavioral Group than in the Support Group. Therefore, it was decided not to introduce an exercise component, but to give brief identical lectures in both treatment groups regarding the importance of exercise and what exercises have been found to facilitate weight loss. Participants were asked to begin an exercise program after the completion of the treatment schedule, and were informed that a complete plan for a walking program

would be distributed at the final treatment session.

Disruptions in the program. The ninth week of meetings was postponed for a week because many participants said they would not be available to meet during the Spring recess. Unfortunately the week after Spring recess, both the Lehman College and Graduate Center campuses were disrupted and closed by student protests against the proposed New York State education budget cuts. Over a period of ten days a few participants met in Lehman College hallways and ladies' lounges. Graduate Center participants met in the outdoor mall entrance area, the nearby office of two volunteers, and finally in a Graduate Center annex building.

Decisions Regarding Data Analysis

Analysis of eight weeks of treatment. Because many fewer participants continued in the programs following these interruptions (see Appendix D), it was decided that only data for the eight weeks prior to the Spring recess would be analyzed. Fortunately, there is a precedent for weight loss research programs of eight or fewer weekly sessions (Bellack et al., 1974; Chapman & Jeffrey, 1979; McReynolds et al., 1976).

The dropout problem and eligibility for inclusion in data analysis. A combination of the high rate of dropping out of the program and the eligibility criteria described below resulted in 70% of the Original group who were not eligible for inclusion in the data analysis to determine weight loss and weight fluctuation, and 33% who were not eligible for inclusion in the attendance outcome variable.

For the analysis of weight loss and weight fluctuation, only participants were included who had (a) attended either the first or second treatment sessions and (b) attended either the seventh or eighth sessions, and (c) who had attended at least three sessions. These criteria resulted in the 48 "Finishers." The attendance and attrition variables were examined for the 107 "Starters" who had attended at least one session.

Human Subjects Review

The proposal for this research was approved by the committee for the protection of human subjects (Institutional Review Board) at both the Graduate School and at Lehman College.

Chapter 3

Results

This chapter will first present descriptive information about the participants, and report the effectiveness of the randomization procedure for assignment to treatment groups. The results pertaining to tests of the hypotheses will then be presented, followed by those regarding the less-central variables. The chapter concludes with findings concerning attendance and attrition.

Characteristics of the Participants

It is of interest to know what kinds of persons responded to the recruitment procedures employed in this study. The characteristics of the participants also determine the kinds of persons to whom the results will most appropriately generalize. Table 1 presents descriptive information for the major characteristics of interest for the 159 Pretest Takers (no attempt was made to obtain information about race or ethnicity).

Although recruitment materials requested participants between the ages of 20 and 45, Pretest Takers' ages reported on the demographic questionnaire ranged from 19 to 53, with a mean of 32 years. Participants were not asked for proof of age. Four volunteers reported ages younger than 20, and four reported ages older than 45. Apparently some

volunteers lied about their ages on the telephone in order to gain access to the study, but wrote down their correct ages on the demographic questionnaire during pretesting. Another four women did not write down their ages.

Pretest weights ranged from 124 to 261 pounds. Participants weighed between 4.5 and 129 pounds over the midpoint for medium-frame women on the Metropolitan Tables. The investigator's eight years of clinical experience in the office of a bariatric physician suggested to her that many older women seeking help to lose weight tended to be heavier than younger women. This observation did not apply to the volunteers for the present research, however. For the Starters, the correlation between pretest weight and age was -.17 (N = 105, p = .08) indicating a tendency for the younger women to be slightly heavier than the older.

The mean number of years of education was 15, or three years of college or other schooling beyond high school. There were some women who did not complete high school as well as 33 women with various levels of post-graduate education. See Appendix I for a breakdown of the number of years of education for all participants.

The Pretest Takers appear to include a higher number than expected of first-born children. The mean birth year was 1959. The United States Census records of Live Births by Live-Birth Order (U.S. Census, 1940-1988) report that 26% of the live births for 1959 were first-born children. In

contrast, 50% of the Pretest Takers were first-born (or only) children.

Seventeen occupational categories appearing in the 1990 Classified Index of Industries and Occupations of the United States Department of Commerce, Bureau of the Census were represented, including professional specialty occupations, students, and administrative support occupations. The occupations of the Pretest Takers are listed in Appendix J.

Approximately 48% of Pretest Takers reported that they were single, 30% reported that they were married, and the remainder said that they were separated, divorced, or living with a friend. Approximately 48% had no children. The rest had at least one child. Further descriptive information is given in Appendix K.

The Pretest Takers (M = 6.9, SD = 5.0) are significantly more field dependent than GEFT Manual (Witkin et al., 1971) norms (M = 10.8, SD = 4.2) ($t(156) = 8.09$, $p < .001$, two tailed). Further descriptive information for the Pretest Takers on the personality tests administered is presented in Table 1, and in Appendix L, which includes the ranges of scores and norms for the Eating Inventory, GEFT, MCSDS, WAIS-R,V, and CESD.

Effectiveness of Random Assignment to Treatment Groups

As indicated earlier, participants were assigned to treatment group by means of a random procedure. If this procedure was effective, the Behavioral and Support

Groups should not differ with respect to any of the major pretreatment variables. For this comparison, data from the 107 Starters were used because they represent the largest number of participants who actually attended at least one treatment session. Table 2 presents the means and standard deviations for the two treatment groups and *t* test vglues for their comparison. (Because of the extensive drop out that occurred between pretesting and the beginning of the program, it was no longer possible to compute a correlated *t* test with matched pairs.) The two treatment groups do not differ with respect to any of the variables. In addition, although participants selected the campus at which they would attend treatment sessions, there was also no difference between the Behavioral Group (n = 50, M = .49, SD =.51) and the Support Group (n = 56, M = .63, SD =.49) with respect to location $t(105) = -1.40$, $p = .16$.

Tests of Hypotheses

Pearson product-moment correlations were used to test hypotheses stated in correlational terms. As explained earlier, data for the 48 Finishers were used to predict proportional weight loss and weight fluctuation. Data for the 107 Starters were used to predict attendance.

Intercorrelations among variables for the Finishers are shown in Table 3. None of the correlational hypotheses with respect to eating styles (Hypotheses 1 through 5) was supported. That is, neither restraint nor disinhibition is

significantly correlated with weight loss, weight fluctuation, or number of sessions attended for the 48 Finishers. Moreover, the relationships between restraint and weight loss, and disinhibition and weight loss, are in the direction opposite to that which was expected. For the 107 Starters, there was also no significant relationship between restraint and attendance ($r(105) = -.10$) or disinhibition and attendance ($r(105) = .0009$) (see Table 4).

Because there is a significant correlation between disinhibition (but not restraint) and MCSDS, as shown in Table 3, the relationship of disinhibition to the dependent variables was analyzed in multiple regressions with MCSDS used as a covariate. These analyses also revealed no significant relationship between disinhibition and weight loss ($N = 48$, $F(2,44) = .93$, $p = .40$), weight fluctuation ($N = 48$, $F(10,34) = 1.23$, $p = .27$), and attendance ($N = 107$, $F(2,103) = 1.09$, $p = .34$).

Hypothesis 6, regarding whether one type of treatment was more effective than the other with respect to proportional weight loss, was examined by a t test for independent groups. The number of drop outs precluded a t test for matched groups. Furthermore, the proportional weight loss variable takes into account the initial weight variable on which the treatment groups were initially matched. As predicted, proportionally more weight was lost

in the Behavioral Group (M = .05, SD = .04) than in the Support Group (M = .03, SD = .03), $t(46) = 2.12$, $p = .02$, one-tailed.

