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Cognitive Behavioral Therapy for Weight Management and Eating Disorders in Children and Adolescents

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Synopsis

Eating disorders and obesity in children and adolescents involve harmful behavior and attitude patterns that infiltrate daily functioning. Cognitive behavioral therapy (CBT) is well-suited to treat these conditions, given the emphasis on breaking negative behavior cycles. This article reviews the current empirically-supported treatments and the considerations for youth with weight control issues. New therapeutic modalities (i.e., Enhanced CBT and the socio-ecological model) are discussed. Rationale is provided for extending therapy beyond the individual treatment milieu to include the family, peer network, and community domains to promote behavior change, minimize relapse, and support healthy long-term behavior maintenance.

Keywords

cognitive behavioral therapy; eating disorders; obesity; weight control

Children and adolescents who struggle with eating disorders and obesity require clinical attention. Eating- and weight-related difficulties are characterized by maladaptive daily patterns, involving distorted cognitions and problematic behavior cycles. The treatment of weight control issues requires a comprehensive approach, as disordered eating permeates the individual, home, and social environments. Cognitive behavioral therapy (CBT) emphasizes the process of changing habits and attitudes that maintain psychological disorders. Given this focus, CBT is an appropriate treatment approach for eating disorders and obesity. By restructuring the harmful patterns that infiltrate daily functioning, youth will be better

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positioned to lead healthier lives. Understanding eating disorders and obesity, as well as their representation as a spectrum of weight control issues, is imperative to their successful treatment and prevention.

Weight Control Issues: Understanding Eating Disorders and Obesity

The spectrum of weight control issues spans a variety of behaviors and cognitions and affects a wide range of individuals. These problems typically develop in childhood and adolescence. Often, unhealthy weight-related patterns are difficult to treat, especially because they are entrenched in daily life. Specifically, a heightened emphasis is placed on food, eating, body weight or shape, and control; for many, it functions as an unhealthy coping strategy. As a result, weight control issues significantly impact social functioning and quality of life.

The revised fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) includes the following eating disorder diagnoses: anorexia nervosa (AN); bulimia nervosa (BN); and eating disorder not otherwise specified (EDNOS)¹, the most commonly diagnosed of the three disorders². Included within the current EDNOS category is binge eating disorder (BED); however, it has been proposed as its own formal diagnosis in the upcoming edition of the DSM³. While individuals with AN are severely underweight, individuals with BN and BED often fluctuate between the normal and overweight ranges.

On the far end of the weight spectrum, childhood obesity has become a major public health concern. Over the past three decades, rates of pediatric overweight and obesity have tripled in the United States⁴, making this a national epidemic. Weight classification is used to determine overweight or obese status. For adults, body mass index (BMI) is the standard definition; for children, BMI percentile is used because it is sensitive and easy to obtain⁵. BMI is the ratio of weight (in kilograms) per the square of height (in meters), and BMI percentiles refer to age- and sex-specific curves. While this article discusses the classification, associated features and comorbidities, and treatment approaches for eating disorders and obesity, it is important to note that obesity is not considered to be a mental illness; it is neither an eating disorder nor an addiction⁶.

Table 1 provides an overview of the current diagnostic criteria, definitions, and prevalence rates for AN, BN, BED, and Obesity.

Clinical Features

Weight control issues are associated with several medical and psychological complications. Patients with eating disorders struggle with body-related cognitive distortions (i.e., body dissatisfaction over-concern with weight and shape shame and guilt) and disordered eating behaviors (i.e., extreme weight loss methods, restrictive dieting, inappropriate compensatory behaviors). In addition, these individuals often experience psychosocial problems, including social isolation, low self-esteem, secretiveness about eating, and stigmatization^{7,8}. Eating disorders are also highly comorbid with other psychological disorders, such as depression, anxiety, and impulse control disorders^{9,10}. Severe medical complications, as a result of the starvation associated with AN, and the repeated binge/purge cycle characteristic of BN, are common. These include: metabolic changes (e.g., electrolyte imbalances); osteoporosis; dental, gastric, and renal abnormalities; dysregulated body temperature; irregular or loss of menses; appetite control dysregulation; and weight fluctuation¹¹⁻¹³. Adolescent binge and loss of control eating are related to excessive weight gain, which is associated with multiple problems, as discussed below¹³⁻¹⁵. Although the physical presentation may look similar to that of obese youth, children and adolescents with BED and loss of control eating experience

distinct psychopathology symptoms related to eating, mood, and anxiety disorders that are not reported by their non-eating-disordered obese counterparts¹⁶.

