

Outcomes of Weight-Loss Programs

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ABSTRACT. We examined the results of a stratified random sample of 50 weight-loss studies conducted in the 1980s for weight change, change in overweight percentage, and improvement in physical health during treatment and follow-up. The typical participant was a White, middle-class woman 48% over her average weight before treatment, who lost 12.8 lb during a 13-week treatment program and then regained 4.3 lb over the next 6.5 months. Treatment efficacy was not improved when only the most successful treatment conditions were examined or when the studies conducted at the end of the decade were compared with earlier studies. Only one study examined change in physical health during weight loss, and only one study showed that participants moved from clinical to nonclinical levels of obesity. In light of these results, we argue that treating obesity through dieting techniques may be a misdirected goal.

OBESEITY is not considered a psychological disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R; American Psychiatric Association, 1987). Nonetheless, psychological techniques, particularly behavior therapy, have frequently been used to understand the etiology and treatment of obesity. As these methods have gained acceptance in the United States (Stunkard, 1980; Stunkard & Mahoney, 1976), psychologists have treated obese clients as well as a large number of nonobese clients who are concerned about their weight. In contrast, people in developing nations consider obesity a sign of status and wealth (Rothblum, 1990), and even people in Western nations such as Australia are less concerned with weight and dieting than are Americans (Tiggemann & Rothblum, 1988).

The clinical prevalence and treatment of obesity in the United States has also resulted in a large number of studies examining the efficacy of various

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types of psychological treatments. Most commonly, these studies randomly assign obese people to one of several treatment conditions or to a control group and then assess weight loss after treatment and follow-up, a method designed to determine which specific programs or components result in the most weight loss during and after the conclusion of treatment.

As early as the 1950s, researchers have remarked on the relatively poor outcome of weight-loss programs. Stunkard (1958) noted that less than 5% of dieters lost large amounts of weight and even fewer maintained this weight loss. Brownell (1982) stated: "If 'cure' from obesity is defined as reduction to ideal weight and maintenance of that weight for 5 years, a person is more likely to recover from most forms of cancer than from obesity" (p. 820).

Critics of weight-loss programs (e.g., Brownell, 1982; Dubbert & Wilson, 1983; Foreyt, Goodrick, & Gotto, 1981; Jeffery, Wing, & Stunkard, 1978; Stunkard & Penick, 1979) have noted that treatment does not result in large weight loss and that the longer the follow-up period the more weight participants regain over time. What is striking about these reviews is both the frankness of the authors (many of whom are also authors of the weight-loss programs they criticize) and their optimism in providing suggestions for future research. Reviewers recommend that programs be both more intensive (e.g., longer treatment, very low calorie regimens) and more comprehensive (e.g., involve spouses or co-workers).

The purpose of the present study was to examine the treatment outcome research of the most recent decade (the 1980s) and evaluate the efficacy of the psychological methods used in weight-loss programs. Rather than focus on the type of treatment, we summarized the extent of weight loss and maintenance of this loss over time, across studies, to determine how much people weighed when they began treatment, how much weight they lost during treatment, and how much of this weight they kept off over time.

Using the clinical level of obesity, which is consistently defined as 20% over ideal weight, we examined the extent to which participants were clinically obese (as opposed to mildly overweight) and to what degree they achieved nonclinical levels of obesity after treatment and follow-up; that is, we examined to what degree weight-loss programs "cured" obesity. We also examined whether the amount and percentage of weight lost improved from the beginning to the end of the decade: Did weight-loss programs improve over time?

Although psychological techniques are used to help people lose weight, the reason for losing weight, particularly for people who are obese, is nearly always to improve physical health. Obesity is cited as a cause for cardiovascular problems, hypertension, diabetes melitus, hyperlipidemia, carbohydrate intolerance, pulmonary problems, renal problems, surgery complications, and complications during pregnancy (Brownell, 1982; Dawber, 1980; Van Itallie, 1979). Thus, the second purpose of our study was to examine to

what degree weight-loss programs have addressed the physical health problems of participants. Did weight loss have a positive effect on physical health, and which medical conditions were most improved due to weight loss?

The need to examine physical health before and after weight-loss programs seemed salient, given research results indicating that dieting itself can cause negative physical health (Polivy & Herman, 1983; Rothblum, 1990, for reviews of this literature). Dieting has been associated with elevated fatty acids, hypertension, elevated serum cholesterol, gallstones, weakness and fatigue, cardiac disorders, and even death (Hibscher & Herman, 1977; Polivy & Herman). We wanted to see to what extent the health benefits of decreasing obesity counteract the possible health risks of participating in weight-loss programs.

Method

Procedure

We searched *Psychological Abstracts* to locate all the articles written about obesity during the 1980s (1980–1989). Articles were eliminated if they (a) did not focus on treatment or treatment follow-up; (b) examined obesity in children or adolescents; (c) used a sample size smaller than 10; (d) used animals as subjects; (e) were not written in English; (f) were not accessible at libraries or through interlibrary loan services; or (g) were reprinted from another journal. Following this procedure we found 82 articles on the treatment and follow-up of adult obesity.

Next, a stratified random sample was conducted by year and journal to arrive at 50 representative studies. The sample was stratified by year because the number of articles published each year varied greatly (a range of 2 to 15 articles per year). Numbers of articles from one journal to another also varied greatly (see Table 1). The *Journal of Consulting and Clinical Psychology* accounted for 27% of the total number of articles, *Behavior Therapy* for 17%, and the remaining journals accounted for 1% to 7% of the total number of articles. Results of the stratified random sample of 50 corresponded to these percentages (see Table 1).

Measures

The 50 articles most often provided quantifiable data in one of two ways: Either the means for each treatment condition were provided separately or one mean was provided for all participants across all treatment conditions. Articles differed in how many treatment conditions were compared, with a range from one to nine conditions per article. For the 50 articles in the

TABLE 1
Total Journal Articles on Obesity Treatment from 1980–1989 and Results of Stratified Random Sample