Information relevant to testing the correlational versions of Hypotheses 7, 8, and 9 is presented in Table 5. The table presents intercorrelations among variables for the Behavioral Group above the diagonal, and for the Support Group below the diagonal. Hypothesis 7 predicts a difference between the two groups with respect to the correlation between restraint and weight loss. Not only do the correlations not differ (z = .66, p = .25), they are in the direction opposite to that which was expected. Hypothesis 8 predicts a difference with respect to correlations between disinhibition and weight loss. Again, the correlations do not differ significantly (z = 1.34, p = .09). Contrary to expectation, the relationship between disinhibition and weight loss appears stronger in the Support Group ($r(23) = .31$) than in the Behavioral Group ($r(21) = -.10$) although the difference does not attain significance. And for the Support Group, the correlation between disinhibition and weight loss is opposite to the expected direction. Hypothesis 9 predicts a difference between treatment groups with respect to the correlations between restraint and attendance. The hypothesis was not supported (z =.93, p = .18).

Hypotheses 10, 11, and 12 deal with field independence.

Hypothesis 10 was supported. As shown in Table 3, field independence was positively correlated with proportional weight loss $r(46) = .29$ $p = .02$, one-tailed. That is, Finishers with higher scores on the GEFT lost proportionally more weight than those with lower scores.

However, field independence was not negatively correlated with weight fluctuation as predicted in Hypothesis 11. Also, the correlations between weight loss and field independence, shown in Table 5, were not significantly greater for the Behavioral Group than for the Support Group. Thus, Hypothesis 12 was not supported ($z = .21$, $p = .42$). Although no hypothesis was made concerning the relationship field independence to attendance, Table 3 shows that there was a significant correlation between these variables, indicating that the higher the field independence, the greater the number of sessions attended ($r(48) = .36$, $p < .05$).

Multiple Regression Analyses

The following multiple regression analyses concern Hypotheses 1 through 9. In regressions with proportional weight loss, weight fluctuation, and number of sessions attended as the dependent variables, the following predictor variables were entered: treatment group (Behavioral Group = 0, and the Support Group = 1) + restraint + disinhibition + restraint x treatment group + disinhibition x treatment group.

Results of the multiple regression predicting weight loss are reported in Table 6. With all variables entered, the multiple correlation (R) was .469. Examination of the regression coefficients indicated that, as predicted, proportionally more weight was lost in the Behavioral Group than in the Support Group (p = .03). The restraint coefficient was significant (p = .03), but its direction was counter to prediction. That is, high restraint is associated with less weight loss. The restraint by treatment group interaction was not significant. However, there was a significant disinhibition by treatment group interaction ($F(5,42) = 4.83$, p = .03). As shown in Figure 1, as disinhibition scores go up, there is an increase in proportional weight loss in the Support Group, but a decrease in proportional weight loss in the Behavioral Group. This finding is consistent with Hypothesis 8.

In multiple regressions employing the group variables (Behavioral or Support) to predict weight fluctuation or attendance, initial weight is added to the list of predictor variables to function as a covariate.

In other regression analyses, none of the hypotheses regarding the relationship of eating styles and treatment groups to weight fluctuation and attendance was supported.

The following multiple regression analyses concern Hypotheses 10 through 12. Regression analyses with proportional weight loss and weight fluctuation as the

dependent variables employed GEFT, treatment group, and treatment group by GEFT as predictor variables. The GEFT predicted weight loss ($F(2,45) = 3.69$, $p = .03$). None of the other predicted relationships was significant.

No predictions were made regarding the GEFT and attendance. Nonetheless, a multiple regression with GEFT and initial weight was run with data from the 107 Starters using the number of sessions attended as the dependent variable. It will be recalled that the correlation in Table 4 between GEFT and number of sessions attended was significant ($r(106) = .24$, $p = .01$). The present analysis showed that when the effect of initial weight is taken into account the relationship between the GEFT and attendance is no longer significant.

\As mentioned earlier, the WAIS-R,V was included to control for any influence of intelligence on the relationship of field independence to other variables. Table 4 shows a highly significant, positive correlation between the GEFT and the WAIS-R,V. Consequently, the WAIS-R,V was added to the multiple regressions as a covariate, to examine the relationship of the GEFT to weight loss, weight fluctuation, and attendance. The addition of the WAIS-R,V did not affect the relationship of the GEFT to any of the dependent variables.

In supplementary multiple regression analyses with weight loss, weight fluctuation, and attendance as the

dependent variables, the following predictor variables were entered into regression equations in various combinations: age, pretest weight, birth order, treatment group, eating styles (restraint, disinhibition, and hunger scores), treatment group x eating styles interaction terms, social desirability scores (MCSDS), field independence (GEFT) scores, treatment group x GEFT, vocabulary I.Q. (WAIS-RV), and depression (CESD). None of the additional variables added anything significant in these analyses.

Other Findings

Field Independence. Messick's (1988) speculations as to whether high scorers on restraint are more field independent ($r(156) = -.02$, $p = .85$) and high scorers on disinhibition are more field dependent ($r(156) = .01$, $p = .86$) were not supported. In addition, high scorers on disinhibition did not have lower verbal I.Q. scores, which is often the case with field dependent persons. Instead, the relationship between disinhibition scores and WAIS-R,V scores was positive and significant ($r(152) = .26$, $p = .001$).

Vocabulary I.Q. The relationships of the WAIS-R,V to weight loss and weight fluctuation were not significant for the 48 Finishers, as shown in Table 3. In Table 4, it is shown that higher scores on the WAIS-R,V predicted better attendance ($r(102) = .32$, $p = .001$). Therefore, a final regression was run to further examine this relationship.

In a multiple regression with the number of treatment sessions attended as the dependent variable and data from the 107 Starters, the following predictor variables were entered: treatment group (0,1) + WAIS-R,V + WAIS-R,V x treatment group. Table 7 shows that the WAIS-R,V predicted attendance at more sessions, $F(2,101) = 6.49$, $p = .002$. That is, the higher the participant's vocabulary score, the longer she stayed with the program.

Depression. Because depression is a frequently reported variable in obesity and weight loss research, it is interesting to note that participants' CESD scores ranged from 0 (not depressed) to 46 (severely depressed). A comparison of participants' mean scores and standard deviations in Table 1 with the norms in Appendix L, Teble 5 suggests that on the average participants were mildly depressed.

Although predictions were not made with respect to CESD scores, analyses relating them to other major variables were carried out. Depressed mood proved to be unrelated to weight loss, weight fluctuation, and attendance at treatment sessions. (See Tables 3 and 4).

There are no significant correlations between the CESD and restraint. However, consistent with a finding of Stunkard & Messick (1985), the CESD scores of Pretest Takers correlated positively with disinhibition, $r(151) = .24$, $p = .003$. Depression scores also correlated positively with

hunger scores, $r(151) = .27$, $p = .001$.

Hunger. Hunger scores were not related to any of the dependent variables. Within the Eating Inventory scales, however, hunger scores and disinhibition scores for the Pretest Takers were significantly correlated ($r(157) = .44$, $p = 000$). Also see Table 4 (Starters) and Table 3 (Finishers) suggesting that the Eating Inventory may not consist of fully orthogonal subscales (cf. Stunkard & Messick, 1985).

Attrition

A striking characteristic of weight-loss studies is the high rate of attrition. The contrast between the people who continued in treatment and those who dropped out is important to explore. In a further attempt to identify any variables which contributed to staying with the program, *t* test comparisons of mean scores for dropouts and Finishers are reported in Table 8. Only the WAIS-R,V scores differentiated between the dropouts and the Finishers, with the latter having significantly higher scores.

Further examination of the correlations among variables reveals that Starters with higher pretest weights dropped out earlier than those with lower pretest weights (see Table 4). The number of sessions attended also correlated negatively with amount overweight ($p = .04$), and positively with education ($p = .04$). As might be expected, the number of sessions attended correlated positively with proportional

weight loss for the Finishers, $r(46) = .33$, $p = .02$.

