

Review



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Behavior Therapy and Cognitive-Behavioral Therapy of Obesity: Is There a Difference?

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ABSTRACT

Current practice guidelines for management of overweight and obesity recommend a program of diet, exercise, and behavior therapy for all persons with a body mass index (calculated as kg/m^2) of at least 30 (and those with body mass index ≥ 25 plus two weight-related comorbidities). In this tripartite treatment—often referred to as lifestyle modification—behavior therapy provides a structure that facilitates meeting goals for energy intake and expenditure. Although standard behavior therapy reliably induces mean weight losses of approximately 10% of initial weight, these reductions are difficult to maintain. Some authors argue that a shift in focus from behavior change to cognitive change will improve long-term results of lifestyle modification programs. This review describes, in detail, the standard behavioral treatment of obesity and compares it with an alternative treatment model that is based in a cognitive conceptualization of weight control. A review of the literature suggests that the differences between standard behavior therapy and cognitive-behavioral therapy of obesity lie more in their underlying theories than in their implementation. Empirical comparisons of the long-term effects of these approaches are needed.

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Obesity, which is defined as a body mass index (BMI; calculated as kg/m^2) ≥ 30 , has doubled in prevalence over the past 20 to 25 years (1,2) and is associated with a multitude of adverse health conditions. As excess weight increases, so do risks of developing heart disease, type 2 diabetes, sleep apnea, osteoarthritis, and several types of cancer, among other conditions (3,4). Although available weight-loss treatments are unlikely to stem the growth of the obesity epidemic at the societal level, they can play a role in reducing weight-related morbidity and mortality at the individual level.

The recommended starting point of treatment is a structured program of diet, exercise, and behavior therapy that is often referred to as lifestyle modification. Practice guidelines issued by the National Heart, Lung, and Blood Institute and the North American Association for the Study of Obesity indicate that this intervention is appropriate for all obese persons, as well as for those who are overweight (ie, BMI of 25 to 29.9) and have two or more weight-related comorbidities (see Table) (5). Lifestyle modification can be delivered in a variety of settings, including primary care (6), clinical research (7), commercial (8,9), and private dietetics practice (10). Typically, these programs induce modest weight reductions that are associated with statistically and clinically substantial improvements in weight-related health conditions (eg, sleep apnea, diabetes, hypertension, hyperlipidemia) and psychosocial outcomes (eg, mood, quality of life, body image) (3,11-13).

The Diabetes Prevention Program (DPP) provided an excellent example of the implementation and effects of lifestyle modification. The DPP was a large, multicenter, randomized controlled trial in which 3,234 overweight and obese (mean BMI \pm standard deviation of 34.0 ± 6.7) adults with impaired fasting glucose (ie, ≥ 110 mg/dL [6.1 mmol/L]) were assigned to receive placebo, metformin (850 mg, twice daily), or lifestyle modification (14). The lifestyle intervention was delivered primarily by registered dietitians and consisted of 16 individual sessions over the first 24 weeks. Sessions were then held at least once every 2 months for the remainder of the study. The lifestyle modification program induced a weight loss of 6.7 kg during the first year of treatment, compared with losses of 2.7 kg and 0.4 kg in the metformin and placebo groups, respectively. At 4 years, lifestyle, metformin, and

Table. The NHLBI^a/NAASO^b guidelines for selecting clinical weight-loss interventions for overweight and obese adults^c

Treatment	Body Mass Index Category ^{de}				
	25-26.9	27-29.9	30-34.9	35-39.9	≥40
Diet, physical activity, and behavior therapy	With comorbidities	With comorbidities	+	+	+
Pharmacotherapy		With comorbidities	+	+	+
Surgery				With comorbidities	+

^aNHLBI=National Heart, Lung, and Blood Institute.
^bNAASO=North American Association for the Study of Obesity.
^cAdapted from National Heart, Lung, and Blood Institute, North American Association for the Study of Obesity. *The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. Bethesda, MD: National Institutes of Health; 2000.
^dCalculated as kg/m².
^eThe + represents use of indicated treatment regardless of comorbidities.

placebo groups maintained losses of 3.5, 1.3, and 0.2 kg, respectively. The primary outcome of the study, however, was not weight loss, but the cumulative incidence of type 2 diabetes over 4 years. The risk of developing diabetes among those who had received lifestyle modification was 58% lower than those who had received placebo and 31% lower than participants who had received metformin. A follow-up to the DPP, called Look AHEAD (Action for Health in Diabetes), is currently being conducted to determine whether a program of diet, exercise, and behavior therapy can reduce fatal and nonfatal cardiovascular and cerebrovascular events in obese adults with type 2 diabetes (15).