Journal	All articles		Sample	
	Total	%	Total	%
<i>Addictive Behaviors</i>	6	7%	3	6%
<i>American Journal of Psychiatry</i>	2	2%	1	2%
<i>Applied Research in Mental Retardation</i>	1	1%	1	2%
<i>Archives of General Psychiatry</i>	3	4%	3	6%
<i>Australian Journal of Clinical and Experimental Hypnosis</i>	1	1%	1	2%
<i>Behavior Therapist</i>	1	1%	0	0%
<i>Behavior Therapy</i>	14	17%	8	16%
<i>Behavioural Research and Therapy</i>	3	4%	2	4%
<i>British Journal of Psychiatry</i>	1	1%	0	0%
<i>British Journal of Medical Psychology</i>	1	1%	1	2%
<i>Group</i>	1	1%	1	2%
<i>International Journal of Clinical Experimental Hypnosis</i>	1	1%	0	1%
<i>International Journal of Eating Disorders</i>	3	4%	2	4%
<i>Journal of Behavior Therapy and Experimental Psychiatry</i>	1	1%	0	0%
<i>Journal of Clinical and Counseling Psychology</i>	22	27%	13	26%
<i>Journal of Clinical Psychiatry</i>	1	1%	0	0%
<i>Journal of Clinical Psychology</i>	1	1%	1	2%
<i>Journal of Counseling Psychology</i>	3	4%	2	4%
<i>Journal of Family Practice</i>	1	1%	1	2%
<i>Journal of Obesity and Weight Regulation</i>	3	4%	1	2%
<i>Journal of Psychosomatic Research</i>	1	1%	1	2%
<i>Military Medicine</i>	1	1%	1	2%
<i>Psychological Reports</i>	5	6%	3	6%
<i>Psychotherapy and Psychosomatics</i>	1	1%	1	1%
<i>Psychotherapy: Theory, Research and Practice</i>	4	5%	3	6%

sample, there were 163 conditions across all articles. For the purpose of the present study, a median score was defined as the mid-point of all the means presented for all 163 conditions for which there was information available. If only a total mean was given for all conditions in an article, then that mean was used.

This method of computing a median ignores the number of participants in each condition (rarely reported at each assessment period in the articles) and also treats each condition separately and equally. We believed this method of computing medians was justified, given the equal importance placed on articles in the psychological literature regardless of number of subjects.

For categorizing nonquantitative data (e.g., type of treatment) we developed a coding system. Finally, articles did not present data consistently; for example, an article might present the mean age of participants across conditions but mean weight loss separately for each condition. Certain data were presented in very few studies (e.g., ethnicity); other data were presented in almost all studies (e.g., pretreatment weight).

We examined articles for the presence of the following variables:

Gender. Because very few studies reported gender for each condition at all three assessment periods, gender was recorded as the total number of women and men across conditions in the study.

Age. All age information was recorded, whether a mean was given or only a range. To determine the median age of participants in all studies, we used only the means (omitting articles that only gave an age range). Because age was reported by gender in only three studies and by treatment group in only five studies, we recorded only the mean age of all subjects.

Ethnicity and socioeconomic status. All available information on these variables was recorded.

Special populations. If a study specified working with a population other than those recruited from the general population or university population, this was recorded.

Physical health. Information about inclusion/exclusion criteria for physical health was recorded, and coding categories were developed based on the data. All other data on physical health, including any change in physical health after treatment, were recorded.

Type of treatment. The type of treatment was recorded and coding categories were developed. Most studies compared two or more treatment conditions.

Control groups. The only studies we considered as having a control group were those in which authors identified the group as such (i.e., waiting-list control, delayed treatment).

Duration. Duration of treatment was recorded in weeks.

Follow-up assessment. Some studies had more than one follow-up assessment period. Because our interest was on the efficacy of treatment programs over time, only the longest follow-up period was recorded. Follow-up period referred to the final follow-up assessment after the end of treatment, in months.

Participant attrition. The number of participants per condition and the total number of participants were recorded for pretreatment, posttreatment, and the final follow-up, respectively. For the studies that provided the number of participants per condition at each assessment period, the attrition rates were calculated and medians found for the posttreatment and follow-up periods.

Weight at each assessment period. Weight information was recorded in pounds for each assessment period. If studies provided weight in kilograms only, the figures were converted to pounds (1 kg = 2.2 lb). If studies provided only change in weight, then the weights for posttreatment and follow-up were determined by adding or subtracting change in weight from the pretreatment weight. From the studies providing the information needed, median weights were obtained for each assessment period.

Weight change. Mean weight change from pretreatment to posttreatment, from pretreatment to follow-up, and from posttreatment to follow-up was recorded. If studies did not provide this information, change in weight was calculated by subtracting posttreatment weight from pretreatment weight, follow-up weight from pretreatment weight, and follow-up weight from posttreatment weight, respectively. From the studies providing this information, median change in weights was calculated for each assessment period.

Overweight percentage. Of studies that referred to overweight percentage, 47% used some form of the Metropolitan Life Insurance Ideal Weights Table, 8% used the Body Mass Index (BMI) (weight/height squared), and 8% used a combination of the two. The remaining 37% did not specify how overweight percentage was determined, but the numbers used made it obvious (BMI scores are very different from overweight percentage). Because 84% of the studies used overweight percentage as defined by a certain percentage over the ideal weight (most used the 20% cutoff, though a few used 15%) according to the Metropolitan Life Insurance Ideal Weights table, we used the 20% cutoff definition in our study.

Overweight percentages were recorded for each assessment period. If studies provided only mean changes, then the percentages for posttreatment and follow-up were calculated by adding or subtracting them from the percentage at pretreatment. From the studies providing this information, the median overweight percentage was obtained for each assessment period.

Overweight percentage change. Change in overweight percentages from pretreatment to posttreatment, from pretreatment to follow-up, and from posttreatment to follow-up were recorded. If studies did not provide this information, change in percentage was calculated by subtracting the posttreatment percentage from the pretreatment percentage, the follow-up percentage from

the pretreatment percentage, and the follow-up percentage from the posttreatment percentage, respectively. From the studies providing this information, median change in overweight percentage was found for each assessment period.

Weight change for the optimum treatment conditions. For each study, the treatment condition that was the most successful was recorded. Success was defined as the condition that precipitated the largest weight loss (regardless of which condition was hypothesized by the author). This was done separately for posttreatment and follow-up, so that one condition might be the most successful during posttreatment and another might be the most successful at follow-up. If a study had only one treatment condition then that condition was considered the most successful.

Comparison of studies over time. We compared 1980 studies with those of later years to examine whether weight-loss programs improved over time in the completeness of the information provided, the amount of weight lost, and the duration of treatment and the follow-up assessment period. Because there were nine studies in 1980 but only three in 1989, the years 1987 and 1988 were added to provide a more equal number of studies. The nine studies in 1980 were compared with the six from the later years in treatment duration, follow-up assessment period, gender, weight, change in weight, and overweight percentage.

Jeanine Cogan trained an undergraduate student to use the coding system and serve as a second rater to calculate interrater reliability; 10% of the articles, randomly selected and coded, resulted in 94% interrater reliability. All variables received a perfect reliability score except for type of treatment and physical health.