Finally, Chi-square tests were performed to determine whether any other predictor variables could differentiate between the Finishers and those who dropped out. Categorical variables of interest were birth order (whether the participants were first or later born), marital status (primarily whether or not they lived alone), whether or not they have children, their number of years of education, or type of treatment group attended. No significant differences were found between dropouts and Finishers.

Table 1

Descriptive Information About Participants Who Took The Pretests

	Pretest Takers			Starters			Finishers		
Variables	N	M	SD	N	M	SD	N	M	SD
Age	155	31.90	8.40	105	32.66	8.11	46	33.11	8.07
Pretest Wt.	159	186.10	34.05	107	186.87	33.45	48	179.67	33.96
Lbs. Overwt.[a]	159	54.21	32.71	107	54.85	32.19	48	48.23	31.78
Education	157	15.24	2.17	106	15.25	2.21	47	15.49	2.33
Birth Order	137	1.93	1.38	90	1.75	1.17	40	1.58	.84
Restraint	159	9.9	4.23	107	9.95	4.43	48	9.33	3.75
Disinhibition	159	11.29	3.23	107	11.40	3.13	48	10.85	3.42
Hunger	159	7.03	3.29	107	6.98	3.04	48	7.06	3.25
GEFT	158	6.95	5.02	106	7.01	5.00	48	7.85	4.84
MCSDS	156	14.85	6.08	106	15.07	5.91	47	14.87	6.27
WAIS-R,V	154	45.08	12.52	104	46.56	12.55	47	49.28	13.30
CESD	153	17.73	11.75	104	16.80	11.74	47	16.62	12.80

[a]From the Metropolitan Life Height/Weight Tables based on the midpoint weight for medium frame women.

Table 2

Effectiveness of Random Assignment to Treatment Groups

	Behavioral Group			Support Group				
Variable	N	M	SD	N	M	SD	t	df
Age	50	32.10	8.16	55	33.16	8.10	- .67	103
Pretest Wt.	51	185.27	33.57	56	188.32	33.59	- .47	105
Lbs. Overwt.	51	53.56	31.83	56	56.03	32.75	- .39	105
Education	51	15.41	2.26	55	15.09	2.17	.74	104
Birth Order	44	1.89	1.35	46	1.59	.96	1.22	88
Restraint	51	9.75	4.25	56	9.52	4.63	.26	105
Disinhib.	51	11.55	2.73	56	11.27	3.47	.46	105
Hunger	51	7.06	2.89	56	6.91	3.19	.25	105
GEFT	50	7.32	5.01	56	6.73	5.02	.60	104
WAIS-R,V	49	47.45	13.28	55	45.76	11.94	.68	102
MCSDS	51	15.14	6.23	55	15.00	5.65	.12	104
CESD	50	15.70	10.87	54	17.81	12.51	-.92	102

Note. Data are reported for the Starters, N = 107. All t-Values n.s.

Table 3

Intercorrelations Among Variables for Finishers

	Variable	1	2	3	4	5	6	7	8	9	10
1.	Restraint		-.37**	-.07	-.12	.25	-.14	-.25	-.14	-.02	.09
2.	Disinhibition			.30*	.22	-.44**	.27	.39**	.08	.15	.12
3.	Hunger				.21	-.19	.23	.33*	-.03	.16	-.02
4.	GEFT					-.17	.60	.23	.29*	.18	.36*
5.	MCSDS						-.23	-.39**	-.20	.09	-.21
6.	WAIS-R,V							.04	.22	.27	.25
7.	CESD								.09	-.05	.16
8.	Weight Loss									-.37**	.33*
9.	Weight Fluctuation										.18
10.	Attendance										

Note. N = 48. Because of pairwise deletion of missing data, some N's = 47.
* p < .05, ** p < .01, two-tailed test.

Table 4

Intercorrelations Within Treatment Groups for Starters

	Variable	1	2	3	4	5	6	7	8	9	10
1.	Restraint		.61**	-.30	-.37	.48*	-.38	-.47*	-.26	-.09	-.09
2.	Disinhib.	-.18		.48*	.26	-.40	.35	.24	-.10	.41*	.22
3.	Hunger	.13	.19		.25	-.34	.23	.18	-.09	.32	.14
4.	GEFT	.09	.24	.22		.12	.60**	.33	.26	.29	.35
5.	MCSDS	.04	-.51**	-.10	-.44*		-.24	-.36	-.18	-.17	-.09
6.	WAIS-R,V	.01	.31	.27	.57**	-.21		.19	.23	.10	.20
7.	CESD	-.02	.49	.43*	.25	-.46*	.04		.29	.12	.15
8.	Wt. Loss	-.06	.31	.06	.21	-.21	.08	.01		-.40	.31
9.	Wt. Fluct.	.06	-.05	-.32	.04	.02	.44*	-.22	-.39*		.12
10.	Attendance	.26	.05	-.14	.37	-.33	.30	.19	.37	.24	

Note. N = 48. Correlations for the Behavioral Group are above the diagonal (N = 23), correlations for the Support Group are below the diagonal (N = 25). Because of pairwise deletion of missing data, some N's are minus one or two cases.
* p < .05, ** p < .01, two-tailed test.

Table 5

Intercorrelations Within Treatment Groups for Finishers

	Variable	1	2	3	4	5	6	7	8	9	10
1.	Restraint		.61**	-.30	-.37	.48*	-.38	-.47*	-.26	-.09	-.09
2.	Disinhib.	-.18		.48*	.26	-.40	.35	.24	-.10	.41*	.22
3.	Hunger	.13	.19		.25	-.34	.23	.18	-.09	.32	.14
4.	GEFT	.09	.24	.22		.12	.60**	.33	.26	.29	.35
5.	MCSDS	.04	-.51**	-.10	-.44*		-.24	-.36	-.18	-.17	-.09
6.	WAIS-R,V	.01	.31	.27	.57**	-.21		.19	.23	.10	.20
7.	CESD	-.02	.49	.43*	.25	-.46*	.04		.29	.12	.15
8.	Wt. Loss	-.06	.31	.06	.21	-.21	.08	.01		-.40	.31
9.	Wt. Fluct.	.06	-.05	-.32	.04	.02	.44*	-.22	-.39*		.12
10.	Attendance	.26	.05	-.14	.37	-.33	.30	.19	.37	.24	

Note. N = 48. Correlations for the Behavioral Group are above the diagonal (N = 23), correlations for the Support Group are below the diagonal (N = 25). Because of pairwise deletion of missing data, some N's are minus one or two cases.
* p < .05, ** p < .01, two-tailed test.

Table 6

Multiple Regression to Predict Proportional Weight Loss

Order in Which Variables Entered into the Equation	B	Beta	F	Sig. F
Treatment Group	-.021428	-.313071	5.236	.0272*
Disinhibition	-.005045	-.499421	3.214	.0802
Restraint	-.005047	-.547619	5.062	.0297*
Restraint x Treatment Group	.002886	.381331	2.986	.0913
Disinhibition x Treatment Group	.007322	.569386	4.829	.0335*
(Constant)	.051950		54.959	.0000
REGRESSION EQUATION			2.365	.0559

Note. Data are for the Finishers, N = 48.

* p < .05.

Table 7

Results of Multiple Regression to Predict Attendance

Variables in the Equation	b	Beta	F	Sig. F
Treatment Group	.194706	.038002	.159	.6912
Wechsler Adult Intelligence Scale-Revised, Vocabulary Subscale	.099401	.485371	14.198	.0003**
WAIS-R,V x Treatment Group	-.070606	-.242295	3.412	.0677
(Constant)	4.238504		148.118	.0000
REGRESSION EQUATION			5.20515	.0022**

Note. Data are for the Starters, N = 107.