Youth who struggle with overweight and obesity often face medical and psychological complications, as well. Notably, depression, feelings of worthlessness, low self-esteem, stigmatization, and teasing are associated psychological sequelae¹⁷⁻¹⁹. Additional difficulties include poor academic performance and behavioral problems²⁰. Excessive weight is correlated with cardiovascular problems (e.g., heart disease, hypertension, high blood pressure, and high lipid profiles), diabetes, stroke, joint and bone pain or disease, cancer, and obstructive sleep apnea²⁰. Moreover, these children and adolescents often engage in disordered eating behaviors²¹, which exacerbate the negative medical and psychological consequences of maladaptive eating patterns.

Thus, weight control issues represent serious problems that need to be addressed. Given that children and adolescents who display maladaptive eating behaviors are likely to develop additional weight-related difficulties^{14,22-24}, treating their current weight issues will both reduce the resultant medical and psychological problems and prevent future unhealthy patterns. Understanding the current risk factors and treatment approaches for weight management issues will improve the clinical responsiveness to youth who present with these problems.

Developing and Maintaining Factors

Multiple factors increase youths' risk for the development of weight control issues. Body dissatisfaction, dietary restriction, overvaluation of weight and shape, negative affect, and low self-esteem are the core cognitions that place individuals at risk²⁵. Specific vulnerabilities, known as appetitive traits, have been linked to eating behavior and physical activity preferences²⁶. *Satiety responsiveness* (e.g., failure to recognize hunger cues), *impulsivity* (e.g., inability to postpone immediate rewards), and *high motivation to eat* are heritable and predictive of excessive weight gain²⁷. Interpersonal difficulties, including sensitivity and teasing^{28,29}, can propel the use of or control over food as a negative coping strategy. In addition, history of depression and history of teasing by a teacher or coach have been linked to the onset of an eating disorder³⁰. Weight control issues in childhood represent another critical risk factor. Being overweight as a child can lead to later development of eating disorder psychopathology and/or obesity^{22,23,31}. Loss of control and/or binge eating at a young age places youth at risk for developing the symptoms consistent with diagnostic criteria for BED³² and for becoming obese^{14,24}.

The child's environment further complicates the risk for weight gain and disordered eating pathology. Negative parental role modeling of unhealthy eating and activity patterns can lead children to develop maladaptive habits. Furthermore, recent trends towards increased sedentary behavior, meals eaten away from home, and consumption of high energy-density foods and drinks hinder healthy lifestyle choices for youth^{33,34}.

While these factors place individuals at risk, they also serve to maintain disordered weight control patterns. For example, there is often a negative cyclical relationship between weight-related behavior and depression³⁵ and interpersonal difficulties^{17,25}. As these patterns continue, they become more strongly entrenched in daily life and more difficult to modify. Thus, the need to intervene early is evident.

Treatment Considerations: The Need for Early Intervention

Habits start young, and in turn, interventions should follow suit. In fact, interventions that break maladaptive behavior patterns before they become ingrained have greater potential for

success. This is particularly noteworthy because shorter duration and reduced severity of symptoms are associated with better outcomes^{5,36-39}; recovery rates for adolescents with eating disorders are higher than those for adults⁸. Thus, through early intervention, children and adolescents are more likely to respond to treatment.

When intervening with youth, it is particularly important to include the parents and family in the treatment process. Parents can facilitate positive behavior change by creating a healthful home environment and minimizing negative stimuli to support healthy habits. For those children and adolescents who may be resistant to treatment, parents are able to serve as enforcers of necessary modifications. Furthermore, parents can model healthy lifestyle choices and reinforce the youth's progress.

While early intervention is effective, it is equally crucial to direct our focus to prevention. Prevention efforts offer the opportunity to reduce the onset and prevalence of weight-related problems. As our understanding of risk factors and predictors of treatment outcome has evolved, we are well-equipped to develop appropriate preventive strategies. Further, because obesity is cyclical (i.e., overweight parents are more likely to have overweight children, who are also more likely to become overweight adults)^{40,41}, increased initiatives for parents and children would enable a necessary decline in the increasing weight trends. Successful pioneering research in this domain demonstrates the utility of preventive work⁴²⁻⁴⁸.