Results

Demographic Information of Weight-Loss Group Participants

Gender. Forty-seven of the studies reported the gender of the participants. In 15 of these, the participants were all women, and in all but one, which used only men, more than half the participants were women. In all but 9, more than 75% of the participants were women. Half had 90–100% female participants.

Age. All but nine studies reported the ages of participants. Thirty gave a mean age of 39.1 years. Ten reported an age range rather than a mean. One study reported age only as "middle-aged."

Ethnicity. Only three studies included information about the ethnicity of the participants. Of these, two reported that all the participants were White and one reported that 59% were Black, 40% were White and 1% were American Indian.

Socioeconomic status. Ten studies reported information about the socioeconomic status of participants, 6 of which did not give numbers or percentages. Four of these studies described the participants as middle class, and the other two described participants as upper middle class. The remaining four studies gave the following information: (a) 80% middle class; (b) 63% lower class, 29% lower middle-class; (c) 53% I, 40% II, and 7% III (where I, II, and III represent status levels); and (d) economic status = 34.41 (with no explanation given on scale).

Type of populations. Participants (64%) were generally recruited through public advertisements from the larger community or from the available university population. Ten of the studies recruited through therapist, physician, employer, or self referrals. Five did not discuss recruitment techniques at all. Treatment took place in weight-loss clinics (8%), mental health centers or private practices (8%), out-patient settings (6%), restrictive environments (e.g., sheltered workshops) (6%), and university and hospital settings (70%). Only one study did not provide information about its treatment setting.

Six studies worked with specific populations. Psychiatric patients, moderately mentally retarded patients, and military personnel were each the focus of one study, and employees at their worksite were the focus of three studies.

Physical health. Seventeen studies did not discuss the physical health of participants. The 33 that did were coded into six categories (Table 2). All the studies excluded people if they had any medical complications, medical complications that would interfere with or be exacerbated by weight loss, specific medical problems such as diabetes, metabolic problems, or were currently taking medications. Additionally, seven studies required physician approval for participation or provided a health examination. Only one study used participants who were experiencing the weight-related health problem of hypertension. In this study, the mean blood pressure values dropped from pretreatment to posttreatment in both the experimental and control groups. This drop was more dramatic for the experimental group, corresponding with a larger weight loss. Blood pressure at follow-up was not given.

Treatment Group Information

Number of treatment group comparisons. Studies generally compared two or more treatment conditions, with a median of three conditions per study.

TABLE 2
Physical Health Qualifications Required for Admittance into Study

Categories	Number of studies
No medical problems/must be healthy	9
No weight related medical problems	11
Specific disorders, diseases, or problems screened out	6
Given health examination/physician approval	6
Subjects had hypertension	1
Physical health not discussed	17

Type of treatment groups. All but eight studies were comparisons of various elements of behavior therapy, which included training in such variables as self-monitoring, stimulus control, self-reinforcement, cognitive modification, problem solving, and exercise regimen programming. Of the behavior therapy studies, three focused on the involvement of spouse or roommate (e.g., cooperative spouse, couple treatment), five focused on a form of maintenance (e.g. booster sessions, relapse prevention), and nine focused on the use of temporary weight-loss aides (e.g. drugs, the gastric bubble, and very low calorie diets such as Optifast, Scarsdale, or a protein-sparing modified fast).

In addition to behavior therapy, five studies focused on the motivating ability of monetary contingencies or contracts, three focused on the impact of direct measuring of adherence to the program's goals, one focused on group composition (homogeneity with respect to degree of overweight and gender), and one focused on contingent therapist contact. The eight studies that were not oriented toward behavior therapy were holistic therapy, rational emotive therapy, and hypnosis.

Usually the most comprehensive treatment condition, which was anticipated to be the most successful, was compared with a less comprehensive treatment condition. In this manner, 44 of the 50 studies found statistically significant between-groups results.

Control groups. Nineteen studies used control groups, which were variously defined as delayed treatment (47%), nonbehavioral (16%), minimal contact (16%), nonspecific (5%), no treatment (5%), similar to the experimental group only without the distinguishing variable (10.5%), and placebo (5%). Two of these studies used more than one of the above-described control groups and one study did not describe the control group.

Duration of treatment groups. The treatment phase of the 50 studies ranged from 4 weeks to 33 months, with a median of 13 weeks. One study did not

indicate treatment length, and two studies simply stated that length varied. Of the 47 studies that included treatment length, 19 ranged from 4 to 10 weeks, 19 ranged from 11 to 17 weeks, eight ranged from 20 to 30 weeks, and one study lasted 33 months.

Follow-up sessions. The final follow-up period ranged from no follow-up to 60 months, with a median of 6.5 months. Ten studies did not have a follow-up period. In one study, it varied from 3 to 24 months, depending on the treatment condition. Two studies were follow-up studies only. At the follow-up, participants completed a questionnaire or were contacted by phone (12.5%), were interviewed or came to a final session (32.5%), or were weighed or asked for weight information (22.5%). The remaining 32.5% of studies that did provide follow-up data did not report the content of the follow-up. Except for one study that offered further hypnotic treatment if necessary, the follow-up was not a forum for further treatment.

Participant attrition. All the studies reported the number of participants at the pretreatment assessment period. Thirty-seven gave the number of participants at pretreatment for each treatment group. Ten gave a total number of participants at the posttreatment period, and only 23 studies reported the number of participants in each treatment group. Eighteen studies did not report the number of participants at the posttreatment at all. At the final follow-up, eight studies reported the total number of participants and 22 reported the number of participants in each treatment group; 19 studies did not report the number of participants, and 1 provided only partial follow-up information.

Only 11 studies provided the number of participants in each treatment group at all three (pretreatment, posttreatment, and follow-up) periods. The median attrition rate of these 11 studies from pretreatment to posttreatment was 19%. The median attrition rate from the pretreatment to the follow-up was 27% (this excludes control groups).

Weight Information and Change in Weight

Completeness of information. Table 3 contains the completeness of weight and overweight percentage information. Twelve studies did not report pretreatment, posttreatment, and follow-up weights. Ten indicated only the mean weight lost by condition from pretreatment to posttreatment. One study gave overweight percentage only, and one provided only the range of weight that was lost by participants. One study provided a total weight and overweight percentage for the pretreatment period only.

Thirty studies reported overweight percentage at the pretreatment period. Of these, 19 indicated overweight percentage for each treatment condition; 11 gave one total overweight percentage only (Table 3). Only nine studies

TABLE 3
Completeness of Weight and Overweight Percentage Information: Number of Studies Reporting Data at Certain Times

Time	Across conditions	For each condition	On treatment group only	Not reported
Pretreatment	10	27	1	12
Posttreatment	0	35	2	13
Follow-up	0	29	2	19
% overweight at pretreatment	11	19	0	20
% overweight at posttreatment	0	9	0	41
% overweight at follow-up	0	6	0	44

reported overweight percentage at posttreatment, and six studies reported it at follow-up.

