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Eating Disorders

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Cognitive behavioral therapy (CBT), as applied to eating disorders, is based on Beck et al.'s (1979) conceptualization of CBT as "an active, directive, time limited, structured approach used to treat a variety of psychiatric disorders" (p. 3). Just a couple of years later, Fairburn (1981) adapted the approach for the treatment of bulimia nervosa (BN), and later for binge-eating disorder (BED; Fairburn et al., 1993). The core of this treatment has endured as the front-line approach for BN and BED. Arguably, anorexia nervosa (AN) has been the subject of more popular interest than BN and BED, and the focus of its treatment was originally psychodynamic (Bruch, 1970). CBT is also now a recommended treatment for AN in adults, but the evidence for its efficacy for this disorder, as we review later in the chapter, is inconsistent.[1]

BN is characterized by repeated episodes of consuming objectively large amounts of food within a limited time frame paired with feeling a loss of control. Additionally, the use of compensatory behaviors intended to prevent weight gain, such as laxative use, self-induced vomiting, and compulsive exercise are employed (Lampard & Sharbanee, 2015). BN was first clinically described as we currently recognize it in 1979 by British psychiatrist Gerald Russell. Dr. Russell was treating patients with AN when he began seeing patients with "powerful and irresistible urges to overeat" in addition to an extreme fear of becoming fat (Castillo & Weiselberg, 2017, p. 85). Dr. Russell categorized these particular patients as being in a "chronic phase of anorexia nervosa" with a poorer prognosis, more resistance to treatment, and dangerous

[1]Clinical examples are disguised to protect patient confidentiality.

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physical comorbidities (Castillo & Weiselberg, 2017, p. 85). Dr. Russell later retracted this statement, stating that individuals diagnosed with BN had a more favorable prognosis compared with individuals with AN. He also recognized BN and AN as separate eating disorders (Castillo & Weiselberg, 2017). The lifetime prevalence of BN is 0.28%, with an estimate of 0.5% in women and 0.15% in men, using the *DSM-5* criteria among a nationally representative sample in the United States (Udo & Grilo, 2018). By comparison, the lifetime prevalence of AN is 0.8% overall, with 1.4% among women and 0.1% among men (Udo & Grilo, 2018).

Purging disorder is similar to BN, except that the meals prompting the inappropriate compensatory behaviors are not "objectively large." Instead, persons with purging disorder vomit, use laxatives, or use diuretics after eating a meal or a snack (Keel, 2007). These behaviors are still quite serious, even without including the objectively large amount of food in the criterion. The prevalence of purging disorder is estimated between 1.1% to 5.3% among women, with no estimates among men (Keel, 2007). Development of treatments are still underway for purging disorder, so the same CBT approach for BN that is discussed below is typically applied.

BED is also characterized by recurrent episodes of consuming an objectively large amount of food in a short period of time paired with a feeling of loss of control. During binge episodes of overeating, individuals often eat much more rapidly than normal, eat until uncomfortably full, consume a large amount of food even when not physically hungry, eat alone due to embarrassment related to the amount of food consumed, and feel disgusted, depressed, or guilty after these episodes. However, unlike those with BN, those with BED do not use compensatory behaviors (American Psychiatric Association [APA], 2013). BED was first identified by Dr. Albert Stunkard (1959), who later worked with others to establish the first diagnostic criteria for the disorder (Spitzer et al., 1993). Although the disorder was previously identified as an "Eating Disorder Not Otherwise Specified," it was characterized as its own disorder in the *DSM-5* in 2013 (APA, 2013).

AN is characterized by extreme food restriction that leads to a significantly low body weight. Typically, persons with AN develop very strict rules about what, when, and how much of any specific food they allow themselves to consume. There is no specific diagnostic cutoff for body mass index (BMI) or percent of expected weight in the *DSM-5* criteria, but mild AN would be specified by a BMI of 17.00 kg/m^2 or higher, moderate would be 16.00–16.99 kg/m^2, severe would be 15.00–15.99 kg/m^2, and extreme would be a BMI below 15 kg/m^2 (APA, 2013). For an individual who is 5 ft 5 in., this would translate into weights of ≥ 103 lb for mild, between 96 and 102 lb for moderate, between 90 and 95 lb for severe, and ≤ 89 lb for extreme. Individuals with AN have a strong fear of weight gain or becoming fat. They also place a very high value on their shape and weight for self-evaluation, accompanied by very little insight into their actual shape and size and the seriousness of their low weight as it relates to their medical, psychological, and social well-being. There is a restrict-

ing type and a binge-purge type, where persons restrict most of the time but also have periodic binge-purge episodes. If all the criteria for AN are met, a diagnosis of AN will override a diagnosis of BN, BED, or purging disorder.

Night-eating syndrome (NES) consists of a delayed pattern of eating, such that individuals consume at least 25% of their intake after the evening meal, and/or they wake during the night to eat at least twice per week (Allison, Lundgren, O'Reardon, et al., 2010). Persons with NES are aware of their nighttime eating; if they are sleepwalking and eating or have very limited awareness, it would be considered sleep-related eating disorder (SRED), which is a parasomnia (American Academy of Sleep Medicine, 2014). The diagnostic criteria indicate three of the following features should also be present: (a) lack of appetite in the morning/skipping breakfast more than half the time; (b) a strong desire to eat between dinner and bedtime; (c) initial onset or middle insomnia at least half the time; (d) the belief that one must eat to fall (back) asleep; and (e) low mood or worsening mood as the day progresses. Distress regarding this behavior should also be present. Although NES can be diagnosed comorbidly with the other eating disorders, careful consideration of other primary causes should be determined, such as medications (i.e., sleep agents such as zolpidem) or other causes of insomnia. Prevalence of NES is estimated at 4.6% in men and 3.4% in women among participants in the Swedish Twin Registry (Tholin et al., 2009), and 3.8% of men and 4.3% of women among a U.S. university sample (Runfola et al., 2014).

BULIMIA NERVOSA

Underlying Theory

We start with BN because its treatment serves as the foundation of CBT for all of the eating disorders. The cognitive behavioral theory posits that the core psychopathology of BN is related to overvaluation of shape and weight, or judging one's self-worth mostly by weight and body shape, thus ignoring perceived performance in other domains of life (Cooper & Fairburn, 2011; DuBois et al., 2017). In turn, overvaluation of shape and weight can result in dietary restraint and restriction, body checking, and preoccupation with thoughts about shape and weight (Cooper & Fairburn, 2011). Individuals with BN tend to marginalize other areas of their lives due to this focus, which becomes a losing proposition given that controlling one's weight and shape completely is difficult, if not impossible, thus maintaining low self-esteem. This overly dependent self-evaluation based on shape and weight leads to the behaviors that characterize BN (Murphy et al., 2010).

One aspect of BN that is not directly related to overvaluation of shape and weight is binge eating. The cognitive behavioral theory posits that binge eating occurs in response to attempts to adhere to extreme dietary rules. Breaking these rules strengthens patients' beliefs that they lack self-control, which maintains the core features of the psychopathology (Fairburn et al., 2008; Murphy et al., 2010). Binge episodes often occur in response to negative mood states

and act as a temporary mood neutralizer. This response can result in habitual binge-eating when negative mood states are present (Fairburn, 2002).

BN often goes unnoticed, as individuals with the disorder are at or above the normal weight range. In addition, those with the disorder often do not have medical complaints that would warrant visiting a physician (Castillo & Weiselberg, 2017). When individuals do seek treatment for the disorder, the literature shows that the treatment of choice for BN is CBT (Cooper & Fairburn, 2011). CBT-BN is utilized with individuals who can be treated on an outpatient basis. Treatment typically lasts up to 20 sessions, with maintenance or booster sessions following less frequently, as needed. With some individuals, progress is limited by maintenance factors associated with the core psychopathology of BN, including clinical perfectionism and low self-esteem (Fairburn, 2002), which are discussed below.