Empirical Support for the Treatment of Eating Disorders and Obesity in Youth

Eating Disorders

CBT is the most established psychological treatment for BN and BED⁴⁹, with demonstrated efficacy over pharmacological and other psychological therapeutic options⁵⁰. The goal of treatment is to identify, monitor, and tackle the cognitions and behaviors that maintain the disorder while heightening the motivation for change^{49,51-53}. Given that the need for treatment far outweighs the availability of practitioners⁵⁴, current efforts are focused on increasing dissemination by modifying the traditional CBT manual into guided self help⁵⁵⁻⁵⁷ and computer- and Internet-based versions^{58,59}.

Interpersonal psychotherapy (IPT) is the only psychological treatment for BN and BED to show comparable efficacy to CBT⁶⁰, and for certain groups, there may be increased benefits^{57,61}. IPT helps patients connect their binge and/or purge behaviors to interpersonal difficulties; the therapist highlights how a social arena can function as both a causal and a maintaining factor for binge eating, but can also be used as an avenue through which to build support for recovery. Given the emphasis of IPT on current relationships, it is particularly effective for youth, for whom the social network is of heightened importance^{62,63}. IPT has been effective for use in individual^{57,64} and group formats⁶⁵⁻⁶⁷ and has demonstrated positive results for the prevention of excessive weight gain in overweight adolescents^{13,68}. Recent studies have found that IPT, as adapted for youth, can also be effectively disseminated into community-based settings⁶³. Current efforts are underway to improve IPT dissemination for the eating disorder population.

Treatment research on AN has been much more scant, in part due to difficulties with participant recruitment and retention^{37,69}. Results of studies have provided little support for specialized psychotherapies or pharmacotherapies, conducted with both underweight and weight-restored individuals⁷⁰⁻⁷⁹. However, family-based therapy—one established form of which is the Maudsley approach—has been effective in treating adolescents with AN^{80,81}. The treatment focuses on empowering the family to serve as agents of change in helping the ill adolescent reach recovery. The therapist works collaboratively with the family to help the

patient regain weight, regulate disordered eating behaviors, and promote healthy adolescent development and independence.

While the DSM-IV uses a categorical classification system of mutually-exclusive diagnoses, patients with eating disorders often develop symptoms consistent with more than one diagnosis over the course of their illness, demonstrating shifts between diagnoses known as diagnostic crossover^{82,83}. To more effectively address this, an enhanced, “transdiagnostic” approach to CBT has been established⁸⁴, with the goal of treating eating disorder psychopathology across diagnoses, rather than a specific diagnosis. The treatment addresses the shared, underlying core beliefs (i.e., over-evaluating and controlling one’s weight and shape) in order to break the maladaptive cognitive and behavior patterns that have maintained the eating disorder^{25,85,86}.

There are two forms of the enhanced CBT (CBT-E): focused (CBT-Ef) and broad (CBT-Eb). CBT-Ef is considered the “default” version and targets the eating disorder psychopathology. The broad version addresses these same issues, but includes an additional focus on external factors that maintain the disorder and make behavior change more difficult. In particular, patients with low self-esteem, poor mood-regulation strategies, high interpersonal problems, and high levels of clinical perfectionism are well-suited for CBT-Eb, in which these four core features are targeted. Both forms of treatment are delivered weekly for twenty sessions in an outpatient setting. CBT-E consists of four phases that modify maladaptive behaviors and negative pathology and teach strategies for relapse prevention. For those entering treatment at low weight (BMI ≤ 17.5), forty weekly sessions are recommended with an additional focus on weight regain.

Obesity

Lifestyle interventions represent the most successful treatment for childhood obesity^{5,38} and have been shown to be more effective than psychoeducation alone⁸⁷. Furthermore, the U.S. Preventive Services Task Force recommends that children ages 6 to 18 years old be screened by pediatricians and offered multi-component, moderate-to-intense treatment to address obesity⁸⁸; this recommended treatment is directly in line with the lifestyle intervention approach. Lifestyle interventions use a multi-component approach to modify children’s daily practices into healthy habits (i.e., healthier diets and increased physical activity), which promotes long-term behavior maintenance^{5,89}. These interventions include behavioral components and cognitive skills training to target weight-related behavior. For the majority of programs, the behavioral aspects of weight treatment are central; however, programs that supplement the behavioral approaches with cognitive restructuring and relapse-prevention techniques may result in increased treatment effectiveness⁹⁰⁻⁹².