This review describes the principal components of lifestyle modification for obesity. Like behavioral treatments for psychological disorders, standard behavior therapy of obesity is based primarily in learning theory (ie, behaviorism), applying the principles of classical and operant conditioning. When applied to weight control, however, standard behavioral programs also frequently include cognitive strategies to induce behavior change. Thus, some authors consider typical lifestyle modification programs to be cognitive-behavioral in nature (16). Others assert that the term *cognitive-behavioral* should be reserved for those treatments whose primary objective is cognitive change. According to Cooper and Fairburn, for example, cognitive-behavioral therapy for obesity seeks not to change eating and exercise behaviors, per se, but the cognitive processes that maintain those behaviors (17,18).

The following section describes the diet and exercise recommendations typically made in lifestyle modification programs and the behavioral and cognitive elements that comprise standard behavior therapy of obesity. The subsequent sections compare and contrast this intervention—the goal of which is behavior change—with an explicitly cognitive-behavioral therapy—the goal of which is cognitive change.

STANDARD BEHAVIOR THERAPY OF OBESITY

Historically, behavioral weight-loss programs included weekly sessions of 60 to 90 minutes each, for approximately 6 months, and induced mean weight losses of approximately 10% of initial weight (19). Without continued treatment, however, participants usually regained approximately one third of their lost weight within the

first 6 months after treatment ended and returned to their baseline weights within 5 years (20). Perri and colleagues found that weight regain could be minimized by offering “maintenance” sessions every other week for an additional 12 months (21). Although extended treatment has become the norm since publication of Perri and colleagues’ study, longer-term studies that included no-treatment follow-up periods have revealed that extended treatment is effective for delaying—not preventing—regain (22).

The behavior therapy component of lifestyle modification can be delivered in individual sessions (as in the DPP) or in groups of approximately 10 participants (as in Look AHEAD) (7,15). While both treatment modalities are efficacious, Renjilian and colleagues found that participants who were randomized to receive group-based therapy lost considerably more weight (11.0 ± 4.8 kg) after 26 weekly sessions than did those who were treated individually (9.1 ± 3.7 kg) (23).

Dietary Guidelines

The National Heart, Lung, and Blood Institute and North American Association for the Study of Obesity’s *Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults* (hereafter referred to as *Practical Guide*) recommends a low-calorie diet of 1,000 to 1,200 kcal/day for overweight women and 1,200 to 1,600 kcal/day for overweight men and heavier (ie, >165 lb) or more active women (5). These intake goals are intended to induce a caloric deficit of 500 to 1,000 kcal/day and, thus, a weight loss of 0.5 to 1.0 kg/week. Very-low-calorie diets, of ≤ 800 kcal/day, are no longer recommended. Despite producing greater initial weight losses than more moderately restrictive diets, very-low-calorie diets require medical monitoring and nutritional supplementation. In addition, very-low-calorie diets have been shown to have no benefits over low-calorie diets for long-term weight control (24).

The *Practical Guide* recommends a low-calorie diet that provides $\geq 55\%$ of kilocalories from carbohydrate, $\leq 30\%$ from fat (8% to 10% from saturated fatty acids), and approximately 15% from protein (5). The optimal macronutrient composition for reducing diets, however, is the subject of some debate. Several randomized controlled trials found that low-carbohydrate (ie, ≤ 30 g/day)

diets produced greater initial weight reductions than the more traditional low-calorie diets described above, but that weight losses with the two diets were not significantly different 12 months after starting the diets (25-28). A recent randomized trial of popular reducing diets suggested that the macronutrient composition of the diet was not an independent predictor of weight loss (29). Modest weight losses were achieved with each diet (ie, Weight Watchers, the Zone, Atkins, and Ornish), with no significant differences between groups at 2, 6, or 12 months. The authors found that dietary adherence—regardless of group assignment—accounted for 36% of the variance in weight loss. This finding suggests that the optimal low-calorie diet for long-term weight control is the one that is most easily followed.