Main Procedures

Treatment is relatively short term (about 20 sessions delivered over 16 weeks on average, with some variability) and is based on a structured manual to be led by a trained clinician. Treatment can be divided into several stages, as described by Fairburn et al. (2008). Stage one involves establishing a therapeutic relationship, as well as the introduction of self-monitoring. Detailed logs of all food and beverages consumed, accompanied by associated thoughts and feelings are established in this first stage. Psychoeducation on the ill effects of rigid dieting and purging behaviors is provided, and implementation of a more regular eating pattern and healthy food choices are also introduced. Ideas about healthy shape and weight are discussed, and weekly weighing is established. The first several sessions are delivered twice per week to establish momentum. Stage two aims to help individuals deal with the dysfunctional thoughts and triggers that drive their dieting behaviors, such as rigid rules around food that lead to binge eating. The cognitions typically addressed are targeted to (a) create insight into the impact of overvaluation of weight and shape and its consequences, (b) develop other aspects central to one's self-concept, (c) challenge body-checking and feelings of "fatness," (d) examine etiological factors for overvaluation, and (e) develop skills to address eating disordered attitudes and thoughts. During stage three, progress is reviewed, and realistic planning for the future is discussed (Fairburn, 1995). These final sessions may be delivered every other week.

More recently, an updated form of CBT has been developed called *enhanced CBT* (CBT-E). CBT-E was developed in response to the finding that many eating disorders have similar core psychopathology (Fairburn et al., 2003), and thus a more inclusive treatment was developed to treat all eating disorders using a "transdiagnostic approach" (Fairburn et al., 2008). The CBT-E model suggests that the core psychopathology of BN may be maintained by (a) mood intolerance, (b) clinical perfectionism, (c) low self-esteem, and/or (d) interpersonal problems. In the first model, the impulse to binge and purge is due to mood

intolerance; binge eating and purging functions to regulate emotions. Clinical perfectionism refers to striving toward extremely high standards in every domain of one's life. The term "clinical" refers to perfectionism becoming problematic when attempts to pursue these high standards continue despite negative consequences. Perfectionistic standards with regard to weight and shape would then lead to disordered eating. Core low self-esteem refers to an insidious negative view of self-worth. In the CBT-E model of treatment for BN, core low self-esteem differs from low self-esteem in that it is unconditional, which is more pervasive as opposed to being situational or limited in scope. Individuals with BN characterized by core low self-esteem are not affected by changes or improvements in the state of the disorder, as they believe these eating patterns are part of their identity (Cooper & Fairburn, 2011). In other words, core low self-esteem contributes to hopelessness about one's ability to change, which may negatively affect treatment. Interpersonal problems contribute to core low self-esteem while creating negative mood states, leading to binge eating and purging behaviors (Lampard & Sharbanee, 2015). Cooper and Fairburn (2010) stated that most patients will benefit from the original CBT for BN approach, but for those presenting with more complex pathology, initiating the broadened treatment is useful.

Efficacy

Research on the effects of CBT-BN indicates that half the patients make a full and lasting recovery, with the most significant effect being the reduction of the frequency of binge episodes and compensatory behaviors (Fairburn, 2002; Fairburn et al., 2008). In a systematic, quantitative review of psychotherapy for BN, Hay et al. (2009) identified CBT as significantly superior to no treatment or wait-list control for the proportion of patients in remission from binge eating, *RR* = 0.69, 95% CI [0.61, 0.79]. When compared with other psychotherapies, including hypnotherapy and psychoanalytic or psychodynamic therapy, CBT has been shown to be more efficacious in the treatment of BN symptoms, *RR* = 0.83, 95% CI [0.71, 0.97]. CBT was also superior to no treatment or wait-list control in reducing depressive symptoms, *SMD* = –0.69, 95% CI [–1.09, 0.30], whereas it was favored, but not statistically significant, over the previously listed psychotherapies in reducing depressive symptoms, *SMD* = –0.28, 95% CI [–0.57, 0.00].

CBT-E therapy is considered "enhanced" because, as mentioned above, it incorporates strategies to improve outcomes associated with hindrances to change, including mood intolerance, clinical perfectionism, low self-esteem and interpersonal problems, in addition to focusing on overvaluation of shape and weight (Murphy et al., 2010). In a trial conducted by Fairburn et al. (2009), 154 participants were enrolled in a two-site randomized controlled trial (RCT) involving 20 weeks of treatment and a 60-week follow-up period. The two forms of treatment were enhanced, with the "focused" approach targeting disordered eating psychopathology exclusively, and the "broad" version targeting

one or more of the associated problems, in addition to the core psychopathology. Participants in the control condition had an 8-week waiting period prior to treatment. Results were based on global EDE change and showed that patients in the wait-list control group demonstrated little change in symptom severity (–0.09), whereas those in the active conditions (focused and broad) displayed significant and equal change in symptom severity (–1.51 vs. –1.53, respectively); this change was maintained during follow-up.

One form of therapy that has been used as a comparator for CBT is interpersonal psychotherapy (IPT). IPT is an evidence-based psychotherapy for disorders in which interpersonal difficulties are maintaining factors. With regard to eating disorders, patients can become more isolated from their peers due to their eating disordered attitudes and behaviors, resulting in psychopathology that persists because it goes unnoticed. In addition, interpersonal problems can exacerbate or cause low self-esteem, which tends to increase efforts to control shape and weight (Murphy et al., 2012). IPT can be used as an alternative to CBT-BN, but treatment often lasts longer (approximately 8–12 months longer), and treatment responses tend to be slower in the beginning, but similar over longer follow-up periods (Fairburn et al., 2008).

In a study conducted by Agras et al. (2000), 220 patients meeting criteria for BN were randomized to 19 sessions of either CBT or IPT and evaluated for 1 year after treatment. Results indicated that CBT was significantly superior to IPT at treatment end for the proportion of individuals recovered (29% vs. 6%) and remitted (48% vs. 28%). For treatment completers, the proportion recovered was 45% in CBT versus 8% in IPT. However, at the 1-year follow-up, there were no significant differences between the CBT and IPT treatment completers.

Special Considerations With This Population

CBT-BN has been tested in adolescents and adults. There do not seem to be any contraindications for its use based on gender or race/ethnicity. As noted above, if certain core psychopathologies are present, the broad version of CBT-E should be employed (NICE, 2017).

Mechanisms of Change

In the original CBT-BN model, changes in overvaluation of shape and weight and dietary restraint are the two most important mechanisms of change (Lampard & Sharbanee, 2015). Studies have shown that changes in these two factors relate to changes in BN symptoms, such as reductions in binge eating and compensatory behaviors. CBT-E utilizes different modules that are meant to treat different maintaining factors of BN, in addition to treatment of the core psychopathology. For example, the mood intolerance module is intended to lead to changes in mood, which will then lead to reductions in binge eating (Lampard & Sharbanee, 2015). Peterson et al. (2017) showed that improvement in emo-

tion regulation, or the ability to tolerate momentary negative mood states and self-directed behavior from baseline to midtreatment and to posttreatment follow-up, predicted improvements in global eating disorder scores.

Application to Diverse Populations

Statistics on the prevalence of eating disorders in minority populations are scarce. This may be due to a historically biased view that only White women suffer from eating disorders or that few studies have been conducted with significant numbers of people from varying racial and ethnic groups and men (Ham et al., 2015). Following completion of diagnostic interviews by a national representative sample of adults in the United States, Udo and Grilo (2018) reported that, on the basis of *DSM-5* criteria, the lifetime prevalence for BN was 0.28%. Prevalence of any eating disorder was greater for women than for men after adjusting for various demographic variables including age and race and/or ethnicity. Adjusted odds ratios did not differ significantly by race and/or ethnicity for BN. The same study examined these differences for AN, showing significantly lower adjusted odds ratios for non-Hispanic Black (*AOR* = 0.48, 95% CI [0.33, 0.72]) and Hispanic (*AOR* = 0.19, 95% CI [0.11, 0.33]) respondents than for non-Hispanic White respondents. Finally, for BED, Udo and Grilo (2018) reported lower lifetime (*AOR* = 0.60, 95% CI [0.38, 0.92]), but not 12-month, adjusted odds ratios for non-Hispanic Black compared with non-Hispanic White individuals.