** p < .01.

Table 8

t-Test Comparisons of Mean Scores for Dropouts and Finishers

	Dropouts		Finishers				
Variable	N	$\bar{X}$	N	$\bar{X}$	t-Value[a]	df	p
Weight at Pretest	110	189.25	48	179.67	1.64	156	.103
Treatment Group	107	1.47	48	1.52	-.61	153	.540
Restraint	111	10.22	48	9.33	1.16	157	.249
Disinhibition	111	11.48	48	10.85	1.12	157	.265
Hunger	111	7.01	48	7.06	-.09	157	.925
GEFT	110	6.55	48	7.85	-1.50	156	.135
WAIS-R,V	107	43.23	47	49.28	-2.82	152	.005**
MCSDS	109	14.84	47	14.87	- .03	154	.979
CESD	106	18.23	47	16.62	.78	151	.436

** $p < .01$, two-tailed.

[a]A pooled variance estimate.

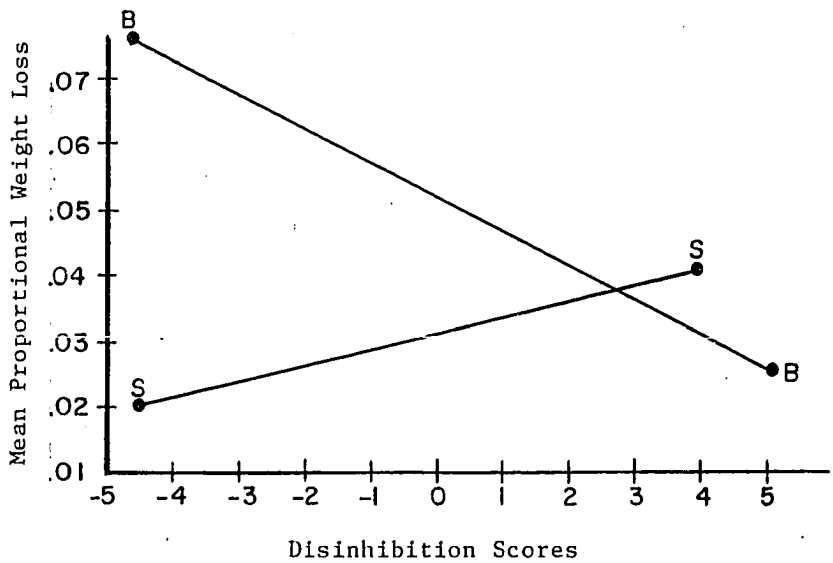

Figure 1. Regression lines and values for proportional weight loss in the Behavioral and Support Groups, predicting from disinhibition scores.

Chapter 4

Discussion

This final chapter will discuss the implications of the characteristics of the research participants and the major findings. The limitations of the study and directions for further research will also be considered.

Participant Characteristics and Generalizability

It has been clear from the outset that the described recruitment procedures would create a self-selected and therefore non-representative sample. As indicated earlier, the volunteers tend to be well-educated. From the information reported about education and occupation, one may infer that, for the most part, they represent the middle class. They are substantially more field dependent than the norms given in the GEFT Manual (Witkin, et al., 1971), and according to the norms for the CESD, they are mildly depressed. Of the Pretest Takers, 50% are first-born or only children. Perhaps women who are first-born or only children are more likely to join a weight loss program than later-born women. Such a tendency would be consistent with findings about first-born and only children being "more likely to," among other things, excel in academic achievement, and have higher I.Q.'s, and achieve eminence (Steelman & Powell, 1985; Watkins, 1992).

Some of the distinctive characteristics of the participants might have limited the size of the treatment

effect. For example, the field dependent nature of the sample might have made the participants so susceptible to external cues that the effects of the treatments were overshadowed. Other personal factors, such as being depressed, may also have reduced the effectiveness of treatment.

Because of the special characteristics of this sample of women, the findings in this study may not generalize to other populations. For example, we cannot be sure how the treatments would affect women who are less field dependent, less educated, have lower verbal intelligence scores, lower depression scores or later birth order.

Major Findings

The first five hypotheses are not supported in individual correlations among eating style scores and the dependent variables. In fact, some results are in the direction opposite to prediction, as in the case of the first hypothesis. Namely, at the end of the treatment program there was a tendency for high scorers on dietary restraint to weigh more than low scorers. This correlational tendency is reflected in a multiple regression analysis as a significant negative relationship of restraint to weight loss (See Table 6).

The results of the current study with respect to the restraint scale seem more like the early findings of Herman and Mack (1975) than the findings that would be anticipated

by Stunkard & Messick's (1985) revisions of the restraint scale. A second consideration that raises a question about the interpretation of what is being measured by the restraint scale is the fact that the scales of the Eating Inventory are not fully orthogonal (Hyland, Irvine, Thacker, Dann, & Dennis, 1989).

Regarding the second eating style, although there was no direct relationship between disinhibition and weight loss, there was a significant interaction between disinhibition and treatment in predicting weight loss, a finding to be discussed in connection with Hypothesis 8.

As expected, Hypothesis 6, which states that participants in the Behavioral Group would be more successful at losing weight than those in the Support Group, was supported by *t* test and multiple regression analysis. Thus, further support has been added to the considerable body of research that details the overall efficacy of Cognitive Behavioral Techniques as useful tools for the treatment of obesity.

Hypothesis 7 anticipated a greater positive relationship between restraint and weight loss in the Behavioral Group than in the Support Group. Contrary to expectation, both correlations were negative. Once again, the question of what is being measured by the restraint scale of the Eating Inventory appears to be the primary issue.

Hypothesis 8 called for the negative correlation between disinhibition and weight loss to be greater in the Behavioral Group than the Support Group. Although the correlation in the Behavioral Group was negative (r = -.10), in the Support Group it was positive (r = .31). The difference between the correlations is not significant; however, a multiple regression analysis, (Table 6 and Figure 1), reveals a significant interaction between disinhibition and treatment group. As shown in Figure 1, persons with high disinhibition scores do only slightly better in the Support Group. It is those with low scores who are affected differently by type of treatment. Low scorers on disinhibition appear to benefit more from Behavioral Group treatment than from Support Group treatment. A subgroup of overweight women (low scorers on disinhibition) who can lose weight in a particular type of treatment (Behavioral Group) may have been identified.

Field independence proved to be the single, most powerful predictor of weight loss. There was no relationship between GEFT scores and weight fluctuation, and no hypothesis regarding the relationship of field independence to attendance. No correlations were found between field independence and restraint or disinhibition.

As noted earlier, the volunteers for the study, on the average, are considerably more field dependent than the norms. Thirteen of the 159 women who took the pretest could

not disembed any of the 18 figures on the GEFT. This finding is consistent with the literature on the relationship between field dependence and obesity (Witkin, et al., 1962). Perhaps the externality hypothesis has been abandoned prematurely. Field dependence may be a dimension or type of externality. It may be that field dependent women are more susceptible to situational factors due to a limited ability to separate self from environment.

Even with a restricted range, the GEFT appears to be a powerful predictor of success or failure at weight loss. Another subtype of obese individuals who can lose weight in group treatment programs (field independent women), may have been identified.

The correlation between the WAIS-R,V and weight loss (r = .22, N = 47) did not attain significance. However, WAIS-R,V scores were the primary predictor of who attended more sessions (r = .32, N = 107). Verbal I.Q. and field independence together may be determinants of weight loss. Persons with higher WAIS-R,V scores may have continued to attend because they better understood the efficacy of treatment. However, attendance at treatment sessions appears to be a necessary, but not a sufficient condition for losing weight. Of those participants who attended through the 7th or 8th sessions, field dependence-independence appeared to determine who would and would not lose weight.

Although depression has been related to obesity in various studies (Stunkard & Messick, 1985), CESD scores are not predictive in the present study nor do they improve prediction when partialed out. While depression scores did not contribute to the current findings, concurrent treatment for depression may be desirable for some who wish to lose weight. Further study of depression is also needed to determine why this variable is effective in some studies and not in others.