Interventions with behavioral components that modify both diet and activity (i.e., physical activity and/or sedentary behavior, during which few or no calories are burned, such as while watching TV) have been demonstrated to be the most effective for overweight youth⁹³⁻⁹⁶ and are recommended by the U.S. Preventive Services Task Force⁸⁸. Another key component of lifestyle interventions is the involvement of the family for support. Family-based behavioral interventions, which include parents in the treatment process, have been demonstrated to be effective in promoting weight control and healthy habit development over the past 30 years^{87,94,97,98}.

Among treatment programs, several behavioral change components have been shown to support healthy weight control. Specifically, intervention strategies focus on *stimulus control* (e.g., restructuring the home to encourage healthy behaviors and limit unhealthy behaviors associated with eating and activity) and *self-monitoring* of weight, eating, and physical activity^{89,90,95,99,100}. In family-based interventions, parents take an active role in

treatment. They are instructed to serve as models for their children by monitoring and modifying their own behaviors, since parent success with weight control is predictive of child success¹⁰¹. Parents are also encouraged to utilize a behavioral reward system, in which successful goal completion (e.g., weight loss, reduced caloric intake, increased physical activity) is reinforced with rewards that are interpersonal and/or promote healthy behavior (e.g., family outings, bike riding, ice skating)¹⁰². Family praise is also encouraged to reinforce positive behaviors. In addition, parents are educated about key parenting behaviors, including modeling, providing consistent reinforcement, and utilizing stimulus control techniques to restructure the home environment. All of these skills help families to develop healthy behaviors.

From a Clinical Perspective: Extending Beyond the Individual Treatment Milieu

While successful treatments programs have been established, relapse and non-recovery still remain a significant problem^{8,38}. Within the eating disorder field, many recovered patients subsequently resume their binge and/or purge behaviors and individuals with AN often do not complete treatment, dropping out prematurely^{37,75,103}. Family-based behavioral treatment for obesity has been shown to be successful in the short-term⁸⁷, but the targeted healthy behaviors are difficult to sustain over time. Many people who lose weight during the intervention experience weight regain^{99,104,105}.

Although relapse prevention is addressed in each of these treatments, more effective strategies are necessary that extend beyond the individual treatment milieu. The persistence of weight-related problems may occur because environmental stimuli, which had fostered the previously learned, maladaptive behaviors, have not been modified¹⁰⁶. Given that individual behaviors related to eating and activity are influenced by complex interactions between socio-environmental factors and biological phenomena, multiple drivers of behavior must be considered to encourage sustained behavior change¹⁰⁷. Thus, without addressing the environmental context, children and adolescents are cued to relapse into prior behavior patterns.

The multiple behavioral drivers can be conceptualized together within a socio-ecological model¹⁰⁸, which can then be incorporated into a weight management treatment program. Specifically, this model posits that factors within the *individual/family*, *peer/social*, and *community* domains serve as important foci throughout treatment^{107,108}. The social and physical environments include the availability of peers and resources to support and promote healthy eating and activity patterns (Fig 1). For individuals who do not receive treatment, harmful patterns are cued; for those who do receive treatment, healthful behaviors are reinforced.

Throughout treatment, exploring each domain for stimuli that encourage or hinder healthy behaviors is important; this provides the foundation from which to promote positive behavior change. Key areas to assess include interpersonal relationships and difficulties, as well as the accessibility and utilization of healthy resources within the home, peer network, and community (Fig 2).

The socio-ecological model was tested in a large-scale randomized controlled trial⁹¹. This study was designed to target weight maintenance in children and was the first to focus on pediatric long-term weight control. The results indicate that continued contact and focus on the child's social ecology are critical treatment components⁹¹. Furthermore, data from computer biosimulation models suggest a socio-ecological emphasis within family-based maintenance interventions produces sustained behavior changes, due to the extension into

multiple contexts¹⁰⁶. The results also provide support for the increased duration and intensity of weight maintenance treatment to improve effectiveness over time.

Discussion and Future Directions

The socio-ecological approach helps to enhance an individual's likelihood of success. The treatment targets extend beyond the individual to incorporate a supportive environment, which more comprehensively addresses the multi-contextual problem of weight control. Involving the family, peers, healthcare providers, and community network is crucial. For example, families should take responsibility to create a healthy home environment: eat regular meals together; avoid bringing home foods that encourage unhealthy eating or electronics that promote sedentary behavior; plan fun and active family outings; and facilitate open communication with youth about daily pressures. Leaders in schools should advocate for healthier meal and snack options, as well as more physically active classes and school-wide events. Communities should offer facilities, clubs, and activities that promote healthy lifestyles, including fitness classes, healthy restaurants, and farmers' markets. On the whole, educating people and providers across the various contexts will enable effective and long-lasting change on a broader scale.