Case Example

"Erica" reported starting to binge and purge with vomiting during her freshman year of high school. She was attending a high-pressure private school that she found challenging, but she was supported by her family, and she was particularly close with her father. Tragically, her father died in an accident, and she was having trouble coping. She started to eat emotionally, and she started gaining weight. After eating sweets in the evening, she would try to restrict what she ate the next morning, fearing she would continue gaining weight. She was active as a soccer player, and she also enjoyed running in the off season. Over her high school years, her binge-and-purge episodes continued, but she was able to hide them. She presented for treatment her senior year in college, afraid that she would continue this pattern even after she graduated. It had started to sink in that this was not just a temporary fix but a cycle that had taken on a life of its own.

Erica described experiencing stress related to her coursework and her relationships with her mother and her peers. By now, her mother knew of Erica's disordered eating, but she was uncertain how to address it. They bickered over concerns for Erica's well-being and the financial burden the binge episodes were causing. Erica's mood was also affected by these binge-purge episodes, which negatively influenced her body image further. This led to trying on

outfits for up to an hour before going out with friends or avoiding social events altogether. Finally, with school, if she felt overwhelmed by starting a project or studying for an exam, she would be triggered to binge, followed by vomiting. She would then feel ill and end up watching shows or movies in her room by herself, leading to missed deadlines and poor grades.

Therapy began with a log of her eating and purging behaviors to identify her pattern of eating and the triggers for her binge episodes. Erica identified several episodes from the previous week. The therapist spent time reviewing a particular episode with her that involved baking brownies for a fundraiser for her club soccer team (see Figure 5.1). She also felt overwhelmed because she had a paper due the next day and did not know where to start. She began eating the brownies and was unable to stop, finishing the whole pan. She felt disgusted and overly full, but she thought it would be okay because she could get rid of the calories and the feeling of being too full if she just vomited. Afterward, she was exhausted and shut herself in her room to watch shows the rest of the night. She felt sad and ashamed the next morning when she had to ask her professor for an extension for her paper.

First, psychoeducation was provided regarding the limited effectiveness of purging to compensate for the calories consumed. Next, the therapist used a thought record to help her identify the situation—having a paper due, but not knowing where to begin. Next, she identified her feelings, which included feeling anxious, overwhelmed, and tired, as well as her automatic thoughts. These thoughts included, "I can't come up with a good idea for how to start my paper. Whatever I write, it won't be good enough," and, "The brownies look so good, it will be okay if I just eat one." After not being able to stop and eating the pan of brownies, she identified these thoughts: "I feel disgusting. If I just throw up, I will feel better and will be able to get on with my night." After vomiting she

FIGURE 5.1. Food Intake and Binge/Compensatory Behavior Log

Time	Location	What did you eat?	Binge?	Compensation?	Comments
12:00 pm	Dining Hall	Salad with chicken, vegetables and oil & vinegar			
6:00 pm	Home	Egg white (2) omelet with cheese and vegetables			
8 pm	Home	Full pan of brownies	√	√	I was stressed about writing a paper and had just made the brownies for my club's fundraiser. I wanted to just eat one, but I couldn't stop. I felt so full that I had to make myself vomit. Then I was relieved, but exhausted. I didn't feel up to doing any schoolwork.

Note. Example from a patient with bulimia nervosa.

stated, "I am worn out and can't concentrate. I don't feel better and don't feel up to writing." The therapist helped Erica identify alternative responses to each thought, also asking her to recognize and tolerate her negative emotions. For example, although she was feeling anxious about writing, her homework for the coming week was to open a document and start typing her ideas out, no matter how tired or overwhelmed she felt. She believed that once she was sitting and writing, she would be able to complete the assignment, so she agreed to this homework task.

Erica was also having trouble resisting vomiting after normal meals given the frequency of her episodes. She stated that even any "normal" sized meal made her feel uncomfortable. The therapist used exposure exercises to have her sit after meals and engage in conversation or go somewhere where she was unable to purge to prevent compensation from occurring. Finally, the therapist helped her use these tools to address her body image issues and improve communications with her mother around her eating and weight concerns so that Erica's need to be secretive about it would lessen and she could start to rebuild her relationship with her mother. A joint session was held to help facilitate communication between Erica and her mother, as well.

As sessions progressed, Erica was able to show good understanding and use of the CBT skills, decreasing her binging and purging episodes over time. She was still having periodic episodes in response to stressors or when home alone with access to baked goods or granola bars (two of her most difficult trigger foods), but she was pleased with her progress and felt more confident about graduating and moving into an "adult life" without the burden of BN. She felt more confident in her body as well, as she generally felt more in control and less depressed. She had even begun dating a fellow student as the sessions concluded.

BINGE-EATING DISORDER

Underlying Theory

Theories of the psychopathology of BED are based on cognitive behavioral theory and the restraint model (Grilo, 2017). According to cognitive behavioral theory, BED, similar to the models for AN and BN, can be characterized by an excessive attention to weight and shape, a desire for control associated with eating behavior, and/or emotional dysregulation (Fairburn, 2017; Haedt-Matt & Keel, 2011; Haedt-Matt et al., 2014; Wilfley et al., 2000). Although overvaluation of weight and shape is not included as a diagnostic criterion for BED, its presence typically indicates a more severe form of the disorder (Mitchison et al., 2018). Additionally, there are particular cognitive and behavioral differences observed in those with BED that are not observed in those with AN nor BN. Wilfley et al. (2000) found that individuals with BED have significantly lower cognitive restraint of eating (i.e. deliberately restricting food in an effort to align with rigid rules regarding eating) scores compared with those with AN and BN. Further, persons with BED are more likely to report eating in secret,

being unsatisfied with their weight, feeling fat, being unhappy with their shape, and experiencing discomfort with seeing their body compared with individuals with AN, BN, and persons who have overweight or obesity but who have no eating disorder. Compared with those with AN and BN, people with BED do not have a significant desire to have a completely flat stomach and report less distress and less avoidance of eating (Wilfley et al., 2000).

Whereas the cognitive behavioral theory of binge eating suggests that thoughts and feelings about body shape and size and other emotional distress become triggers for binge episodes, the restraint theory suggests that dieting increases the likelihood of binge eating. As a result of a calorie deficit, either through dieting or skipping meals, hunger levels increase, leading to a sense of loss of control once eating is allowed. The more frequently this restriction occurs, followed by a binge episode, the more likely it is for a cyclical pattern to develop (Polivy & Herman, 1985). However, not all persons with BED have a history of restriction. Thus, binge eating could also result as a means of controlling or distracting oneself from experiencing emotional dysregulation.

Main Procedures

CBT for binge eating focuses on the cognitive distortions often exhibited in those with eating disorders (Fairburn, 2017), such as concerns about shape and weight, "all or nothing" thinking, perfectionism, and low self-esteem. Given the influence that weight and shape have on the way individuals with BED view themselves, treatment focuses on improving self-confidence and discovering alternative influences on self-worth other than weight and shape. Treatment also focuses on creating more regular healthy eating habits and identifying and resolving triggers associated with maladaptive eating patterns. CBT for binge eating was adapted from CBT-BN (Fairburn et al., 2008), as described previously.

As with any manualized form of treatment, it is important to follow the protocol for optimal effectiveness. A meta-analysis by Vocks et al. (2010) examining various forms of treatment for binge eating found CBT-based psychotherapy and structured self-help to have a strong effect on reduction in binge eating. Evidence suggests that following a structured program may be a useful first-line approach to treating BED, and also that using a self-help approach based on the manual holds promise and may also increase access to CBT care (Grilo, 2017).