Only one study reported whether participants moved from clinical levels of obesity to nonclinical levels. At the pretreatment period in this study, 1 of the 16 participants was below the clinical level of obesity (under 20% overweight). At posttreatment five additional participants had gone from clinical to nonclinical levels. At the follow-up, only one participant was still at the nonclinical level of obesity.

Weight at each assessment period. Table 4 contains the 50 studies and the weight information they presented. Of the 38 that reported pretreatment weight, these ranged from 139.6 lb to 308.1 lb, with a median of 189.5 lb. Of the 37 that reported weight at posttreatment, the range was 134.2 lb to 271.5 lb, with a median of 177.5 lb. Of the 31 studies that reported follow-up weights, these ranged from 154.1 lb to 294 lb, with a median of 182.2 lb.

Weight change. Table 4 also contains weight change from pretreatment to posttreatment, from pretreatment to follow-up, and from posttreatment to follow-up, respectively. Weight change could not be calculated for articles that did not provide pretreatment, posttreatment, and/or follow-up weights.

Change in weight from pretreatment to posttreatment ranged from 2.9 lb gained to 62 lb lost, with a median of 12.8 lb lost. Change in weight from pretreatment to follow-up ranged from 8.6 lb gained to 29.8 lb lost, with a median of 9.7 lb lost. Change in weight from posttreatment to follow-up ranged from 41.7 lb gained to 15.6 lb lost, with a median of 4.3 lb gained.

Overweight percentage at each assessment period. Table 5 contains overweight percentage information from the 50 studies. Of the 30 that reported at pretreatment, the range was from 21.4% to 179%, with a median of 48%

TABLE 4
Weight and Change in Weight at Three Assessment Periods

Author	Weight			Weight change		
	Pre	Post	FU	PrePost	PreFU	PostFU
Rotatori, Fox, & Wicks (1980)				7.3	9.1	1.8
				5.6	2.8	+2.8
Chavez & Michaels (1980)	165.7	159.8		5.9		
Gormally, Rardin, & Black (1980)	176.9	164.8	172.3	12.1	4.6	+7.5
Hautzinger (1980)	199.6	184.4	175.0	15.2	24.9	9.7
Bigelow, Griffiths, Liebson, & Kaliszak (1980)	177.3	175.3	178.7	2.0	+1.4	+3.4
		172.7	177.0	4.6	0.3	+4.3
		176.0	178.7	1.3	+1.4	+2.7
Franzini & Grimes (1980)				5.2		
				7.1		
				5.0		
				1.1		
				0.4		
Bornstein & Devine (1980)	180.9	179.0	174.8	1.9	6.1	4.2
		178.1	180.3	2.8	0.6	+2.2
		174.4	173.0	6.5	7.9	1.4
		174.6	168.6	6.3	12.3	6.0
Block (1980)	166.6	157.3	147.4	9.3	19.2	9.9
		163.7	162.1	2.9	4.5	1.6
		166.1	166.2	0.5	0.4	+0.1
Carroll, Yates, & Gray (1980)	165.7	155.9		9.8		
		159.8		5.9		
		163.7		2.0		
Brownell & Stunkard (1981)	208.3	188.5	198.4	19.8	9.9	+9.9
	206.7	189.3	198.3	17.4	9.0	+8.4
	197.6	178.7	187.9	18.9	9.3	+9.6
	218.0	194.2	204.5	23.8	10.3	+13.5
	195.8	180.2	189.0	15.6	8.8	+6.8
Wing, Epstein, Marcus, & Shapira (1981)	201.8	178.8	183.1	23.0	18.7	+4.3
	190.5	171.6	180.9	18.9	9.6	+9.3
Craighead, Stunkard, & O'Brien (1981)	201.5	177.5	181.7	24.0	19.8	+4.2
	210.3	178.4	196.4	31.9	13.9	+18.0
	215.8	182.1	205.7	33.7	10.1	+23.6
	205.7	208.6		+2.9		
	180.8	167.6		13.2		
Pearce, LeBow, & Orchard (1981)	192.8	178.0	174.2	14.3	18.2	3.9
		182.8	187.6	9.5	4.8	+4.7
		181.1	179.9	11.2	12.4	1.2
		188.8	193.5	3.6	+0.7	+4.7
Hartigan, Baker-Strauch, & Morris (1982)	202.0	191.5	189.0	10.5	13.0	2.5
	179.9	179.2	185.8	0.7	+5.9	+6.6
	178.5	178.6	176.6	+0.1	1.9	2.0

TABLE 4 (continued)

Author	Weight			Weight change		
	Pre	Post	FU	PrePost	PreFU	PostFU
Inglis (1982)				2.0		
				2.9		
Pezzot-Pearce, LeBow, & Pearce (1982)	185.4					
Wing, Epstein, & Shapira (1982)	181.9	168.4	166.4	13.5	15.5	1.9
	189.5	176.4	177.5	13.1	12.0	+1.1
Katahn, Pleas, Thackrey, & Wallston (1982)	238.8	210.7	217.8	28.1	21.0	+7.1
Murphy, Williamson, Buxton, Moody, Absher, & Warner (1982)	193.7	178.1	188.0	15.6	5.7	+9.9
	199.3	184.2	204.9	15.1	+5.6	+20.7
	186.3	168.3	178.9	18.0	7.4	+10.6
	185.2	168.4	169.3	16.8	15.9	+0.9
	198.9	179.4	192.6	16.5	6.3	+10.2
	177.2	176.4		0.8		
Wolf & DeBlassie (1982)				6.4		
				4.8		
				+0.4		
				4.4		
				4.1		
				+0.4		
Sperduto & O'Brien (1983)				13.8		
				8.7		
Black & Friesen (1983)	178.5	175.1		3.4		
	152.9	152.5		0.4		
				9.3		
Sandifer & Buchanan (1983)						
Davies, Gibson, Davies, Long, & Reinsenleiter (1983)*				9.9	25.5	15.6
Rand & Stunkard (1983)				30.0		
Stamps, Catino, & Feola (1983)	189.5	159.5		18.2		
	189.1	170.9		44.5		
	258.0	213.5		5.9	8.3	2.4
Owusu-Bempah & Howitt (1983)	150.1	144.2	141.8	5.4	3.4	+2.0
	149.4	144.0	146.0	4.5	2.4	+2.1
	146.7	142.2	144.3	23.4	11.8	+11.6
Jeffery, Gerber, Rosenthal, & Linquist (1983)	205.8	181.7	193.4	24.9	16.3	+8.6
	219.1	194.2	202.8	31.1	13.8	+17.3
	231.1	200.0	218.3	27.8	18.8	+9.0
	211.9	184.1	193.1	33.9	22.1	+11.0
	226.8	192.9	203.9	31.8	14.6	+17.2
	237.8	206.0	223.2			
Abrams & Follick (1983)				7.8	9.8	2.0
Wing, Epstein, Shapira, & Koeske (1984)	195.4	187.6	185.6	9.1	8.1	+1.0
		186.3	187.3			