Increasing Dietary Adherence

Adherence to a low-calorie diet can be enhanced by increasing structure. Additional structure limits food choices, thereby reducing temptation and the potential for miscalculating energy intake. One means of increasing the structure of a low-calorie diet is by providing meal plans (ie, grocery lists, menus, and recipes). Evidence of this concept comes from Wing, Jeffrey, and colleagues, who found that providing both low-calorie food (free of charge or subsidized) and structured meal plans resulted in substantially greater weight losses than standard behavior therapy with no additional structure (30). Furthermore, there were no differences between the group that received meal plans and those that received food. The clinical implications of these findings are clear: providing patients with low-calorie meal plans is a practical means of increasing the structure of a low-calorie diet, thereby improving adherence and optimizing weight loss.

Exercise Guidelines

The amount and type of physical activity recommended in lifestyle modification varies across programs. The *Practical Guide* states that “all adults should set a long-term goal to accumulate at least 30 minutes or more of moderate-intensity physical activity on most, and preferably all, days of the week” (5). Moderate-intensity exercise is defined as that which expends 4 to 5 kcal/minute and an example is walking for 30 minutes at 4 mph. The *Practical Guide*, as well as the DPP and Look AHEAD lifestyle modification programs, recommends that the exercise regimen be implemented slowly, beginning at 10 minutes per day to avoid fatigue, muscle soreness, strains, or more serious medical consequences (5,7,15).

The *Dietary Guidelines for Americans 2005* suggests different levels of physical activity based on weight- and health-related goals (31). According to this report, all adults should accumulate at least 30 minutes of moderate-intensity activity on most days to reduce the risk of chronic disease. Adults seeking to manage weight or prevent unhealthy weight gain should get at least 60 minutes of moderately to vigorously intense exercise on most days. Those who are seeking to maintain a weight loss should engage in 60 to 90 minutes of moderate physical activity on most days.

Increasing Adherence to Activity Recommendations

Contrary to findings regarding dietary adherence, exercise adherence seems to increase with less structure. Evidence from randomized trials suggests that persons in standard behavior therapy engage in more physical activity if they are instructed to do so at home (ie, on their own) than if they attend on-site, supervised, group-based exercise sessions (32). Participants also accumulate more minutes of activity if they are encouraged to do so in multiple short sessions (of 10 minutes each), rather than in one long session (33). Other findings suggest that increasing lifestyle activity (ie, energy expended in daily tasks) produces equivalent weight loss, and can be more effective for maintaining a reduction, as compared with programmed activity (ie, a “workout”) (34). Decreasing the structure of physical activity apparently reduces barriers that inhibit exercise (eg, lack of time or financial resources).

Behavioral Skills

Behavior therapy provides patients with a set of principles and techniques with which to modify eating and activity habits. This treatment is distinct from traditional psychotherapy. The purpose is not to treat or eliminate a psychiatric disorder, but to change eating and exercise behaviors. In addition, this intervention seeks not to provide insight into the origins of the problem behaviors, but to teach skills for changing them.

Self-Monitoring. Self-monitoring of food and energy intake is perhaps the most important skill taught in standard behavior therapy, and can also be the most difficult to implement correctly. Persons in the general population have been found to underestimate their calorie intake by 8% to 34% (35,36). For persons seeking weight loss—especially those who report an inability to lose weight—the error in estimation can approach 50% (37). Thus, care must be taken to educate patients on the use of measurement tools (eg, cups, spoons, scales), Nutrition Facts labels, and calorie-counting guides. In-session modeling and practice are useful for this purpose. Participants in lifestyle modification are instructed to record the time, amount, preparation, and calorie content of all foods and beverages consumed, as well as a description of the item itself. By recording additional contextual information (eg, hunger ratings, emotions, and activities at the time of eating), eating-related contingencies can be identified and targeted for change.

The importance of self-monitoring was demonstrated by Baker and Kirschenbaum, who rated the self-monitoring records of participants in an 18-week standard behavior therapy program and separated participants into quartiles of monitoring consistency (38). They found that the most consistent monitors achieved a mean weight loss of approximately 15 kg, whereas those who did not keep food records gained an average of approximately 4 kg.