Special Considerations With This Population

A majority of those with BED have other psychiatric and medical comorbidities, independent of weight status (Kessler et al., 2013). There is a strong evidence base of a high comorbidity rate between psychological disorders and BED, with the most common disorders being mood, anxiety, and substance use disorders. Additionally, BED is associated with medical comorbidities, such as dyslipidemia and Type 2 diabetes; however, the evidence is not as consistent for

medical as for the psychopathology comorbidities (Devlin, 2017). Although comorbidities are important to consider when conceptualizing a clinical case, they do not necessarily have an effect on treatment outcomes (Kessler et al., 2013), as discussed in the section on mechanisms of change. As with the other eating disorders, individuals with BED often have complex presentations, with binge eating representing only one of many health concerns.

Efficacy

CBT is considered the leading psychological approach to treatment for eating disorders by both the American Psychiatric Association (Yager et al., 2012) and the National Institute for Health and Care Excellence (NICE, 2017), with CBT for BED proven efficacious in eliminating binge episodes in about 60% of those who receive treatment (Fairburn, 2017). In addition, CBT for BED has been shown to reduce eating-disorder-related psychopathology, including depression. CBT for BED has largely been proven superior against controls such as medications and behavioral weight loss in binge eating outcomes. It is important to note that while CBT for BED is efficacious in improving the aforementioned symptoms, it is not particularly helpful for weight loss (Grilo, 2017).

A meta-analysis by Vocks et al. (2010) that included 1,973 participants found CBT more efficacious in reducing binge-eating frequency ($d = 0.82$, 95% CI [0.41, 1.22]) and days with binge eating ($d = 1.04$, 95% CI [0.70, 1.38]), as well as increasing binge-eating abstinence ($d = 6.83$, 95% CI [3.50, 13.33]) compared with untreated control groups. CBT also was found to reduce binge-eating-related psychopathology such as depression ($d = 0.36$, 95% CI [0.08, 0.64]), to a lesser degree, and concerns about weight ($d = 0.85$, 95% CI [0.43, 1.27]) and eating ($d = 1.43$, 95% CI [0.84, 2.01]). CBT for BED did not significantly reduce dietary restraint scores, shape concern, or body mass as compared with those without treatment. Vocks et al. (2010) also found that self-help CBT significantly reduced binge frequency ($d = 0.84$, 95% CI [0.37, 1.30]) and concerns with weight ($d = 0.85$, 95% CI [0.43, 1.27]) and eating ($d = 1.43$, 95% CI [0.84, 2.01]), while increasing binge abstinence ($d = 25.77$, 95% CI [9.74, 68.15]). Additional improvements observed with self-help CBT include decreased dietary restraint scores ($d = 0.68$, 95% CI [0.09, 1.26]) and concerns associated with shape ($d = 0.66$, 95% CI [0.25, 1.07]); however, this self-help form of therapy did not significantly reduce depressive symptoms.

Brownley et al.'s (2016) systematic review and meta-analysis found therapist-led and structured self-help CBT for BED more efficacious in decreasing binge frequency and increasing binge-eating abstinence compared with wait-list controls (58.8% vs. 11.2%, $RR = 4.95$, 95% CI [3.06, 8.00]). Therapist-led CBT also significantly reduced global eating disordered attitudes and behaviors (strength of evidence, moderate; no relative risk reported), but not depressive symptoms or body mass. Multiple studies have found no to minimal effect of combining medication with CBT compared with CBT alone for the treatment of BED (Devlin et al., 2005).

Mechanisms of Change

Although CBT for BED has been established as one of the leading treatments for binge eating, there is a paucity of literature on mechanisms of change. Grilo et al. (2012) examined moderators and predictors of response to CBT treatment. They found the most predictive and moderating trait of binge eating remission in CBT treatment was the overvaluation of shape/weight, whereby those who had lower scores of overvaluation of shape/weight were more successful at treatment end. Several demographic variables, including education status and older age of onset of the disorder, were associated with higher rates of binge remission. However, Grilo et al. (2012) found that psychiatric disorders, personality disorders, and obesity failed to predict or moderate BED treatment outcomes. Medical comorbidities, which are also often found among those with BED, have not been examined as predictors of treatment efficacy.

A systematic review by Vall and Wade (2015) examining predictors of efficacy among various BED treatments found several significant factors. First, higher weight suppression (i.e., the difference between an individual's highest weight and current weight) was associated with more binge episodes. Second, more frequent binge eating at baseline predicted worse binge-eating outcomes at end of treatment. Third, higher motivation to change and less eating disorder pathology predicted better outcomes. Finally, several psychopathology measures at baseline predicted better outcomes, including lower depressive symptom scores, higher BMI, higher self-esteem, lower weight/shape concerns, older age of onset, shorter duration of the disorder, less comorbid psychopathology, and better interpersonal functioning. It is important to note that while the majority of studies examined in this systematic review included forms of CBT, the authors did not exclusively examine CBT, including other forms of treatment as well.

Kober and Boswell (2018) argued that neural processing features and certain areas of the brain, such as the ventral striatum, amygdala, insula, and orbitofrontal cortex (Boswell & Kober, 2016), now often measured in brain imaging studies, may also provide insight into treatment outcomes. They offer that impairments in cognitive control and increased emotional reactivity, food-cue reactivity, and cravings are likely related to emotion dysregulation, which in turn may cue binge eating. However, more research is needed to pair outcomes with imaging studies to outcomes in CBT trials for BED.

Application to Diverse Populations

A randomized placebo-controlled trial by Grilo et al. (2014) evaluated the effectiveness of a weight-loss medication (sibutramine) and a self-help form of CBT, alone and in combination, in an ethnically diverse primary care setting (55% non-White) for the treatment of BED. Although sibutramine was associated with greater weight loss compared with placebo, none of the treatments differed in binge-eating outcomes. Demographic factors, such as age, sex, race, and education, did not predict any changes in outcomes. It appears that CBT for

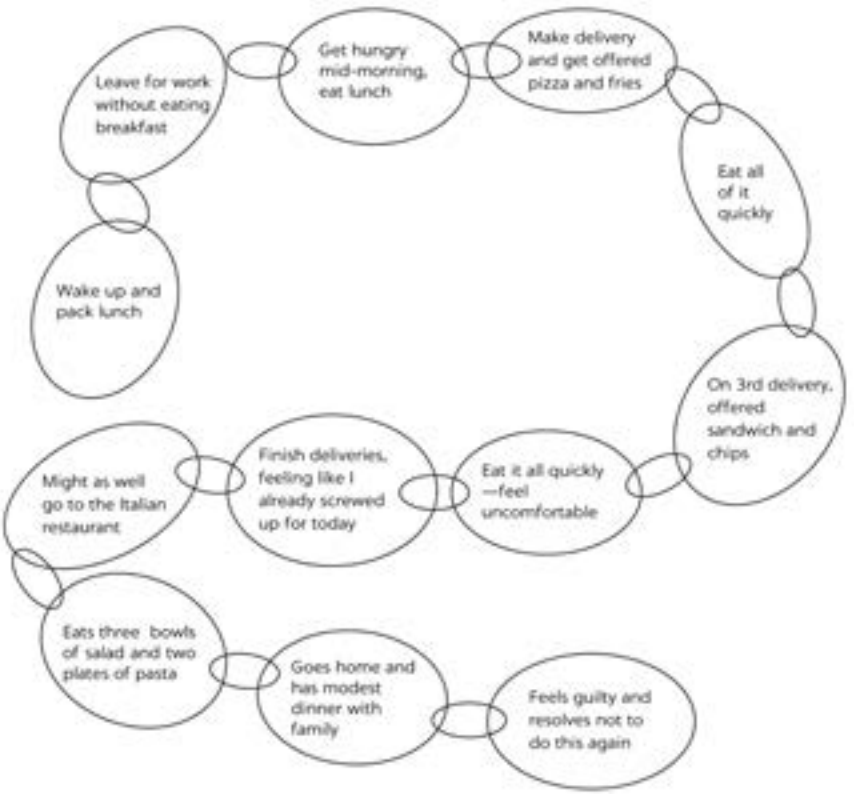
binge eating is equally effective across different demographics, but more studies would be valuable to confirm these results.