(table continues)

TABLE 4 (continued)

Author	Weight			Weight change		
	Pre	Post	FU	PrePost	PreFU	PostFU
		187.9	192.8	7.5	2.6	+4.9
Perri, McAdoo, Spevak, & Newlin (1984)	200.5	188.1	199.7	12.4	0.8	+11.6
	185.7	172.2	175.7	13.5	10.0	+3.5
Perri, Shapiro, Ludwig, Twentymen, & McAdoo (1984)	194.9	173.7	172.2	21.2	22.7	1.5
		176.1	188.4	18.8	6.5	+12.3
		175.7	182.2	19.2	12.7	+6.5
		182.2	19.2	12.7	+6.5	+2.7
		178.4	181.1	16.5	13.8	+5.3
	176.1	181.4	18.8	13.5	+11.0	
	177.0	188.0	17.9	6.9		
Stalonas, Perri, & Kerzner (1984)	182.6	170.1	183.9	12.5	+1.3	+13.8
	181.5	171.1	189.8	10.4	+8.3	+18.7
	180.3	170.4	180.5	9.9	+0.2	+10.1
	188.4	178.3	181.4	10.1	0.7	+3.1
Dubbert & Wilson (1984)	207.7	191.1	194.7	16.6	13.0	+3.6
	208.9	188.7	188.5	20.2	20.4	0.2
	190.4	173.3	175.1	17.1	15.3	1.8
	195.0	180.8	183.0	14.2	12.0	+2.2
Fox, Haniotes, & Rotatori (1984)	176.4	169.1	175.8	7.3	0.6	+6.7
	165.0	156.8	160.9	8.2	4.1	+4.1
Jeffery, Snell, & Forster (1985)				27.0		
				17.0		
				20.0		
				24.0		
				17.5		
				37.3		
				21.5		
				23.0		
			22.5			
			21.0			
Basler, Brinkmeier, Buser, Haehn, & Molders-Kober (1985)	194.9	193.1	181.9	1.8	13.0	11.2
Stalonas & Kirschenbaum (1985)	188.0	175.3		12.7		
Burnett, Taylor, & Agras (1985)	196.3	188.2	178.6	8.1	17.7	9.6
	185.3	182.0	183.0	3.3	2.3	+1.0
Wadden & Stunkard (1986)	234.1	203.1	224.0	31.0	10.1	+20.9
	246.8	215.3	225.9	31.5	20.9	+10.6
	237.6	195.1	209.2	42.5	28.4	+14.1
Cochrane & Friesen (1986)	216.0	209.5	198.2	6.5	17.8	11.3
	184.8	176.8	167.6	8.0	17.1	9.1
	175.8	177.3	175.3	+1.5	0.5	2.0

TABLE 4 (continued)

Author	Weight			Weight change		
	Pre	Post	FU	PrePost	PreFU	PostFU
Bennett (1986)	179.7	166.9	172.7	12.8	7.0	+5.8
		158.6	168.0	21.1	11.7	+9.4
		177.1	179.3	2.6	0.4	+2.2
		161.0	167.8	18.7	11.9	+6.8
		174.9	178.8	4.8	0.9	+3.9
	166.9	170.2	12.8	9.5	+3.3	
			15.9			
Sperduto, Thompson, & O'Brien (1986)				9.7		
Wise, Mann, Cooper, & Rustigi (1986)	262.7	200.7	242.4	62.0	20.3	+41.7
	285.4	253.3	294.0	32.1	+8.6	+40.7
Griffiths & Holliday (1987)	158.4	142.7	150.3	15.7	8.1	+7.6
	167.6	154.2	159.8	12.8	7.8	+5.0
	182.6	170.8	182.8	11.8	+2	+11.6
	308.1	271.5		36.6		
Wade, Hart, Kirby, & Mills (1988)	303.6	267.0		36.6		
Perri, McAllister, Gange, Jordan, McAdoo, & Nezu (1988)	195.9	172.1	188.0	23.8	7.9	+15.8
	214.2	185.2	189.1	29.0	25.1	+3.9
	213.3	188.3	194.7	25.0	18.6	+6.4
	209.5	180.7	189.3	28.8	20.1	+8.6
	214.3	184.2	184.5	30.1	29.8	+0.3
Perri, Nezu, Patti, & McCann (1989)	212.5	193.0	202.4	19.6	10.1	+9.4
	220.8	190.8	199.1	30.0	21.7	+8.3
Barabasz & Spiegel (1989)				2.9		
				7.5		
			14.1			
Craighead & Blum (1989)	150.5	139.5	139.9	11.0	10.6	**
	149.0	140.9	144.7	8.1	4.3	**
	153.5	148.9	149.3	4.6	4.2	**

Note. Empty spaces indicate that no information was provided. Under weight change, all numbers refer to weight lost unless there is a (+) sign.

*Davies, et al (1983) provided only a range from pretreatment to posttreatment of 3 pounds gained to 15.25 pounds lost. **Change in weight could not be computed because follow-up data was based on different numbers than posttreatment data.

overweight. Of the nine studies that reported at posttreatment, the range was from 14.5% to 62.2%, with a median of 38.4% overweight. Of the six that reported at follow-up, the range was from 14.2% to 62.2%, with a median of 41.4% overweight.