Limitations of the Study

The inability to generalize the findings to a more representative population of women is limiting, but the major problem with the study is the high rate of attrition. However, this is a problem that has generally been associated with weight loss research, in which people often do not comply or simply drop out of weight loss treatment. The high attrition rate in the present study (with only 48 of the 107 Pretest Takers eligible for inclusion in weight loss and weight fluctuation analysis) is consistent with other research (e.g. Abrams & Follick, 1983; Stunkard & Brownell, 1980; Peterson et al., 1985).

What factors affect coming or not coming to meetings? There are many possible reasons for dropping out of a weight loss research program. For one thing, the requested physician's consent letter may have contributed to dropping out. Some overweight women may be reluctant to see a

physician. A few participants said they did not have a personal physician. Physicians on call for the study had agreed to be available to see participants at a reduced rate if needed. None of the participants requested a referral. The $80 initial consultation rate may still have been perceived as too much, because volunteers were responding to a free weight loss research program. It may be that the whole issue of weight loss and self-image is so emotionally charged that volunteers are deeply ambivalent about treatment and unable to make a firm commitment. Sometimes people drop out of weight loss programs because they have gained weight and are embarrassed to return. Once motivation develops in a program, some people drop out to lose weight on their own. A few may join other programs, often pinning hopes on vacant promises. There may be a negative reaction to the group leader, group members, the nature of the treatment, or the recommended foods and/or portions.

An attempt was made to reach the 159 Pretest Takers, by mail, to have them attend a feedback meeting in order to have a final weight measure. Twenty dropouts attended. Ten had gained weight, seven lost weight, two remained the same and one declined to be weighed.

The internal validity of the research, which concerns the extent to which effects may be attributed to the independent variables, may be lessened because of the high

rate of attrition. However, attrition is an outcome variable of interest in its own right. The parameters of attrition should be examined more closely to determine what factors affect coming or not coming to meetings. It is necessary to develop techniques which help dieters stay in treatment, to attempt to weigh dropouts at the end of data collection, and to explore statistical methods which better handle data collected over time, with missing measures. One such relatively new technique is Hierarchial Linear Models (Bryk & Raudenbush, 1992).

Finally, as explained earlier, in order to make the treatments as different from each other as possible without the confounding effect of differences in the amount of exercise that would be performed in the two types of treatment groups, exercise was not a part of the program. It is regrettable that it was necessary to eliminate an exercise component, which should be an integral part of any good weight loss program.

Significance of the Findings

Despite the current Zeitgeist, which is anti-diet, the risks of obesity demand safe, effective means to help those who need to lose weight. The results are consistent with prior research in suggesting that, overall, cognitive behavioral techniques facilitate weight loss more effectively than a support group alone.

It would be helpful to clinicians working with obese

persons if they could identify even a subgroup of people who can lose weight under certain conditions. One such subgroup may be field independent persons. That the GEFT predicts weight loss supports Witkin et al. (1962), regarding the field dependent person's use of eating as a generalized defense against anxiety, and suggests that if further evidence is found for the relationship between field independence and weight loss, it may be helpful to target field independent persons as a potentially successful subgroup for whom intervention is recommended.

Why does field independence work so well at predicting weight loss? Are high scorers on the GEFT better able to resist the temptation of food cues in the environment? Do they have a better sense of body image? Do they use different defenses against anxiety? Further study of relative field independence (or perhaps disembedding ability) as a predictor for success at weight loss is indicated.

The finding that high WAIS-R,V scores predicted staying with the program longer is consistent with outcome studies of psychotherapy research (Luborsky, L., Chandler, M., Auerbach, A. H., Cohen, J., & Bachrach, H. M., 1971). More "intelligent" clients generally stay with treatment and have more "successful" outcomes. In obesity research the length of treatment is usually a contributing factor toward success at weight loss. The development of effective treatment

techniques for the less verbal person might be helpful.

The current study provides some information in the search for individual difference variables which suggest how to make treatment more person specific. The findings are interesting in terms of further understanding of possible subtypes of obesity on one hand, and for understanding more about treatment on the other. Consistent with prior research, behavior modification treatment techniques appear to be better for almost all participants, but there appear to be some interesting individual difference variables which affect weight loss.

Researchers have not yet developed individualized treatment components that will facilitate weight loss and maintenance for more people whose health is at risk because of chronic obesity. This study has shown that some individual differences can interact with treatment and therefore, the pursuit of individual differences, and treatment techniques tailored to aspects of individual personality, appears promising. Research utilizing more groups with fewer participants in each group may contribute to the identification of person specific techniques.

Appendix A

Consent to Participate

Your consent is requested for participation in a 12 week weight loss research program. The purpose of the research is to evaluate different weight loss programs.

In addition to your consent on this form, I will provide a letter for your physician to sign indicating that you are in good health. Any physician's fee will be your responsibility.

The investigator is a doctoral candidate in the Ph.D. Program in Social and Personality Psychology at the Graduate School of the City University of New York (C.U.N.Y.). Participation in this research is voluntary and will be without cost to you. You may withdraw at any time without penalty of any sort.

The weight loss program should not pose any discomfort for participants. The benefits may include weight loss, information about weight loss and maintenance, and results on standardized tests. If you have any concerns, please bring them to the attention of the investigator or to the chairperson of the Human Subjects Committee at the C.U.N.Y. Graduate School (212-642-2421) at any time.

As a research participant, you will be asked to complete a demographic, medical, and some personality questionnaires and perform a pencil-and-paper task which involves finding simple designs within complex designs in a group pretreatment session.

Through a random process you will be assigned to one of two treatment groups or a control group. Both types of treatment have been shown to be effective. Please do not discuss your treatment with anyone outside of your group.

At the end of the research all of your questions will be answered. Results on standardized tests will then be provided. If you are assigned to the control group, you will also be invited to three post-research treatment sessions and receive information on dieting and weight loss.

There will be complete confidentiality regarding any information you have provided. In addition, all pretreatment materials will be identified by code number, and the investigator will never attach names to materials and will not be aware of individual results until after the 12 week weight loss program.

You will be weighed (in privacy) at the beginning of the program and each week before group meetings.

Please also be advised that there is no medical coverage available should a mishap occur during a research procedure.

I have read and understand the foregoing description of my participation in this research and I voluntarily agree to take part.

By the first group meeting I will return the physician-signed letter.

I will keep a signed copy of this consent form for reference.

_____

Participant's Signature

_____

Diana Darlington, Investigator
(212) 549-1671

_____

Date

Faculty sponsors of this research are:
Professors Charles P. Smith, Chair
Suzanne C. Ouellette
Louis J. Gerstman
Graduate School of the City University of New York

Appendix B

Demographic Questionnaire

As stated in the Consent to Participate in this research program, all information will be treated with complete confidentiality and anonymity in reporting. Nonetheless, it is always your privilege not to answer questions which you would prefer to leave unanswered. Please consider, however, that the more information the investigator has, the more meaningful the results of the research.

Do not write your name on this form. The last five digits of your Social Security number will be your

Code No.: ___ - _____ Date _____

Age: _____ Year of Birth:_____ Weight: _____ Height _____

What is your educational level?