Clinical Example

"John" is a 40-year-old African American man with a BMI of 42.1 kg/m^2 (5 ft 8 in., 285 lb) who meets the criteria for BED. He works as a delivery person for a local paper product manufacturer whose primary clients are various restaurants in the area. Each day while making deliveries, he is offered food (e.g., pizza, sandwiches, baked goods, etc.; see Figure 5.2). John usually skips breakfast to control his weight. He often packs what is considered a normal sized lunch, such as a turkey and cheese sandwich, small bag of chips, a granola bar, and soda, but he typically eats it around 10:00 a.m., well before he originally intended. Later on, he continues to snack on the foods offered to him from various restaurants. For example, he may eat a slice of pizza around 11:30 a.m., then a side of French fries and large (12 in.) cheese steak around 1:00 p.m. This pattern continues throughout the day.

John finishes his shift around 4:00 p.m. and has dinner with his wife and two children at their home around 5:45 p.m. However, about twice per week, John will stop, without his wife knowing, at his favorite Italian chain

FIGURE 5.2. Example of Behavioral Chain for Binge-Eating Disorder



restaurant for an all-you-can eat dinner after 4:00 p.m. During these occasions, he eats about five breadsticks, three large bowls of salad, and two large pasta entrees. Once he begins eating, he reports feeling immense pleasure and inability to stop. He orders the second pasta and tells himself that he will buy it now but save it for his lunch tomorrow. However, once the food arrives, he always ends up eating that portion before he leaves. He keeps these episodes from his wife, using cash instead of charging the meal. This routine has become a secretive, affair-like relationship with food. When he returns home and eats dinner with his family, he has a regular plate of food (i.e., two grilled chicken breasts, one cup of macaroni and cheese, and a baked potato). Often, he will follow dinner with dessert, such as two ice cream bars or a one-eighth portion of pie, from about 5:45 p.m. to 6:00 p.m. He reports having his restaurant meal before his "actual dinner" because he is embarrassed about overeating in front of his family. This way, he can enjoy his large meal by himself without the shame and guilt he experiences from eating large amounts in front of others. Although John feels pleasure while eating, he feels guilty and disgusted afterward, and his eating is negatively impacting his relationship with his family. John has experienced nine binge episodes per week, on average, for the past 2 years.

In treatment, the therapist began by reviewing the CBT model for the treatment of BED. The therapist reviewed a food log form to track his intake throughout the day, including when, what, and how much he was eating, and what triggers may have been present before eating. Next, they completed a behavioral chain to make the chain of events explicit. Completing these exercises increased his awareness regarding his belief that restricting in the morning would be healthy, but in fact, it was prompting him to eat his lunch early, producing dichotomous thinking that he had ruined his plan for the day, so he might as well eat the food that was offered to him at the restaurants. He was assigned to begin eating a nutritionally sound breakfast and continuing to pack his lunch and snacks. Dysfunctional thought records were introduced next to modify these automatic thoughts, including the opportunity to generate alternative responses he could use in those situations. Each week, he completed these tools to provide opportunities during each therapy session to use each difficult eating situation as a learning tool, and to illustrate progress when he successfully resisted loss-of-control eating episodes. As he progressed through treatment, he gained momentum by internalizing his successes and building self-efficacy for his ability to decline food offers from the restaurants.

The therapist also helped John focus on alternative activities he could do after work when he was feeling compelled to stop at the restaurant. This intervention included planning a different route home so he would avoid driving near the restaurant and setting up an exercise routine for himself with his children or his wife, when possible, during that time instead. He also generated other ideas for filling that time, like accomplishing household tasks that had been lingering or starting a hobby that he had not participated in for a while. The final target of treatment included targeting his body dissatisfaction. Following the use of Socratic questioning (i.e., asking key questions to draw out

answers to the patient's own questions and to uncover assumptions that may be the basis for one's automatic thoughts), John was able to describe the pressure he was feeling from his wife and his own standards to preserve a muscular physique that he had when he was several years younger. He viewed himself as a failure with his 30-pound weight gain over the previous 2 years, and he was developing health issues, such as high blood pressure and hyperlipidemia.

The therapist used thought records to help John modify his discomfort with his body, as well as emphasize healthy eating habits and physical activity that would help to address his growing health concerns. Finally, marital issues that contributed to his secretive, disordered eating behaviors were addressed, and the therapist assigned John exercises to talk with his wife regarding the impact of her language regarding health behaviors and body shape and size expectations on his emotional and physical functioning. A typical thought was "My wife won't know that I ate it, so I might as well have it now so that I don't overeat in front of her and risk having her comment about it." An alternative thought that he eventually generated was "Just because my wife doesn't know, doesn't mean that I don't end up feeling badly about it. I will feel better if I say no now, and I will not feel like I'm hiding things from her and my kids."

John found success by instituting a regular eating schedule and by typically packing his own meals and snacks. He developed the ability to decline foods that were offered to him on his deliveries, and the business owners stopped offering food so frequently as his responses remained consistent. He physically felt better and less sluggish by the end of the day, so he was more open to going home and spending time with his children and being active with them or by himself. He also felt as though a burden had been lifted between him and his wife, as he was not spending money for binge episodes and hiding his behavior. John was able to communicate more openly with his wife about comments and rules that she had regarding weight and eating that were maintaining his secretive eating behaviors, raising her awareness of the paradoxical result that her comments were having. She was able to prepare meals and snacks that provided more satiety for John, and to support his packing and preparing of meals and snacks for work. Overall, John reduced his binge episodes to about once per month. In the final sessions, the focus was on his ability to recover from infrequent episodes and learn from the triggering event, emotion, or thought to continue preventing binge episodes from occurring most of the time.

ANOREXIA NERVOSA

Underlying Theory

After Fairburn adapted Beck's CBT for depression for use with BN, others in the field (e.g., Garner & Bemis, 1982, 1985) provided a treatment manual of CBT for AN. The formulation of CBT for AN is similar to that described above for BN and BED; overvaluation of weight and shape, which are rooted in low self-esteem, lead to a strong drive or desire to control one's weight and shape through extreme restriction of food intake. Thus, the cognitive disturbance

—extreme dissatisfaction with weight and shape—leads persons with AN to make choices to restrict their intake or compensate inappropriately after eating (the behavior). This becomes a cycle that is quite difficult to break.

Persons with AN differ from those with BN and BED by their achievement of a very low body weight. To reach such a low weight, individuals typically have certain personality features, such as perfectionism, and a temperament that can sustain such self-deprivation. Their low self-esteem is often tied to feelings of social unease and ineffectiveness, and they often lack an awareness of their feelings (a lack of interoceptive awareness), such that they are unable to express their emotions constructively. They then turn their distress inward and try to put their focus on controlling their eating in order to control their weight and shape, which is conceptualized as a strong drive for thinness. AN-restricting subtype is manifested by strict restrictive behaviors, and AN-binge-purge subtype is characterized by dietary restriction most of the time, interrupted by binge-purge episodes, which also can become cyclical. Once caught in this cycle, eating causes increasing discomfort—both cognitively, with negative thoughts about one's value as a person if they eat something "bad" or too much of a serving, and physically, with increasing gastrointestinal discomfort as weight loss and starvation become severe. Persons with AN obsess about food and planning what and how they will eat the little amount of food that they allow themselves, and their worlds generally become smaller. They isolate themselves more to focus on their food and weight goals and become less able to eat or socialize with others because of their extreme eating rules and rituals. However, they are living in a trapped world where they believe the only way they can increase their self-esteem is to control their weight and shape.