Change in overweight percentage. Table 5 also contains change in overweight percentage from pretreatment to posttreatment, from pretreatment to follow-

TABLE 5
Overweight Percentage and Change in Overweight Percentage at Three
Assessment Periods

Author	% overweight			% weight change		
	Pre	Post	FU	PrePost	PreFU	PostFU
Rotatori, Fox, & Wicks (1980)	26.3					
	26.0					
Chavez & Michaels (1980)	48.6					
Gormally, Rardin, & Black (1980)	42.3					
Hautzinger (1980)						
Bigelow, Griffiths, Liebson, & Kaliszak (1980)	40.6					
Franzini & Grimes (1980)	37.0					
Bornstein & Devine (1980)	46.4					
Block (1980)						
Carroll, Yates, & Gray (1980)	48.0					
Brownell & Stunkard (1981)	58.0	43.0	50.7	15.0	7.3	+7.7
	59.1	45.9	52.1	13.2	7.0	+6.2
	63.2	47.4	55.3	15.8	7.9	+7.9
	70.1	51.6	62.2	18.5	7.9	+10.6
	54.3	41.9	47.2	12.4	7.1	+5.3
Wing, Epstein, Marcus, & Shapira (1981)						
Craighead, Stunkard, & O'Brien (1981)	56.7					
Pearce, LeBow, & Orchard (1981)	41.0					
Hartigan, Baker-Strauch, & Morris (1982)	36.0					
Inglis (1982)						
Pezzot-Pearce, LeBow, & Pearce (1982)	48.3					
Wing, Epstein, & Shapira (1982)						
Katahn, Pleas, Thackrey, & Wallston (1982)	46.3	38.1		8.2		
Murphy, Williamson, Buxton, Moody, Absher, & Warner (1982)	44.2					
	46.2					
	37.3					
	42.0					
	47.7					
	32.1					
Wolf & DeBlassie (1982)						
Sperduto & O'Brien (1983)						
Black & Friesen (1983)	32.2					
	37.8					
Sandifer & Buchanan (1983)	57.0					

TABLE 5 (continued)

Author	% overweight			% weight change		
	Pre	Post	FU	PrePost	PreFU	PostFU
Davies, Gibson, Davies, Long, & Reisenleiter (1983)						
Rand & Stunkard (1983)	45.8					
Stamps, Catino, & Feola (1983)	49.4					
	49.5					
	97.7					
Owusu-Bempah & Howitt (1983)						
Jeffery, Gerber, Rosenthal, & Linquist (1983)	24.9	14.5	14.2	10.4	10.7	.3
Abrams & Follick (1983)	24.5	15.7	18.2	8.8	6.3	+2.5
	25.2	16.7	16.6	8.5	8.6	.2
Wing, Epstein, Shapira, & Koeske (1984)						
Perri, McAdoo, Spevak, & Newlin (1984)	51.3					
	48.0					
Perri, Shapiro, Ludwig, Twentyman, & McAdoo (1984)	57.0					
Stalonas, Perri, & Kerzner (1984)						
Dubbert & Wilson (1984)	53.6	41.1	43.6	12.5	10.0	+2.5
	51.4	37.0	36.5	14.4	14.9	.5
	47.9	34.6	36.1	13.3	11.8	+1.5
	39.6	29.6	31.1	10.0	8.5	+1.5
	44.4	38.7	43.9	5.7	.5	+5.2
Fox, Haniotes, & Rotatori (1984)	34.7	28.0	31.3	6.7	3.4	+3.3
Jeffery, Snell, & Forster (1985)	117.0					
	179.0					
Basler, Brinkmeier, Buser, Haehn, & Molders-Kober (1985)						
Stalonas & Kirschenbaum (1985)	47.4					
Burnett, Taylor, & Agras (1985)						
Wadden & Stunkard (1986)	85.4	61.0		24.4		
	91.8	67.7		24.1		
	90.7	57.1		33.6		
Cochrane & Friesen (1986)						
Bennett (1986)	48.0	37.4	42.1	10.6	5.9	+4.7
		31.1	38.8	16.9	9.2	+7.7
		45.8	47.5	2.2	.5	+1.7
		31.5	37.4	16.5	10.6	+5.9
		44.1	47.3	3.9	.7	+3.2
		37.4	40.7	10.6	7.3	+3.3

(table continues)

TABLE 5 (continued)

Author	% overweight			% weight change		
	Pre	Post	FU	PrePost	PreFU	PostFU
Sperduto, Thompson, & O'Brien (1986)						
Wise, Mann, Cooper, & Rustigi (1986)	50.0					
Griffiths & Holliday (1987)						
Wade, Hart, Kirby, & Mills (1988)						
Perri, McAllister, Gange, Jordan, McAdoo, & Nezu (1988)						
Perri, Nezu, Patti, & McCann (1989)	53.6	38.9	44.8	14.7	8.8	+5.9
Barabasz & Spiegel (1989)	52.4	37.1	37.4	15.3	15.0	+3
Craighead & Blum (1989)	22.8					
	22.6					
	21.4					

Note. Empty spaces indicate that no information was provided. Under weight change, all numbers refer to weight lost unless there is a (+) sign.

up, and from posttreatment to follow-up, respectively. Change in overweight percentage could not be calculated for articles that did not provide pretreatment, posttreatment and/or follow-up weights.

Change in overweight percentage from pretreatment to posttreatment ranged from 2.2% to 33.6% lost, with a median of 12.9% lost. Change from pretreatment to follow-up ranged from .5% to 15% lost, with a median of 7.9% lost. Change from posttreatment to follow-up ranged from 10.6% gained to .5% lost, with a median of 3.3% gained.

Weight Change For the Most Successful Conditions

Table 6 contains a summary of weight and weight change of the optimum conditions compared with all conditions across assessment periods. When only the most successful conditions in each article were examined, based on weight change from pretreatment to posttreatment, mean pretreatment weight ranged from 153.5 lb to 303.6 lb, with a median of 189.4 lb. Mean weight at posttreatment ranged from 139.5 lb to 267 lb, with a median of 176.8 lb. Mean change in weight from pretreatment to posttreatment ranged from 1.8 lb to 62 lb lost, with a median of 13.5 lb lost.

We also examined the optimum condition per study based on the amount of weight lost from pretreatment to the final follow-up (this could be a com-

TABLE 6
Comparison of Weight Information for Optimal Conditions and All Conditions

Weight	Optimal conditions			All conditions
	Pre-Post	Pre-FU	Post-FU	
Pre weight	189.4	194.9	193.9	189.5
Post weight	179.8	178.3	177.8	177.5
FU weight	178.6	178.6	178.7	182.2
Pre-post change	13.5	13.5	12.5	12.8
Pre-FU change	13.0	15.9	14.2	9.7
Post-FU change	+1.0	+4	+4	+4.3

Note. The optimal conditions were defined as the condition that precipitated the largest weight loss. If a different condition revealed a larger weight loss at follow-up than at posttreatment, this group was considered the most successful, and a separate analysis was done for each assessment period.

pletely different treatment condition from the best pre-post condition; thus, it refers to participants who lost the most weight during this period regardless of how well they did from pre- to posttreatment). Mean pretreatment weight ranged from 150.1 lb to 262.7 lb, with a median of 194.9 lb. Mean weight at follow-up ranged from 139.9 lb to 242.4 lb, with a median of 178.6 lb. Mean change in weight from pretreatment to follow-up ranged from .33 to 29.8 lb lost, with a median of 15.9 lb lost.