Grade school		_____	Graduate Education
High school		_____	Highest Degree _____
College	1	_____	Other _____
Years	2	_____	_____
	3	_____	
	4	_____	

Occupation: _____

Marital Status and Living Arrangements:

Single, never married	_____	How long? _____
Married	_____	How long? _____
Separated	_____	How long? _____
Divorced	_____	How long? _____
Remarried	_____	How long? _____
Widowed	_____	How long? _____
Living with a friend of the same sex	_____	
Living with a friend of the opposite sex	_____	

Do you have children? _____ How many? _____

Please list any children, as follows:

Sex F or M	Age	Overweight? 1 = yes 2 = no	Living with you?
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Have other members of your original nuclear family been overweight? 1 = yes, 0 = no, or NA = not applicable

Mother _____
Father _____
Sisters _____
Brothers _____

What is your position in the birth order of your family? ___

On a scale of 0 to 5 (0 meaning NOT READY to 5 meaning VERY READY), how motivated, committed, and "ready" do you feel with respect to starting a weight-loss diet? ____

Participant's Name:

_____

Address:

_____

_____

Telephone Nos.:
Business Residence Other

_____

Last five digits of your Social Security number:

____ - _____

Appendix C

Medical History

Code No.: ___ - _____

PERSONAL HISTORY: Illnesses - Have you ever had:

Please Check	No	Yes		No	Yes
high blood pressure	___	___	stomach ulcer	___	___
low blood pressure	___	___	duodenal ulcer	___	___
heart disease	___	___	colitis	___	___
heart attack	___	___	gall bladder	___	___
blood clots	___	___	gall stones	___	___
phlebitis	___	___	kidney stones	___	___
stroke	___	___	kidney infect.	___	___
diabetes	___	___	bladder infect.	___	___
gout	___	___	cirrhosis	___	___
sinusitis	___	___	tuberculosis	___	___
asthma	___	___	cancer	___	___
emphysema	___	___	goiter	___	___
bronchitis	___	___	epilepsy	___	___
nervous breakdown	___	___	gonorrhea	___	___
polio	___	___	syphilis	___	___
anemia	___	___	mumps	___	___
rheumatic fever	___	___	German measles	___	___
chicken pox	___	___	Other: _____		
others: _____			_____		

ALLERGIES: Are you allergic to: List food/drug allergies:

Please check	No	Yes	
Penicillin	___	___	_____
Sulfa	___	___	_____
Aspirin	___	___	_____
Codeine	___	___	_____
Any other drugs	___	___	_____

PAST MEDICAL HISTORY:
Are you under treatment by any doctor, dentist or chiropractor
for any condition whatsoever? (circle) Yes No
For what condition(s): _____

INJURIES: Have you had: Any other notable injuries?

	No	Yes	
concussion	___	___	_____
head injury	___	___	_____
back injury	___	___	_____
fracture	___	___	_____

gall bladder op.	___	___	_____
varicose vein op.	___	___	_____
thyroid operation	___	___	_____
prostatectomy	___	___	_____
hysterectomy	___	___	_____
Caesarean section	___	___	_____
removal of ovaries	___	___	_____
any other operation	___	___	_____
If so, what?	___	___	_____

FAMILY HISTORY:	ALIVE	DEAD	AGE	HEALTH/CAUSE OF DEATH
Father	___	___	___	_____
Mother	___	___	___	_____
Siblings	___	___	___	_____
	___	___	___	_____
	___	___	___	_____
	___	___	___	_____
Spouse	___	___	___	_____
Children	___	___	___	_____
	___	___	___	_____
	___	___	___	_____

Does any blood relative have a history of:

	No	Yes		No	Yes
cancer	___	___	stroke	___	___
tuberculosis	___	___	epilepsy	___	___
diabetes	___	___	insanity	___	___
heart trouble	___	___	suicide	___	___
high blood pressure	___	___	eating disorder	___	___

If you have answered yes to any of the above, please explain:

_____

_____

X-RAYS:

Have you ever had x-rays of the following:

	No	Yes	When?
chest	___	___	_____
stomach (upper G.I.)	___	___	_____
gall bladder	___	___	_____
kidneys	___	___	_____
skull	___	___	_____
colon (lower G.I.)	___	___	_____

REVIEW OF SYMPTOMS:

	No	Yes	When?
cough	___	___	_____
sputum (phlegm)	___	___	_____
shortness of breath	___	___	_____
chest pain	___	___	_____
palpitations	___	___	_____
angina	___	___	_____
nausea	___	___	_____
vomiting	___	___	_____
diarrhea	___	___	_____
constipation	___	___	_____
abdominal pain	___	___	_____

TOBACCO USE:	No	Yes
previous	___	___
present	___	___

Please circle:
cigarettes cigars
chewing tob. pipes

JOB SATISFACTION:
Please circle:
high moderate
low non existent

SELF ESTEEM:
Please circle:
high moderate
low non existent

gas pain	___	___	_____
heartburn	___	___	_____
blood in stools	___	___	_____
headache	___	___	_____
dizziness	___	___	_____
fainting spells	___	___	_____
seizures	___	___	_____
muscle weakness	___	___	_____
numbness, tingling	___	___	_____
impaired hearing	___	___	_____
impaired vision	___	___	_____
do you wear glasses?	___	___	_____
contact lenses?	___	___	_____
when you urinate			
is it frequent?	___	___	_____
does it burn?	___	___	_____
does it smell?	___	___	_____
trouble starting?	___	___	_____
change in color?	___	___	_____
do you bleed easily?	___	___	_____
you bruise "	___	___	_____
do you get fevers?	___	___	_____
fatigue?	___	___	_____
sleep disorders	___	___	_____
vaginal bleeding	___	___	_____
discharge	___	___	_____
itching	___	___	_____

SEX LIFE:
Satisfaction
high moderate
low non existent
Frequency
high moderate
low non existent

DO YOU TAKE MEDICINES OR DRUGS?

What?	How often?
_____	_____
_____	_____
_____	_____
_____	_____

Do you take birth birth control pills? _____

Name, Address and phone of your personal physician:

_____
_____
_____
_____

EATING BEHAVIOR:
What has caused your excess weight?

_____
_____

Circle any that apply:

night eating	binge eating	sweets and starches
stress eating	food cravings	use of laxatives
use diuretics	oral fixation	purposeful vomiting

ALCOHOL AND DRUG USE

Check one:	HEAVY	MODERATE	RARE	NEVER
liquor	___	___	___	___
wine	___	___	___	___
beer	___	___	___	___
tranquilizers	___	___	___	___
sleeping pills	___	___	___	___
downers	___	___	___	___
cocaine	___	___	___	___
uppers	___	___	___	___
narcotics	___	___	___	___
marijuana	___	___	___	___
poppers	___	___	___	___

MENSTRUAL HISTORY:
Age at onset ___
regular ___Yes___No
length of cycle ___Days
duration of flow ___Days ___heavy ___medium ___light
excessive cramps ___Yes ___No
excessive pain ___Yes ___No
other abnormality ___Yes ___No
P.M.S. ___Yes ___No
date of last menstrual period _____
date of last PAP smear _____
are you menopausal? ___Yes ___No

PREGNANCIES:
number___ alive___ still born___
premature___ c-sections ___
abortions ___ miscarriages ___
other complications _____
_____

Addendum to the Medical History Form

WHEN QUESTIONS REQUIRE A (YES = 1) OR (NO = 2) ANSWER, KINDLY FILL IN "1" OR "0".

Are you taking any medications? ___
If you answered yes, what are you taking and why?
_____
_____
_____

What diet programs have you tried?
(Please list the diets you have tried and then circle programs on which you lost weight.)
_____
_____
_____
_____

If you answer yes ("1") to any of the following questions, please add:

1. the frequency of the behavior or when it occurred.
2. for how long (number of months? years?) have you engaged in the behavior, and
3. whether you are engaging in the behavior at this time.

Have you ever taken laxatives in an effort to lose weight?___
1.
2.
3.

Have you ever used diuretics in an effort to lose weight?___
1.
2.
3.

Have you ever tried vomiting in an effort to lose weight?___
1.
2.
3.

Have you ever exercised "excessively" and frequently in an effort to lose weight? ___
1.
2.
3.

Have you ever been extremely or "dangerously" thin? ___
1.
2.
3.

Have you ever taken anti-depressant medication? ___
_____
_____
1.
2.
3.