Main Procedures

CBT for AN consists of the same phases of treatment as described above for BN; however, the first goal of treatment for AN is always weight gain. This is so for obvious safety reasons, but also for efficacy reasons. If someone is starving, their thinking becomes increasingly rigid, and it becomes difficult to engage in talk therapy in an effective manner. Thus, in the first phase, the rationale for CBT is described, and psychoeducation is provided on the biological, psychological, and social underpinnings of the disorder. Persons with AN are often reluctant to engage in treatment, as their loved ones may be more distressed by their symptoms than they are, so an appraisal of their motivation for treatment is useful. This phase is also a time to build the therapeutic relationship by focusing on setting collaborative goals for improvements. This can be challenging for those with AN because they may not want to gain weight, but in outpatient treatment, clear goals should be set for progression of weight gain. A skilled therapist will set about this task in an empathic and open manner so that patients have a voice in expressing their goals and desires for regarding their eating disorder and their desired quality of life. The therapist can carefully highlight how the eating disorder has increasingly taken on its own life, and how it

initially may have felt to the patient that they were in control, but now the AN is in charge. As this conversation progresses, along with weight gain, patients can start to disengage from the AN thoughts and behaviors, and they improve their ability to express longer term goals and desires for their lives outside of weight and shape.

Weight is taken at each treatment session on a regular schedule—typically at the beginning of each session. If patients are reluctant to see their weight, desensitization to seeing the number becomes part of the therapy. Homework is also an essential part of the treatment, and patients must understand from the outset that there will be goals and tasks to practice at home, such as increasing the number of meals, increasing their calories and nutrients, and decreasing physical activity, which will be reviewed and problem-solved at their next session. This homework also includes self-monitoring of all food eaten, where it is eaten, as well as details about one's automatic thoughts and possible triggers for restricting or binge eating and purging. From these records, the therapist and patient can work together into the second phase of treatment to identify feelings, self-deprecating thoughts, and patterns of interpersonal exchanges that maintain the eating disorder. They can then work to establish alternative ways of cognitively assessing these situations so that healthier eating patterns can replace the dysfunctional ones, and skills for managing one's feelings and interpersonal interactions can be implemented.

During this phase, a weight gain goal is clarified, and a meal plan is set. Collaboration with a nutritionist and physician is recommended to implement the meal plan and weight regain goals safely. The weight goal should be a range based on past weight history before onset of AN, as well as other health parameters, such as resolution of amenorrhea, if applicable. An action plan should be developed with the patient to identify the necessary steps to increase the likelihood that the prescribed meals and snacks will be eaten. These can be used to problem-solve situations where patients are experiencing obstacles to enacting their eating plans or other homework assignments, which prevents them from reaching their goals (e.g., weight gain, improved social skills, decreased body dissatisfaction).

Thought records are used in this phase to identify and restructure cognitive distortions, such as "If I eat three meals a day, I will be fat and disgusting" or "If I go out after I have eaten, my stomach will be so bloated that everyone will notice." The content of these thoughts can relate to eating, body dissatisfaction, or everyday stressors or interpersonal problems. Modifying these thoughts and generating alternative responses is an ongoing process, with hope that the patient will continue to use this strategy even once treatment has ended. Several behaviors are targeted with thought-restructuring exercises, including body checking, which can take on the form of extended periods of time pinching oneself or scrutinizing oneself in the mirror, picking at one's clothing so that it is not too form-fitting, and seeing if parts of one's body are touching (e.g., thighs) or hanging (e.g., arms or stomach). Excessive exercising is also targeted, with an initial moratorium on exercise until weight has approached the desired

range. Exercise can be reintroduced at that time, with attention to rigid thoughts that sustain the excessive nature of exercise typically seen with AN. Finally, the behaviors associated with undereating, such as choosing low-fat foods, moving food around on the plate and cutting food into small pieces during the meal, and any variety of methods used to consume smaller quantities of food than prescribed, are addressed in this phase of treatment. The therapist would start with validation of how difficult it is to stop using these behaviors, followed by challenges to discontinue the use of these behaviors that maintain the psychopathology.

Once patients have approached their weight goals and they are normalizing eating behaviors, the last phase of treatment shifts toward deconstructing the schema that maintain AN. Weight restoration is typically accomplished before the disordered attitudes regarding body weight and shape and low self-esteem are significantly improved. This treatment phase focuses on identifying other aspects of oneself outside of shape and weight that they value, as well as longer-term life goals and ways in which AN is not consistent with those values and goals. A visual, typically a pie chart, can be used to identify one's current valuation of all aspects of oneself, as well as the version of the chart that one aspires to without having the AN (see Figure 5.3). Further work on interpersonal interactions and regulation of emotions is also targeted in this phase of CBT for AN, such that one can increase self-efficacy and not rely on AN symptoms as distractors from solving problems effectively in the real world.

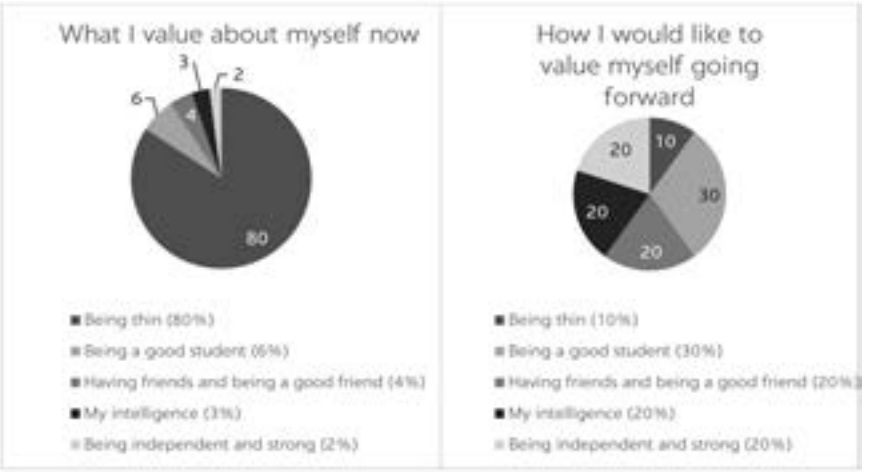
Therapy typically ends with sessions every other week to help patients practice and maintain their skills. Booster sessions may be scheduled as needed following treatment end.

Efficacy

Unfortunately, there have been relatively few studies of CBT for AN and limited development of the theory, perhaps because of its low prevalence and the historically high dropout rates observed in treatment (Galsworthy-Francis & Allen, 2014). In general, CBT or CBT-E for AN show significant gains in BMI, eating disordered attitudes and behaviors, and mood, but these outcomes are not typically significantly better than comparison treatments, such as IPT, family-based therapies, and specialist supportive clinical management.

With CBT for AN, BMI shows increases between 0.9 to 2.1 kg/m^2 (e.g., from a BMI of 16.0 to 16.9–18.1 kg/m^2) from baseline to treatment end (Byrne et al., 2017; Fairburn et al., 2013; Zipfel et al., 2014). This has not been superior to the gains shown with specialist supportive clinical management, ranging from 1.4 to 1.5 kg/m^2 (e.g., from a BMI of 16.0 to 16.4–16.5 kg/m^2; Byrne et al., 2017; McIntosh et al., 2005; Schmidt et al., 2015), or Maudsley model anorexia nervosa treatment for adults (MANTRA), with gains ranging 1.4 to 1.8 kg/m^2 (e.g., from a BMI of 16.0 to 16.4–16.8 kg/m^2; Byrne et al., 2017; Schmidt et al., 2015). When examining the proportion of participants who reach a BMI of 18.5 kg/m^2, CBT is not superior to other treatments statistically, but there seems

FIGURE 5.3. Visualization of Current Versus Desired Self-Schema in a Patient With Anorexia Nervosa



to be more separation when using this measure, with 59% in CBT-E, 44% in MANTRA, and 48% in specialist supportive clinical management reaching this marker of weight normalization (Byrne et al., 2017).