Energy intake is not the sole focus of self-monitoring. Physical activity is also monitored and recorded in behavior therapy. At a minimum, participants record the type and amount (in minutes) of programmed activity. They also can monitor their lifestyle activity with a pedometer. Adults in the general population take approximately 6,000 to 7,000 steps per day, with obese persons walking

nearly 2,000 fewer steps each day than persons of average weight (39,40). Using the clear and immediate feedback provided by a pedometer, participants in lifestyle modification are encouraged to increase their energy expenditure by making small increases in the number of steps they take each day. Several authors currently recommend accumulating at least 10,000 steps per day (41,42).

Goal-Setting. Participants in standard behavior therapy are instructed to set specific (ie, quantifiable) behavioral goals. Rather than setting a goal of “I’ll try harder,” for instance, participants are encouraged to describe observable behaviors that they will implement, such as, “I will prepare my dinners for the week on Sunday afternoon so that I can avoid eating out this week.” Goals also should be time-limited. Typically, the time frame is 1 week (as in the previous example) because sessions are held weekly. Finally, behavioral goals should be realistic, yet moderately challenging. Those characteristics increase the likelihood of success and engender a sense of accomplishment, which can be reinforcing. (The extent to which weight loss goals should be realistic is discussed later.)

Stimulus Control. According to the principles of operant conditioning, reinforcing stimuli are those that increase the probability that a given behavior will be repeated. Examples of stimuli that reinforce healthful eating and exercise behaviors include the weight loss itself and the resulting improvements in quality of life, body image, and health. Although those stimuli are not under the control of the behavior therapist, the therapist can assist lifestyle modification participants in establishing schedules and criteria for rewarding themselves for desirable behavior. It is essential that receipt of the reinforcer be made contingent upon the implementation of the target behavior. The promise of a pedicure for meeting all exercise goals for the month, for example, will not be motivating if the participant proceeds with the pedicure regardless of behavior.

Principles of classical conditioning also are relevant to behavioral weight control and are applied to break the associations of nonfood cues with eating. If a person habitually eats breakfast in her car during her morning commute, for instance, several nonfood cues (eg, sitting in the car, familiar sights along the drive to work) will stimulate her desire to eat. Similarly, if a person repeatedly snacks on his couch after dinner, the act of sitting on the couch (at any time), watching television (if that is a typical activity during evening snacking), or even feelings of fullness from dinner, will become cues to eat snack food in the future. Thus, participants in standard behavior therapy are taught to restrict their eating to the kitchen or dining room table, so as to reduce the number of cues that become associated with eating.

A simpler method of stimulus control involves reducing the availability of cues for undesirable behavior (eg, overeating, inactivity) and increasing cues for desirable behavior. For example, participants in lifestyle modification may be encouraged to keep tempting foods out of sight or, if possible, to purge their homes of those foods altogether. Food records should be kept in the eating area so that participants are cued to record their intake immediately after eating.

Behavioral Substitution. Carefully managing the external environment does not ensure that all cues for undesirable behavior will be eliminated. Many persons, for instance, eat in response to emotional stimuli. Through self-monitoring, participants in standard behavior therapy might learn to identify nonhunger cues to eat and substitute alternative behaviors for eating. If a person learned, for instance, that he tends to eat when anxious, he would be taught relaxation techniques and instructed to practice them (instead of eating) in response to future anxieties. It is helpful if the substitute behavior is incompatible with eating. Listening to music, for example, might not be an appropriate alternative, as persons can easily eat and listen to music simultaneously. Better options include writing, knitting, housekeeping, and exercising, because these activities inhibit eating.

Cognitive Skills

Cognitive approaches to behavior change also are used in the standard behavioral treatment of obesity. Two skills that are commonly taught are problem-solving and cognitive restructuring.