Finally, we examined the best condition per study based on the amount of weight lost from the posttreatment period to the final follow-up. Mean weight at posttreatment ranged from 139.5 lb to 253.3 lb, with a median of 177.8 lb. Mean weight at follow-up ranged from 139.9 lb to 294 lb, with a median of 178.7 lb. Mean change in weight from the posttreatment to the follow-up ranged from 40.7 lb gained to 15.6 lb lost, with a median of .4 gained.

Comparison of Studies Over Time

We compared the nine studies from 1980 and the six studies from 1987-1989 to assess whether weight loss studies were more successful in the late 1980s than at the beginning of the decade. Tables 4 and 5 give this information separately for each study, and Table 7 contains a summary of the weight information for studies conducted in 1980 versus 1987-1989.

Of the nine 1980 studies, two did not provide pretreatment, posttreatment, and follow-up weights; two others did not provide follow-up information. Of the six 1987-1989 studies, one did not provide pretreatment, post-

TABLE 7
Medians of Weight at Each Assessment Period, Median Changes in Weight, and Median Duration of Treatment and Follow-Up Assessment in 1980 Versus 1987-1989

Weight	1980	1987-1989
Pre weight	176.9	209.5
Post weight	166.1	180.7
FU weight	173.9	173.9
Pre-post change	5.1	17.7
Pre-FU change	4.6	10.1
Post-FU change	.7	+6.4
Treatment duration	10 weeks	17.5 weeks
Follow-up	4 months	10 months

treatment, or follow-up weights, and two others did not provide follow-up information. Seventy-eight percent of the 1980 studies provided overweight percentages at pretreatment, compared with 33% of the studies that provided this information in 1987-1989. None of the 1980 studies provided overweight percentages at all three assessment periods. Sixty-seven percent of the studies from 1987-1989 provided this information.

In 1980, treatment duration ranged from 5 to 16 weeks, with a median of 10 weeks. From 1987-1989, treatment duration ranged from 12 to 30 weeks, with a median of 17.5 weeks. The final follow-up from end of treatment ranged from 0 to 36 months, with a median of 4 months in 1980 and from 0 to 24 months in 1987 to 1989, with a median of 10 months (see Table 7).

All but one 1980 study gave a gender breakdown. Five reported 90% or more women, and seven reported 70% or more women. All 1987-1989 studies reported gender; three reported 90% or more women, and five reported 70% or more women.

In 1980, pretreatment weight ranged from 139.6 lb to 199.6 lb, with a median of 176.9 lb. Posttreatment weight ranged from 184.4 lb to 137.3 lb, with a median of 166.1 lb. Follow-up weight ranged from 147.4 lb to 180.3 lb, with a median of 173.9 lb. Change from pretreatment to posttreatment ranged from .4 lb to 15.2 lb lost, with a median of 5.1 lb lost. Change from pretreatment to follow-up ranged from 1.4 lb gained to 24.9 lb lost, with a median of 4.6 lb lost. Change from posttreatment to follow-up ranged from 7.5 lb gained to 9.9 lb lost, with a median of .7 lb lost. Information on overweight percentages cannot be provided because none of the studies gave these data at the three assessment periods (see Table 7).

In 1987-1989, pretreatment weight ranged from 149 lb to 308.1 lb, with a median of 209.5 lb. Posttreatment weight ranged from 139.5 lb to 271.5 lb,

with a median of 180.7 lb. Follow-up weight ranged from 139.9 lb to 202.4 lb, with a median of 173.9 lb. Change from pretreatment to posttreatment ranged from 2.9 lb to 36.6 lb lost, with a median of 17.7 lb lost. Change from pretreatment to follow-up ranged from .2 lb gained to 29.8 lb lost, with a median of 10.1 lb lost. Change from posttreatment to follow-up ranged from .3 lb gained to 15.8 lb gained, with a median of 6.4 lb gained. Information on overweight percentages cannot be provided because only one of the studies gave these data at the three assessment periods (see Table 7).

Summary

The typical weight-loss treatment study during the 1980s compared a behavioral package treatment program to one or more other conditions for about 13 weeks of treatment and then assessed participants at a 6.5-month final follow-up. The typical participant was a White middle-class woman 39.1 years old in basically good health weighing 189.5 lb at the start of treatment. At the posttreatment assessment, she weighed 177.5 lb, and 6.5 months later she weighed 182.2 lb. If she was randomly assigned to the treatment condition with the best outcome (based on amount of weight lost from pre- to posttreatment) she was likely to have lost 13.5 lb after treatment, still weighing 176 lb. At final follow-up assessment, she weighed 177 lb.

Discussion

The results show that weight-loss research during the 1980s often lacks completeness of information in the published articles. Furthermore, the actual success of programs (usually measured in pounds lost) is not high.

Participant Characteristics

Although gender and age were provided by almost all these studies, ethnicity and socioeconomic status (SES) were rarely reported. Participants were generally White and middle class, an accurate reflection of the people who are most likely to diet in the United States. Nevertheless, this demographic profile does not reflect those who are most likely to be obese, who tend to be poor and African-American (Goldblatt, Moore, & Stunkard, 1965). Furthermore, the demographic profile of people at risk for obesity-related health problems (e.g., hypertension, cardiovascular disorders) tend to be older men (National Center for Health Statistics, in Dwyer, Feldman, & Mayer, 1970).

Effectiveness of Weight-Loss Programs

The results of our analysis of the treatment outcome literature indicate little evidence that obesity was effectively reduced. In general, participants were

obese before treatment, still obese after treatment, and continued to be obese as long as they were followed up. For the sample of studies conducted in the 1980s, the median weights for pretreatment, posttreatment, and follow-up assessment periods were 189.5 lb, 177.5 lb and 182.2 lb, respectively. The median change in weight from pretreatment to posttreatment was 12.8 lb lost. The median change in weight from pretreatment to follow-up was 9.7 lb lost. The median change in weight from the posttreatment to follow-up was 4.3 lb gained. The median duration of a weight-loss program was 13 weeks, and the median follow-up period was 6.5 months.