In a systematic review of CBT for AN, Galsworthy-Francis and Allan (2014) included just 16 treatment studies that had been conducted between 1995 to 2014, with only five of those being RCTs. Comparison between therapies and examination of long-term outcomes was difficult, they reported, due to the high treatment dropout rates, particularly with follow-up data. Thus, no statistical comparisons across studies were reported. Galsworthy-Francis and Allan (2014) further confirmed that CBT often produced significant gains in BMI, disordered eating pathology, and some general pathology. This was not superior to results from other approaches (e.g., dietary counseling, nonspecific supportive management, IPT, behavioral family therapy), but less dropout was observed in the CBT treatment conditions in four of seven controlled studies, particularly as compared with inpatient treatment and nutritional counseling. They also suggested that one reason CBT does not perform significantly better than other approaches with AN could be that the large amount of psychoeducation and use of cognitive skills, such as thought restructuring, may be too difficult in light of the cognitive rigidity associated with starvation in this disorder. However, it appears that CBT for patients with severe and enduring AN (duration of more than 7 years) show similar outcomes as patients who do have this high level of impairment and disability (Calugi et al., 2017). Calugi et al. (2017) reported that among 66 inpatients, 44% of the nonsevere (n = 34) and 41% of the severe (n = 32) groups reached BMIs greater than 18.5 kg/m^2, indicating a weight in the "normal" range, with 32% and 33%, respectively, having minimal eating disorder pathology at a 12-month follow-up.

Overall, the data are not convincing that CBT for AN is superior to other treatments, but it also is not inferior to other treatments. It may be more

acceptable to patients, as evidenced by slightly lower treatment dropout rates (Galsworthy-Francis & Allan, 2014), so it certainly remains one of the best options available at this time for adults with AN.

Mechanisms of Change

CBT for AN first targets weight regain so that rigidity of thinking is reduced and the substance of treatment, such as modifying dysfunctional thoughts regarding overvaluation of weight and shape and extreme restraint of eating, can ensue. As specific examples of triggers and eating disordered attitudes and behaviors are modified and skills are taught for generating alternative responses, the underlying schema (i.e., one's framework for conceptualizing oneself and one's view of the world) of what the individual values and strives for in life can shift from control of one's body weight and shape to more varied and productive goals. These mechanisms are hypothesized based on the cognitive theory of eating disorders (Fairburn, 2017; Fairburn et al., 2008). More data are needed to confirm these pathways.

Special Considerations With This Population

Outpatient care for patients presenting with very low BMI (below 17 kg/m^2) would typically be contraindicated. A full assessment of medical stability and safety should be undertaken in conjunction with a physician to determine the appropriate level of care in these cases (e.g., hospitalization or partial hospitalization; NICE, 2017).

Application to Diverse Populations

As Galsworthy-Francis and Allan (2014) commented in their review, most studies of CBT for AN did not report race or ethnicity, let alone the impact of age, sexual orientation, or gender identity (most studies report over 90% of participants are women). It is unclear how these factors may impact CBT outcomes for AN.

NIGHT-EATING SYNDROME

Underlying Theory

The core feature of NES is that the typical daytime pattern of food intake is delayed, which interrupts the normal diurnal sleep-wake cycle. Persons with NES feel compelled to eat to fall asleep initially or to fall back to sleep during the night. NES is conceptualized as an eating disorder with features of sleep (insomnia) and mood (depressive) symptoms. Thus, CBT was adapted for NES based on the approaches for each of these disorders.

Allison et al. (2004) described four of the most common themes reported by persons with NES before their nocturnal eating episodes. These included expe-

riencing (a) specific food cravings (e.g., "I know that jar of peanut butter is in the cabinet—I can't fall back to sleep now until I have some"), (b) feeling anxious or agitated (e.g., "I am still worried about how my meeting at work will go tomorrow and can't sleep, but if I eat, that will help me fall back to sleep"), (c) feeling the need to eat something so one's stomach feels full (e.g., "I just need to put something in my stomach, and then I will be able to sleep"), and (d) feeling the need to eat to fall back to sleep (e.g., "I will be a wreck at work tomorrow if I don't get back to sleep soon—I know I can fall back to sleep if I eat something, so that is what I will do"). Unfortunately, persons with NES often experience shame, disgust, and distress after nocturnal eating, particularly in the morning. Many describe feeling as though they have a "food hangover," causing them to delay their eating in the morning, thus perpetuating the cycle.

Main Procedures

As with the previously described approaches, in the first stage of CBT for NES, the therapist develops the therapeutic relationship, explains the rationale for CBT, and educates the patient on the basic techniques of CBT (Allison, 2012). These techniques include monitoring sleeping, eating, and mood patterns, along with the automatic thoughts associated with these events (Sessions 1–4). The *Nighttime Eating Assessment*—which presents a series of visual analog scales that the patient completes before eating at night to identify mood states that might be triggering the urge to eat—are to be completed for the first 2 weeks of therapy. This exercise helps to identify other targets of therapy so that skills can be developed to undermine the patient's typical pattern (Allison, 2012). Thought records are used to construct alternative thoughts and responses to the urge to eat at night, and the use of social support is encouraged.

In addition to identifying the stressors and thoughts that precipitate unwanted eating, the patient is asked to complete food logs to detail their circadian pattern of food intake. Patients are encouraged to move their first meal of the day earlier (e.g., if nothing is eaten until 2:00 p.m., a lunch at noon would be prescribed), with successively earlier meals assigned in subsequent sessions. The therapist explains that although regulating the daytime eating schedule is not sufficient to stop the nocturnal ingestions, it is necessary to break the delayed pattern of eating. In addition, the therapist encourages behavioral experiments (i.e., homework designed to modify beliefs about the pros and cons of behaviors, and debunk dysfunctional thoughts that sustain those—usually negative—behaviors) to address the nighttime awakenings and ingestions, including attention to the energy and nutrient content of the snacks. A "kitchen is closed" time is also chosen, indicated with a verbal declaration and by turning the lights off. Patients are encouraged to brush their teeth and move to another area of the house after that time. A behavioral chain describing the specific steps in a patient's nocturnal eating episodes, along with ways that the patient can break the links, is also completed and given to the patient for reference at home.

If patients have overweight or obesity and have a desire to lose weight, calorie tracking with their food log is instituted at Session 3, with typical goals of 1,200–1,500 calories for women and 1,500–1,800 calories for men. At weights above 250 lb (113 kg), adjustment of these calorie goals is made accordingly. Clinical experience has suggested that implementing a calorie goal improves motivation for change and therapy compliance among those seeking treatment for NES, as part of their distress regarding their nighttime eating is its negative influence on their weight gain. Restraint and overvaluation of weight and shape are not as extreme in those with NES as in BED and other eating disorders (Allison et al., 2005), so encouraging a structured behavioral weight loss component does not seem contraindicated for this disorder.

In the middle stage of CBT for NES (Sessions 5–8), the work centers on firmly establishing the skills that have been developed in the first phase. Depressed mood and dysfunctional thoughts about eating continue to be monitored and addressed through the use of thought records, together with continued use of behavioral interventions. Behavioral experimentation is essential for decreasing the occurrence of evening and nighttime ingestions. Although the actual methods may differ based on the layout of the patient's house, the presence or absence of family or roommates, and what food is available, each approach involves stimulus control of food, including strategies such as preparing preset, portion-sized snacks and placing them on the counter or in the front of the refrigerator; locking or hiding away desirable food at night; or engaging in another activity until sleepiness returns. Thoughts regarding fear of weight gain and lack of hunger with regard to starting to eat earlier in the day, and with regular daytime meals and snacks, is also addressed. If depressed mood is present, these symptoms are treated with the same thought records and behavioral activation/change of typical routine outlined previously. Negative beliefs about weight and shape, if present, are also be attended to throughout the therapeutic process, as these beliefs are often intricately tied to negative affect.

The final stage of therapy, Sessions 9–10, transitions to biweekly sessions. The therapist reviews progress and helps the individual generate possible triggers for relapse. Therapists also aim to increase self-efficacy regarding the patient's ownership of the progress they have made, so that they can maintain their progress outside of the therapeutic relationship.