Given the establishment of effective treatments for eating disorders and weight control, the next step is to disseminate this work. Translational research promotes the extension of laboratory findings into everyday practice; this is particularly relevant for addressing the national obesity epidemic. Training community people and providers to recognize disordered eating patterns and unhealthy weight status will likely make early detection and intervention more feasible, and in turn, has the potential to further our prevention efforts. Moreover, instructing providers in the delivery of the established, manual-based treatments will advance treatment practices and reach. Additionally, we should continue to expand research across populations. Studying additional ages and racial/ethnic groups may offer insight into the manifestation of disordered weight control patterns and key treatment factors that need to be addressed to ensure widespread treatment success.

Conclusion

The parallels between eating disorders and obesity allow for the discussion of these issues along a weight control continuum. Within the eating disorders field, specialized psychotherapies (e.g., CBT and IPT) remain effective modalities for the individual eating disorder diagnoses, and a "transdiagnostic" approach (i.e., CBT-E) has been developed to better address symptom fluctuation between diagnostic categories. For obesity, family-based behavioral treatment programs are the most effective, and the incorporation of targeted cognitive skills are useful additions. These lifestyle interventions are enhanced when applied through a socio-ecological framework. Across the spectrum, treatment approaches should encourage the family, peer network, and community to create supportive environments. Ultimately, we need to intervene early to have the best likelihood of helping children and adolescents to improve daily functioning and lead healthy lives.

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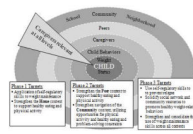


Figure 2.
The Socio-Ecological Model treatment targets

Table 1

Overview of the current diagnostic criteria, definitions, and prevalence rates for AN, BN, BED, and Obesity

Anorexia Nervosa	Bulimia Nervosa	Binge Eating Disorder	Obesity
<p>A. Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).</p> <p>B. Intense fear of gaining weight or becoming fat, even though underweight.</p> <p>C. Disturbance in the way one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of current low body weight.</p> <p>D. In postmenarcheal females, amenorrhea (absence of ≥ 3 consecutive menstrual cycles).³</p>	<p>A. Recurrent episodes of binge eating, characterized by:</p> <ol style="list-style-type: none"> 1. Eating, in a discrete period of time (e.g., within 2-hours), an amount of food that is definitely larger than most people would eat during a similar period of time or circumstances 2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating) <p>B. Recurrent inappropriate compensatory behavior, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.</p> <p>C. The binge eating and inappropriate compensatory behaviors both occur, on average, ≥ 2 times a week for 3 months.²</p> <p>D. Self-evaluation is unduly influenced by body shape and weight.</p> <p>E. The disturbance does not occur exclusively during episodes of AN.</p>	<p>A. Recurrent episodes of binge eating, characterized by:</p> <ol style="list-style-type: none"> 1. Eating, in a discrete period of time (e.g., within 2-hours), an amount of food that is definitely larger than most people would eat during a similar period of time or circumstances 2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating) <p>B. Binge eating episodes are associated with 3 (or more) of the following:</p> <ol style="list-style-type: none"> 1. Eating much more rapidly than usual 2. Eating until uncomfortably full 3. Eating large amounts of food when not feeling physically hungry 4. Eating alone because of being embarrassed by how much one is eating 5. Feeling disgusted with oneself, depressed, or very guilty after overeating <p>C. Marked distress regarding binge eating is present.</p> <p>D. The binge eating occurs, on average, ≥ 2 days a week for 6 months.⁴</p> <p>E. The binge eating is not associated with the regular use of inappropriate compensatory behaviors and does not occur exclusively during episodes of AN or BN.</p>	<p>Overweight: 85th to < 95th BMI¹ Percentile Obesity: $\geq 95^{\text{th}}$ BMI Percentile</p>
<p>Prevalence Estimates: 0.3 – 3.7%</p>	<p>Prevalence Estimates: 1.0 – 4.2%</p>	<p>Prevalence Estimates: 0.7 – 3.0%</p>	<p>Prevalence Estimates: Obesity: 16.3% Overweight & Obesity: 31.9%</p>

¹ Body Mass Index (BMI) = weight (kilograms)/height (meters)²; BMI percentile = age- and sex-specific curves.

² Reduction of this criterion to one time per week for 3 months has been proposed for DSM-V.

³ Removal of this criterion has been proposed for DSM-V.

⁴Reduction of this criterion to one time per week for 3 months has been proposed for DSM-V.