What does it mean for a woman weighing 189.5 lb to engage in a comprehensive program for a period of 13 weeks to find herself weighing 179.8 lb almost 10 months after the start of this endeavor? Is this less-than-minimal weight loss worth the time, energy, emotion, and perhaps money that she is spending? Was she promised more hopeful results? How does she experience this 10 lb loss? Because she gained more than 4 lb from posttreatment to follow-up, did she view herself as a failure? Because research indicates that the obese are held responsible for their condition (Brownell, 1982; Maddox, Back, & Liederman, 1968), did she internalize her lack of continued weight loss? Given the negative attitudes that others hold of the obese (Harris, Harris, & Bochner, 1982; Larkin & Pines, 1979), did peers and family view her as a failure? Although most studies obtained statistically significant results by comparing one treatment condition with another, this does not indicate whether the weight loss is of any personal significance to the participants.

Are Weight Loss Programs Improving Over Time?

The median length of treatment increased from 10 weeks in 1980 to 17.5 weeks in 1987–1989, and the median weight loss from pretreatment to posttreatment was 5.1 pounds in 1980 and 17.7 pounds in 1987–1989. However, mean length of follow-up similarly increased from 4 months to 10 months, and weight change from the end of treatment to follow-up changed from .7 lb lost to 6.4 lb gained. Furthermore, participants at the end of the 1980s weighed more before treatment (209.5 lb) than did those in 1980 (176.9 lb). Thus, the longer treatment and longer follow-up indicated more weight fluctuation (more weight loss and more regain) for participants at the end of the decade, but not more success.

Clinical Criteria for Weight Loss

Without exception, weight-loss treatment programs have determined success by pounds of weight lost. However, there is no criterion for clinically significant weight loss; successful weight loss is usually defined as such merely

because it was statistically greater than other, less successful, treatment conditions.

Most weight-loss researchers agree on the definition of obesity as 20% above the ideal weights of the Metropolitan Life Insurance tables. Furthermore, they exclude subjects who are less than 20% overweight. Thus, it is surprising that the literature did not uniformly report the percentage of subjects who were below 20% overweight at posttreatment and follow-up. If 20% overweight is defined as "clinical," then we can determine the number of subjects who are nonclinical or asymptomatic at posttreatment and at follow-up.

In these 50 studies, overweight percentages at pre-, post- and follow-up treatment periods were reported in 6, of which participants in only one (Abrams & Follick, 1983) moved from clinical to nonclinical weight levels. Yet the mean overweight percentage in this study at pretreatment period was approximately 25%, barely above the 20% "clinical" criteria. Additionally, only one study (Fox, Haniotes, & Rotatori, 1984) specified whether participants moved from clinical levels of obesity to nonclinical levels. At pretreatment, 1 of the 16 participants was below the clinical level of obesity (under 20% overweight). At posttreatment, five additional participants had moved from clinical to nonclinical levels, but at follow-up, only one participant was still at a nonclinical level of obesity.

Reporting the number of nonclinical subjects after treatment is not unusual for other topic areas in the psychological literature. For example, the cigarette smoking literature (Baer, Karmarck, Lichtenstein, & Ransom, 1989; Burling et al., 1989) regularly reports the percentage of smokers in each treatment condition who have quit smoking (i.e., become nonclinical) rather than reporting the mean number of cigarettes smoked in each condition at each assessment period (which, like reporting weight lost, would not give an indication of clinical or nonclinical levels). The depression treatment literature reports on the percentage of subjects who are below clinical levels of depression (Scogin, Jamison, & Gochneaur, 1989). It may not always be possible to clearly differentiate clinical from nonclinical levels of all clinical topic areas (e.g., anxiety disorders), but obesity is one area with a clear cut-off point that has considerable agreement among researchers and clinicians.

Change in Physical Health

Physical health is another characteristic that should be discussed in obesity treatment articles. Only one study used participants who were experiencing a weight-related health problem. Because a prerequisite to participation in the remaining studies was to be in general good health, researchers were unable to test the assumption that weight loss will improve health. If researchers use only healthy participants, it is not possible to determine what effects weight

loss has on health unless one is prepared to conduct follow-up assessments in future years. Most subjects were young, healthy, adult women, not a group likely to have health risks until much older. It would seem important either to use longitudinal health data or else to focus on groups at risk for later health problems (e.g., older men) and on those who already exhibit early or moderate signs of health problems to determine whether weight loss reduces health problems.

As this study indicates, most programs do not result in large amounts of weight loss. Even if those people who lose significant amounts have a reduced risk for health problems, it is necessary to ask about the majority of people who lose only a minimal amount of weight. How much loss is critical for change in health? What about the tendency for people to lose weight during treatment and then regain part of this during follow-up? Is a 20-lb loss followed by a 10-lb regain the same as a 10-lb loss followed by no regain or the same as no change at all? Intuitively, slight loss without regain would seem preferable to moderate loss followed by slight regain; empirically, this needs to be determined.

Despite the relative lack of research on the health benefits of weight loss, there are some data on the health risks of dieting. A study by Hibscher and Herman (1977) indicated that obese and nonobese dieters exhibited elevated levels of free fatty acids, whereas nondieters showed normal levels. There is some evidence that starvation diets result in increased risk of hypertension, heart failure, and diabetes among both obese and nonobese people (Ernsberger, 1985).

Most programs conducted by psychologists are aimed at gradual weight loss and thus may be safer than many self-initiated diets that use more radical weight-loss methods. Nevertheless, psychologists (Brownell, 1982; Foreyt, 1987) continue to advocate aggressive approaches for extreme obesity, including very low caloric diets. Furthermore, studies with animals indicate that repeated weight loss and regain can result in an increased preference for fatty foods (Brownell, Greenwood, Stellar, & Shrager, 1986), hypertension (Ernsberger, 1985), heart disease (Smith, Smith, Mameesh, Simon, & Johnson, 1964), and shortened lifespan (Ernsberger). Research on the potential health risks of repeated dieting, particularly on the weight loss and regain typical of these treatment programs, needs to be conducted with humans.

It is important to increase our knowledge of the potential health benefits of weight loss, especially given the reality of minimal loss and some regain. Furthermore, the health benefits of weight loss must be balanced against the health risks of dieting. In lieu of the evidence, perhaps treating obesity may be a misdirected goal. Instead, research could shift from treating obesity through dieting techniques to a paradigm that includes education about dieting and its negative effects, the impact of societal demands for thinness, pro-

moting a positive self-image, the importance of social support, and the acceptance of one's body as it is. More researchers are advocating a shift from treating obesity to treating weight preoccupation that is a result of dieting behaviors (Dwyer, 1973; Fullarton, 1977; Stake & Lauer, 1987; Willmuth, 1986; Wooley, Wooley, & Dyrenforth, 1980). Given the lack of effectiveness of weight-loss programs, psychologists may be perpetuating a problem rather than providing a solution.

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