Problem-Solving. As taught in standard behavior therapy programs, problem-solving is a multistep iterative process that is based on the work of D’Zurilla and colleagues (43,44). The first step is to identify the problem in detail. It also is useful to identify the chain of events (ie, situations, behaviors) that preceded the problem behavior. One or more “links” in the chain are targeted and, in the second step, potential solutions are generated. Participants are advised to look beyond the most obvious solution to “brainstorm” a number of potential options. The third step entails listing pros and cons, then conducting a cost-benefit analysis, for each possible solution. The fourth step is to choose the most feasible solution and implement it for a given period of time. When that period elapses, the fifth step, evaluation, is undertaken. Successful solutions are continued. If the attempted solution fails, the process begins again.

Cognitive Restructuring. Negative thoughts can be obstacles to desired behavior change. Thus, patients in standard behavior therapy are taught to monitor the thoughts that interfere with their ability to meet behavioral goals, identify distortions in those thoughts, and replace the dysfunctional thoughts with more rational ones. All-or-nothing thinking—particularly with regard to success or failure—is a common cognitive distortion seen in weight-loss therapy. The example below illustrates how cognitive restructuring can be undertaken to correct this distortion within a lifestyle modification program.

A patient lost approximately 7% of her body weight in the first 20 weeks of treatment. The size of her weight losses began to decline at week 16. At her week 21 visit, she lost no weight and, at week 22, she regained a small amount of weight. The following hypothetical exchange took place during the week 22 session:

Interventionist (I): You’ve been putting forth a great deal of effort over the past 5 months and it has really been showing in your weight loss. Last week, though, the scale didn’t move for you and, this week, you had a small weight gain.

Patient (P): I was really discouraged after weighing in last week. I thought, “If I’m not going to lose weight, why am I working so hard? What am I getting out of it?” So I wasn’t as consistent as usual with my record keeping and I took a vacation from exercise. I guess that’s why I gained weight this week.

I: OK. After a week of staying weight-stable, you basically told yourself that self-monitoring and walking were wastes of your time.

P: Right.

In this exchange, the patient and interventionist identified an “ABC” sequence of activating event (ie, the lack of weight loss), belief about the event (ie, efforts are going unrewarded), and consequence (ie, a reduction in self-monitoring and physical activity). Following this ABC model, pioneered by Ellis, the interventionist examined whether the belief is based on reality or cognitive error (45).

I: I’d probably have given up, too, if I were in your situation and had the same thoughts. Let’s now examine those thoughts and see if they’re accurate. Maybe there’s another way of thinking about your weight over the past 2 weeks. Why did you start coming to these sessions in the first place?

P: I wanted to lose weight and be healthier. I had high blood pressure and my doctor told me I was prediabetic.

I: Had high blood pressure?

P: Yes. It’s under much better control now that I’ve lost some weight and started exercising. My blood sugar looks normal, too. I didn’t want to go on medications and so far I’ve been able to avoid them.

I: Those sound like benefits to me. What else has changed?

P: I find it a lot easier now to chase my 3-year-old son around the house. My knees don’t hurt as much as they used to and I’m not as exhausted as I was before. I enjoy playing with him a lot more now than I did when I was heavier.

I: Great. You’ve given me several examples of ways in which your efforts have paid off: you’ve lowered your blood pressure, avoided having to take medication, reduced your pain and fatigue, and you’re getting greater enjoyment from your time with your son. Is it fair to say that the original thought, that you were getting nothing in return for your efforts, was inaccurate?

P: Yes, that’s fair.

Once the errors in the belief are identified, the interventionist works with the patient to substitute more functional, reality-based interpretations of the activating event.

I: Now let’s imagine that you could go back to last week, when your weight didn’t change, and you could change the way you thought about the situation. Can you give me a more accurate, more productive, set of thoughts?

P: I could’ve thought, “Even though I didn’t lose weight this week, I’ve been losing weight right along. My health has improved and I’m enjoying life a little more since I started counting calories and exercising. So I guess my efforts are paying off.”

I: If those had been your thoughts last week, do you think you would have done anything differently this week?

P: I wouldn’t have been so discouraged, so I probably would have kept up with my exercise routine and my record keeping. That probably would have kept me from gaining weight this week.

Cognitive restructuring assumes that changing beliefs can alter affective and behavioral outcomes. This is one of the assumptions, in fact, that underlie all cognitive-behavioral psychotherapies (46). The nature and history of these therapies are discussed in greater detail below.