Was the anti-depressant medication used to control purging behavior? ___

What, if anything, changed in your feelings or behaviors while on anti-depressant medication?
_____
_____
_____

Appendix D

Table 1

Attendance, and Attrition by Treatment Session and Date
159 Particitants Pretested

Session Attended	Week of		Number Attending
1	February	3	89
2		10	71
3		17	56
4		24	59
5	March	3	56
6		10	50
7		17	36
8		24	39
Spring Recess: Friday, March 29 - Sunday, April 7 (No Meetings Held)			
9	April	7	13
10		14	16
11		21	18
12	May	5	25
Debriefing and Test Feedback Session			44

Pretreatment testing at Lehman and the Graduate Center (October 1990 through January 1991)

A Student Strike was held April 15-27, 1991.

Appendix E

EAT TO LOSE WEIGHT

NYC DEPARTMENT OF HEALTH
BUREAU OF NUTRITION
93 WORTH ST. ROOM 714
NEW YORK, NY 10013

FOR MOST WOMEN AND SMALL FRAME MEN - *1200 CALORIE MENU PLAN	SAMPLE 1200 CALORIE MENU
BREAKFAST	BREAKFAST
High Vitamin C Fruit - ONE**	1 medium Orange
Protein Food - ONE portion	1 soft Cooked Egg
Bread or Cereal	1/2 Bagel-Cottage Cheese
Beverage	1 cup Skim Milk
LUNCH	LUNCH
Protein Food - TWO portions	2 oz. Tuna Fish
Bread, Grain or Starchy Vegetable - TWO	2 slices Wh. Wheat Toast
	Coleslaw and Tomato
Fruit - ONE portion	1 small banana
DINNER	DINNER
Protein Food - ONE portion	3 oz. Roast Chicken
High Vitamin A Vegetable - ONE	1/2 cup Braised Carrots
Other Vegetables - EAT FREELY	Mixed Gr. Salad w/Lemon
Starchy Vegetable or Bread or Grain - ONE portion	1/2 small Baked Potato
	1/4 cup lowfat Yogurt (for potato)
Fruit - ONE portion	1 small Apple
Beverage	6 oz. Skim Milk
SNACK	SNACK
Fruit - ONE portion	1 medium Peach
OTHER DAILY FOODS	
Milk - TWO cups or substitute	
Fat - ONE portion	

*Consult your physician in regard to taking supplementation.

**See portion size under Food Groups.

SAMPLE 1600 CALORIE MENU	FOR MOST MEN AND LARGE FRAME WOMEN *YOUR 1600 CALORIE MENU
BREAKFAST	**BREAKFAST**
High Vitamin C Fruit - ONE	1/2 medium Grapefruit
Protein Food - ONE portion	2 oz. Cottage Cheese
Bread or Cereal - TWO (whole grain or enriched)	2 slices Whole Wheat Toast
	1 tsp. Margarine
Beverage	1 cup Skim Milk
LUNCH	**LUNCH**
Protein Food - TWO portions	2 oz. Tuna Fish
Bread, Grain or Starchy Vegetable - TWO	2 slices Whole Wheat Toast
	Coleslaw and Tomato
Fruit - ONE portion	1 tsp. Mayonnaise
Beverage	1 small Banana
DINNER	**DINNER**
Protein Food - FOUR portions	4 oz. Roast Chicken
High Vitamin A Vegetable-ONE	1/2 cup Braised Carrots
Starchy Vegetable or Grain or Bread - TWO portions	1 small Baked Potato
	2 tsp. Italian Dressing
Other Vegetables - EAT FREELY	Mixed Green Salad
Fruit - ONE portion	1 medium Apple
Beverage	1/2 cup lowfat Yogurt (for potato)
	4 oz. Skim Milk
SNACK	**SNACK**
Fruit - ONE portion	1 medium Peach

DO NOT EAT OR DRINK

Bacon, Fatty Meats, Sausage, Beer, Liquor, Wines
Cakes, Cookies, Crackers, Doughnuts, Pastries, Pies
Candy, Chocolates, Nuts
Cream - Sweet and Sour, Cream Cheese, Non-Dairy Creamer

DO NOT EAT OR DRINK
French Fried Potatoes, Potato Chips
Buttered Popcorn, Pretzels and Similar Snack Foods
Gelatin Desserts, Puddings (Sweetened)
Honey, Jams, Jellies, Sugar and Syrup
Ice Cream, Ices, Ice Milk, Sherbets, Whole Milk, Butter
Soda (sweetened), fruit flavored)

PROPER PORTIONS FACILITATE WEIGHT LOSS

PROTEINS

1 oz. fish, poultry, lean meats
(LIMIT MEATS TO 16 oz. A WEEK)
1 egg (LIMIT TO 4 PER WEEK - NO
THAN ONE PER MEAL)
2 oz. cottage, pot or part skim ricotta cheese
1 oz. part skim hard cheese
(LIMIT TO 4 oz. A WEEK)
2 oz. tofu) always in
1 level tbsp. peanut butter) - combination
1/2 cup cooked dry beans) with grains

SKIM MILK OR SUBSTITUTE

1 cup (8 oz.) skim milk, lowfat butter-milk,
plain lowfat yogurt
1/2 cup (4 oz.) evaporated skim milk
1/3 cup nonfat dry milk

BREADS, CEREALS, GRAIN PRODUCTS

(whole grain or enriched)
1 slice bread
1/2 roll, bagel, pita bread, matzo, English muffin
3/4 cup ready-to-eat cereal
(not presweetened)
1/2 cup cooked rice, all pastas, buckwheat,
bulgar wheat, grits

STARCHY VEGETABLES

1/2 small potato, 1/2 cup peas, corn, green lima
beans, winter squash, pumpkin, plantain, yautia, nam,
or dasheen
1/2 cup cooked dry beans and peas
1/4 cup sweet potato
1/2 medium ear corn

YOU MAY USE

Herbs, Spices, Horseradish, Lemon, Vinegar,
Mustard, Pepper and Salt (in moderation)

HIGH VITAMIN C FRUITS (No added sugar)

1/2 CUP (4 oz.) orange, grapefruit
1 medium orange
1/2 grapefruit
1 large tangerine
1/2 small cantaloupe
1 cup tomato juice
1 cup strawberries
1/2 medium mango
1/2 medium papaya
1 kiwi

OTHER FRUITS

1 medium apple, peach or nectarine
1 small banana or pear
12 cherries or grapes
1/2 cup pineapple
1/2 pomegranate
2-3 apricots, prunes or plums
1 cup watermelon
1/4 small honeydew
2 tbsp. raisins

HIGH VITAMIN A VEGETABLES

1/2 cup cooked or 1 cup raw
broccoli, carrots, dark leafy greens (beet, collard, dandelion, mustard and turnip) chicory, escarole, kale, parsley, spinach, Swiss chard, watercress, pumpkin, red pepper, winter squash

VEGETABLES YOU MAY EAT FREELY

all leafy greens, asparagus, broccoli, Brussels sprouts, cauliflower, celery, cucumber, green beans, mushrooms, red and green peppers, summer squash, tomatoes

FATS

1 tsp. vegetable oil
1 tsp. mayonnaise
1 tsp. margarine
2 tsp. Italian dressing

YOU MAY DRINK

Water, coffee or tea (in moderation) seltzer, bouillon and consomme (is salt is not restricted)

Appendix F

Table 1

Treatment Schedule for
Eight Cognitive Behavioral Groups and Eight Support Groups

Monday - Lehman College	Room	Type of Group
9:00 - 10:00 a.m.	CA 215	Behavior
1:00 - 2:00 p.m.	CA 215	Support
4:00 - 5:00 p.m.	CA 215	Behavior
8:30 - 9:30 p.m.	CA 213	Support
Tuesday - Graduate Center		
11:45 a.m. - 12:45 p.m.	815	Support
12:45 - 1:45 p.m.	815	Behavior
5:30 - 6:30 p.m.	539	Support
6:30 - 7:30 p.m.	539	Behavior
Wednesday - Graduate Center		
11:45 a.m. - 12:45 p.m.	539	Behavior
12:45 - 1:45 p.m.	539	Support
5:30 - 6:30 p.m.	603	Behavior
6:30 - 6:30 p.m.	603	Support
Thursday - Lehman College		
11:10 a.m. - 12:05 p.m.	CA 226	Support
1:20 - 2:15 p.m.	CA 217	Behavior
6:00 - 7:00 p.m.	CA 248	Support
7:00 - 8:00 p.m.	CA 248	Behavior

Appendix G

Assignment Schedule
Cognitive Behavioral Techniques Treatment Group

Session 1
Introduction to Classical Conditioning
Homework: Behavior Assessment Food and Diary
For discovering Classically Conditioned eating responses and extinguishing conditioned behavior.