Cognitive-Behavioral Approaches to Behavior Change

The term *cognitive-behavioral therapy* (CBT) is often, mistakenly, thought to refer to a singular method of psychotherapy. There are, rather, several therapies to which the label CBT could apply. The first two cognitive-behavioral approaches to psychotherapy were developed nearly simultaneously, and in isolation, by Ellis and Beck (45,47). Both authors were trained in psychoanalysis and noticed characteristic patterns of thinking in their patients that appeared to cause, maintain, or exacerbate psychological distress. They found that psychoanalysis did little to alter dysfunctional thought patterns and, thus, was ineffective for relieving distress. In Ellis’ Rational Emotive Behavior Therapy, as well as in Beck’s Cognitive Therapy, the therapist is more active and directive than in psychoanalysis. To help patients correct their cognitive errors, these therapies include use of logic, Socratic questioning, behavioral experiments, and (in Rational Emotive Behavior Therapy) direct disputation.

All CBTs—beginning with Ellis’ and Beck’s systems and continuing through the many derivative approaches that have been developed over the last 4 decades—share three core assumptions: (a) cognitions affect behavior, (b) cognitions can be changed, and (c) cognitive change can effect behavior change (46). Several CBTs have been dubbed “empirically supported treatments” for various psychological disorders, including major depression, several anxiety disorders, and bulimia nervosa (48). Empirically supported treatments are those that can be delivered in a standardized manner and have been shown by independent investigators to be either superior to alternative or placebo treatments or equivalent to other empirically supported treatments (49).

CBT of Obesity

As shown above, standard behavior therapy of obesity includes cognitive strategies to induce changes to eating and exercise behaviors. Furthermore, standard behavioral weight-loss programs appear to share the assumptions of CBTs described above (46). Cooper, Fairburn, and Hawker, however, advanced three additional criteria for a treatment to be considered cognitive-behavioral: (a) it is based on a cognitive conceptualization of the processes that maintain the problem in question (ie, thoughts and thinking patterns are understood as central to the problem), (b) it is focused on altering the cognitive and behavioral mechanisms that maintain the problem behavior, and (c) it uses both cognitive and behavioral techniques to effect change in maintaining mechanisms (18). Standard behavior therapy of obesity meets the latter two, but not the first, of these criteria. That is, standard behavior therapy aims to change both the cog-

Differences

- Cognitive change is the primary aim of CBT, whereas behavioral change is the primary aim of standard behavior therapy.*
- CBT is delivered only in individual sessions, whereas standard behavior therapy can be delivered to individuals or groups.
- CBT is delivered in flexible modules, whereas standard behavior therapy sessions are typically delivered in a predetermined order.

Similarities

- Treatments are time-limited and problem-oriented.*
- Treatments are present- and future-focused.*
- Patient and therapist collaborate and share responsibility for success.*
- Patient is educated on basic nutrition (calorie sources, calorie-restriction), health effects of modest weight loss and physical activity, and healthful eating patterns.
- Behavioral skills taught include self-monitoring (of weight, intake, and physical activity) and goal-setting.
- Cognitive skills taught include problem-solving and challenging of dysfunctional thoughts.

Figure. Similarities and differences between standard behavior therapy and Cooper and colleagues' cognitive-behavioral therapy (CBT) of obesity (17,18). *As noted in reference 18.

nitive and behavioral foundations for eating and physical activity habits, and uses both cognitive and behavioral strategies to achieve those aims. However, standard behavior therapy understands the problem of obesity as primarily behavioral in nature, rather than as the product of erroneous beliefs and dysfunctional thoughts.

According to Cooper and colleagues, standard behavioral weight-loss programs have met with limited long-term success because they neglect the contribution of cognitive factors to weight regain following an initial reduction (17,18). They developed an alternative treatment of obesity, which explicitly distinguishes weight loss from weight maintenance and attempts to address what they see as a key cognitive obstacle to long-term weight control: unrealistic weight goals. Cooper and colleagues (18) stated that having unrealistic weight-loss goals “undermines the patient’s ability to acquire and use effective weight maintenance behavior.” That is, when patients discover that they are unable to meet their unrealistic weight-loss goals, they might conclude that continuing their efforts is futile. In so doing, they might ignore non-weight-related benefits that they may have achieved (eg, increased self-confidence). Patients then return to previous eating and activity habits, which creates a state of positive energy balance and causes them to regain their lost weight (18).