Session 2
Introduction to Operant Conditioning
Homework: Behavior Assessment and Food Diary
For discovering the antecedent events and consequences that elicit and perpetuate eating behavior.

Session 3
Introduction to Cognitive Mediation and Breaking the Behavior Chain
Homework: Behavior Assessment and Food Diary
For discovering how thinking about performing an action can help you perform that action.

Session 4
Introduction to Social Learning
Homework: Behavior Assessment and Food Diary
"Sometimes our Best Friends"
Learning to modify the behavior of people who sabotage the dieter's best efforts.

Session 5
Introduction to the Physiological Basis of Obesity
Homework: Behavior Assessment and Food Diary
With techniques for handling visual, auditory, and olfactory eating cues.

Session 6
Introduction to Psychological Factors in Obesity
Homework: Behavior Assessment and Food Diary
With body awareness exercises (proper use of a scale, a belt, a full-length mirror, and a measuring tape).

Session 7
Targeting a Problem Behavior
Homework: Behavior Assessment and Food Diary
Apply techniques such as "thought stopping," "trying an alternative behavior," "punishment," "reinforcement of an appropriate eating behavior," and record results.

Session 8
The basics of good nutrition.
Becoming fat-wise and calorie-smart.
Homework: Behavior Assessment and Food Diary
Food label reading and reporting assignment.

Session 9
Techniques for handling obsessive food thoughts.
Thought Stopping and having alternative thoughts available for a quick shift of attention.
"Punishment," or the rubber band reminder.
Homework: Thought Assessment and Food Diary
Practice techniques.

Session 10
How to select a self-help book.
And review of techniques most helpful to participants.
Homework: Thought Assessment and Food Diary
Library/bibliotherapy assignment.

Session 11
Review of behavior extinction procedures.
Question and discussion period.
Homework: Behavior Assessment and Food Diary

Session 12
Lecture on exercise for weight loss, explanation of handouts for a Fitness Walking Program, practice in pulse taking, figuring maximum heart-rates and target zones, and suggestions for record keeping and the application of behavioral techniques for starting and maintaining an exercise program.

Appendix H

Schedule of Topics
Social and Psychological Issues Support Group

Session 1
Motivation
(to eat - to diet - to change one's style of life)

Session 2
Depression and Anxiety

Session 3
Relationships

Session 4
Sex-role Issues

Session 5
Assertiveness

Session 6
Self-Esteem

Session 7
Dealing With Loss and Change

Session 8
Stress and Stress Management

Session 9
Loneliness, Boredom, and Food

Session 10
Body Image, and Culture

Session 11
Sexuality

Session 12
Lecture on exercise for weight loss, explanation of handouts for a Fitness Walking Program, practice in pulse taking, figuring maximum heart-rates and target zones, and suggestions for record keeping and the application of behavioral techniques for starting and maintaining an exercise program.

Appendix I

Table 1

Breakdown of Educational Level of Participants

	Number of Participants		
Level of Education	Pretest Takers	Starters	Finishers
Did not complete high school	4	3	2
High school graduate	12	8	2
Years of college:			
One	19	12	1
Two	23	13	7
Three	22	19	11
Four	45	29	14
Years of graduate study:			
One	1	1	1
Two	23	15	4
Three	6	3	3
Four	3	3	2
Unspecified	1	1	1
	159	107	48

Appendix J

Table 1

Occupations of Women Completing the Pretest

	Number
Part 1 (Census Categories)*	
Administrative support occupations, including clerical	22
Business and repair services	5
Entertainment and recreational services	3
Executive, administrative, and managerial occupations	4
Finance, insurance, and real estate	1
Private household occupations	10
Professional and related services	5
Professional specialty occupations	37
Public administration	1
Sales occupations	5
Service occupations, except protective and household	5
Technicians and related support occupations	6
Wholesale trade	1
Part 2 (Categories not listed in the Index)*	
Students	34
Unemployed	5
Unspecified/missing data	15
	159

* United States Department of Commerce Bureau of the Census 1990 Classified Index of Industries and Occupations. Washington, D.C.

Appendix K

Table 1

Descriptive Information for Category Variables
159 Pretest Takers

Type of Treatment	N	Percent
Cognitive Behavioral	80	50.3
Social Support	75	47.2
Dropped Out After Assignment to Treatment Group and Before the First Meeting	4	2.5
		100.0
Location Where Treatment Was Conducted (Selected by Volunteer)		
Lehman College	68	48.2
Graduate Center	91	57.2
		100.0
Assignment to Participation Group (Based Upon Volunteer Availability)		
Group No.		
1	13	8.2
2	6	3.8
3	7	4.4
4	14	8.8
5	7	4.4
6	7	4.4
7	13	8.2
8	16	10.1
9	3	1.9
10	13	8.2
11	12	7.5
12	7	4.4
13	4	2.5
14	6	3.8
15	5	3.1
16	8	5.0
	(missing)	11.3
		100.0
Years of Education		
	7	.6
	11	1.9
	12	7.5
	13	11.9
	14	14.5
	15	13.8

Appendix L

Table 1

Range of Scores and Norms for the Eating Inventory (Stunkard & Messick, 1988)

Scale	Possible Range of Scores	Norms		No. of Participants
Restraint	0 - 21	Low to Average	0 - 10	90
		High	11 - 13	35
		Clinical	14 +	34
				159
Disinhibition	0 - 16	Low to Average	0 - 8	33
		High	9 - 11	38
		Clinical	11 +	88
				159
Hunger	0 - 14	Low to Average	0 - 7	89
		High	8 - 10	43
		Clinical	11 +	27
				159

Appendix L

Table 2

Ranges of Scores and Norms for the Group Embedded Figures Test (Witkin, et al., 1971)

Possible Range of Scores	Quartiles	Participants' Range	No. of Participants
0 - 18	1	0 - 8	103
	2	9 - 11	22
	3	12 - 14	18
	4	15 - 18	15
			158

N = 242

X = 10.8

SD = 4.2

Appendix L

Table 3

Range of Scores for the Marlowe Crowne Social Desirability Scale (Crowne & Marlowe, 1967)

Possible Range of Scores		Range for Participants
0 - 33	No Published Norms	0 - 30

Appendix L

Table 4

Range of Scores for the Wechsler Adult Intelligence Scale - Revised, Vocabulary Subscale (WAIS-R,V): (Wechsler, 1981)

Possible Range of Scores	Participants' Scores
0 - 70	14 - 66

Scaled score equivalents of raw scores are published for various age groups, but norms for subscales are not in the WAIS-R Manual.

Appendix L

Table 5

Range of Scores for the Center for Epidemiologic Studies Depression Scale (Devins & Orme, 1985)

Possible Range of Scores	Participants' Range
0 - 60	0 - 46

Norms	No. of Participants
0 - 15.5 Not Depressed	76
16 - 20.5 Mild Depression	17
21 - 30.5 Moderate	30
31 + Severe	36
	150

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