The principal difference between standard behavior therapy and Cooper and colleagues' CBT of obesity lies in the primary goal of each treatment—behavior change in the former and cognitive change in the latter. For Cooper and colleagues, changes in eating and exercise behaviors are seen as the consequence of altering the cognitions that underlie those behaviors. Despite this fundamental difference, there are overwhelming similarities between the treatments (see [Figure](#)).

Empirical Support for CBT of Obesity

Cooper and colleagues reported in 2003 that a study of their treatment was nearing completion (18). Results from that study had not yet been published at the time of this writing. Thus, neither the efficacy nor the effectiveness of this treatment can be evaluated.

The extent to which unrealistic weight goals are harmful, however, has been examined empirically. Foster and colleagues found that participants in lifestyle modification hoped to lose approximately one third of their body weight (50). Although a reduction of this size can be realistically expected with bariatric surgery, it is more than three times the mean weight loss achieved with diet, exercise, and behavior therapy (19,51). This finding supports the notion that unrealistic weight-loss goals are common among persons seeking lifestyle modification. In a separate study, Wadden and colleagues found that participants retained their unrealistic expectations after being informed of the average weight losses achieved in standard behavioral programs (52).

Fortunately, having unrealistic weight-loss goals does not appear to be related to negative psychological outcomes and may even be associated with greater long-term weight reductions (53,54). Linde and colleagues, for instance, found that the “dream” BMIs (ie, weight-loss goals) participants set prior to beginning an 8-week lifestyle modification program did not predict weight change at the end of treatment or at 6 months' follow-up. At 18 months' follow-up, however, dream BMI was significantly related to weight change such that those with more unrealistic goals maintained greater weight losses at the end of the study (54). These results are in direct contradiction to Cooper and colleagues' assertion that unrealistic weight-loss goals inhibit long-term weight control and, thus, should be a target of intervention (17,18).

Is There a Difference between Standard Behavior Therapy and CBT of Obesity?

Standard behavior therapy of obesity produces modest weight losses that are associated with improvements in physical and mental health. Unfortunately, however, the weight reductions achieved with this treatment are difficult to maintain. Cognitive factors, as posited by Cooper and Fairburn, likely play some role in the problem of weight regain (17). The mechanisms that account for regain, however, are extremely complex and include not only cognitive factors, but behavioral, genetic, and neuroendocrine factors as well.

The difference between Cooper and colleagues' CBT of obesity and standard behavior therapy lies largely in the theoretical foundations of the treatments. The former asserts that cognitive change is a prerequisite of long-term behavior change. The latter acknowledges that changing thoughts is helpful for altering problem behaviors, but that cognitive change is neither necessary nor sufficient for behavior change. In practice, the two treatments appear to be quite similar. Each includes similar recommendations for decreasing energy intake and increasing energy expenditure. There is also considerable overlap among the specific behavioral and cognitive techniques used in the two treatments.

CONCLUSIONS

The question of whether cognitive change precedes and causes behavior change or vice versa has been the subject of theoretical debate and empirical scrutiny for several decades. Current research methods are unlikely to settle this issue definitively in laboratory settings and much less likely to identify whether cognitive or behavioral change is primary in the successful maintenance of a weight loss achieved in lifestyle modification. Randomized controlled trials of standard and CBT-based lifestyle modification programs, however, are necessary to determine whether explicitly increasing focus on cognitive change enhances long-term outcomes of behavioral weight control therapy. Until CBT is shown to be equivalent or superior to standard behavior therapy of obesity, clinicians who wish to assist their clients with long-term weight control are encouraged to use both cognitive and behavioral strategies within the context of a standard behavioral lifestyle modification program. Nutrition professionals seeking to provide such a program can access the treatment manuals and participant handouts used in the DPP's "Lifestyle Balance" intervention (available online at <http://www.bsc.gwu.edu/dpp/manuals.htmlvdoc>). As demonstrated by the DPP, registered dietitians can efficaciously implement a standard behavioral weight-loss protocol to induce modest weight reductions and yield substantial long-term health benefits (7,14).

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