Efficacy

One study has tested CBT for NES, with a 10-session treatment delivered over 12 weeks among 25 participants (Allison, Lundgren, Moore et al., 2010). Intention to treat analysis showed significant reductions in the percentage of food intake consumed after dinner (from 35% to 24.9%), number of weekly awakenings (from 13.5 to 8.5 per week), and weekly nocturnal ingestions (from 8.7 to 2.6 per week; Allison, Lundgren, Moore, et al., 2010). Among participants with overweight or obesity, a 3 kg weight loss was also reported, with caloric reductions from 2,356 per day at Session 3 (the first time calories are tracked)

to 1,759 per day at treatment end. More studies are needed to confirm these results.

Mechanisms of Change

CBT for NES seems to work by recalibrating an individual's temporal pattern of eating, such that the nocturnal drive to eat, which becomes habitual over time, is diminished and patients no longer feel compelled to eat, even if they continue to wake up during the night. The treatment uncouples the urge to eat during the night from the act of falling asleep initially or falling back to sleep, so that even if they have problems initiating sleep or waking during the night, they are able to do other soothing activities in order to resume sleep (Allison, 2012). These mechanisms are based on the CBT theory of NES, so these pathways should be tested further.

Special Considerations With This Population

Some persons with NES report that their first moments of awareness do not occur until they are standing in front of the refrigerator, whereas others are fully aware from the moment they wake and rise from bed. Persons with reduced awareness typically are not able to identify automatic thoughts until they are about to eat or are already eating. Treatment of nocturnal ingestions focuses on increasing awareness progressively earlier in the waking process so that patients can access and implement the CBT skills during the nocturnal eating episodes. Behavioral approaches, such as placing a bell or some other type of alarm on the door may be used in some cases to raise awareness before they are even able to leave the bedroom.

Persons with NES who have normal weight seem to endorse more severe symptoms; a higher proportion of their intake occurs after dinner because they seem to be restricting more during the day than persons with overweight or obesity. Persons with NES who have normal weight also report higher levels of compulsive exercise to compensate for their nocturnal ingestions. Thus, those with NES with normal weight may need to pay more attention to compensatory behaviors and fear of weight gain than those with higher weights (Allison, Lundgren, Moore, et al., 2010).

DISSEMINATION OF CBT FOR EATING DISORDERS

CBT has been evaluated through numerous RCTs and is regarded as the "gold standard" treatment for BN and BED, but there remains limited access to effective, evidence-based versions of this treatment. Some barriers include the availability of resources, namely doctoral-level therapists, inadequate training for therapists, and lack of competence and consistency in adhering to the treatment protocol (Fairburn & Wilson, 2013). Therefore, efforts to address these

barriers are pivotal in the transfer from evidence-based research to clinical practice. Self-help or guided self-help using evidence-based treatment manuals are also valuable in disseminating these treatments (Peterson et al., 2009). The primary manual for self-help CBT, developed by Fairburn (2013), includes information about the disorder and manualized instructions for implementation of treatment.

Given the severity of AN, professional help is typically recommended. CBT and CBT-E trainings are offered through the Centre for Research on Eating Disorders at Oxford (CREDO, https://www.credo-oxford.com), and professional conferences, such as the Academy for Eating Disorders (https://www.AEDweb.org), can be valuable tools for therapists to learn this treatment. There are few self-help CBT treatments for AN, with little outcome data currently available.

Much work is needed to disseminate CBT for NES given it is not well-recognized (Goncalves et al., 2009). A self-help book is available (Allison et al., 2004), as well as a treatment manual (Allison, 2012).

CONCLUSION AND FUTURE DIRECTIONS

CBT is the first-line treatment recommended for both BN and BED. The evidence is less clear for the treatment of AN, as CBT reduces symptoms but is not superior to other therapies. Even though it is the most commonly recommended therapy for BN and BED, the proportion of those patients who enter remission with treatment typically ranges between 50% and 60%, leaving a need for other therapies, given the large minority of patients whose symptoms persist. Accessing treatment can be difficult, however, so it is important to note that self-help manuals may be helpful, particularly in milder cases of BN and BED. More work is needed to validate treatments for purging disorder and NES.

REFERENCES

Agras, W. S., Walsh, T., Fairburn, C. G., Wilson, G. T., & Kraemer, H. C. (2000). A multicenter comparison of cognitive-behavioral therapy and interpersonal psychotherapy for bulimia nervosa. *Archives of General Psychiatry*, *57*(5), 459–466. https://doi.org/10.1001/archpsyc.57.5.459

Allison, K. C. (2012). Cognitive-behavioral therapy manual for night eating syndrome. In J. D. Lundgren, K. C. Allison, & A. J. Stunkard (Eds.), *Night eating syndrome: Research, assessment, and treatment* (pp. 246–265). Guilford Press.

Allison, K. C., Grilo, C. M., Masheb, R. M., & Stunkard, A. J. (2005). Binge eating disorder and night eating syndrome: A comparative study of disordered eating. *Journal of Consulting and Clinical Psychology*, *73*(6), 1107–1115. https://doi.org/10.1037/0022-006X.73.6.1107

Allison, K. C., Lundgren, J. D., Moore, R. H., O'Reardon, J. P., & Stunkard, A. J. (2010). Cognitive behavior therapy for night eating syndrome: A pilot study. *American Journal of Psychotherapy*, *64*(1), 91–106. https://doi.org/10.1176/appi.psychotherapy.2010.64.1.91

Allison, K. C., Lundgren, J. D., O'Reardon, J. P., Geliebter, A., Gluck, M. E., Vinai, P., Mitchell, J. E., Schenck, C. H., Howell, M. J., Crow, S. J., Engel, S., Latzer, Y., Tzischinsky, O., Mahowald, M. W., & Stunkard, A. J. (2010). Proposed diagnostic criteria for night eating syndrome. *International Journal of Eating Disorders*, *43*(3), 241–247.

Allison, K. C., Stunkard, A. J., & Thier, S. L. (2004). *Overcoming night eating syndrome: A step-by-step guide to breaking the cycle*. New Harbinger Publications.

American Academy of Sleep Medicine. (2014). *International classification of sleep disorders* (3rd ed.).

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books9780890425596

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. Guilford Press.

Boswell, R. G., & Kober, H. (2016). Food cue reactivity and craving predict eating and weight gain: A meta-analytic review. *Obesity Reviews*, *17*(2), 159–177. https://doi.org/10.1111/obr.12354

Brownley, K. A., Berkman, N. D., Peat, C. M., Lohr, K. N., Cullen, K. E., Bann, C. M., & Bulik, C. M. (2016). Binge-eating disorder in adults: A systematic review and meta-analysis. *Annals of Internal Medicine*, *165*(6), 409–420. https://doi.org/10.7326/M15-2455

Bruch, H. (1970). Psychotherapy in primary anorexia nervosa. *Journal of Nervous and Mental Disease*, *150*, 51–67. https://doi.org/dnfrks

Byrne, S., Wade, T., Hay, P., Touyz, S., Fairburn, C. G., Treasure, J., Schmidt, U., McIntosh, V., Allen, K., Fursland, A., & Crosby, R. D. (2017). A randomised controlled trial of three psychological treatments for anorexia nervosa. *Psychological Medicine*, *47*(16), 2823–2833. https://doi.org/10.1017/S0033291717001349

Calugi, S., El Ghoch, M., & Dalle Grave, R. (2017). Intensive enhanced cognitive behavioural therapy for severe and enduring anorexia nervosa: A longitudinal outcome study. *Behaviour Research and Therapy*, *89*, 41–48. https://doi.org/10.1016/j.brat.2016.11.006

Castillo, M., & Weiselberg, E. (2017). Bulimia nervosa/purging disorder. *Current Problems in Pediatric and Adolescent Health Care*, *47*(4), 85–94. https://doi.org/10.1016/j.cppeds.2017.02.004

Cooper, Z., & Fairburn, C. G. (2010). Cognitive behavior therapy for bulimia nervosa. In C. M. Grilo & J. E. Mitchell (Eds.), *The treatment of eating disorders: A clinical handbook* (pp. 243–270). Guilford Press.

Cooper, Z., & Fairburn, C. G. (2011). The evolution of "enhanced" cognitive behavior therapy for eating disorders: Learning from treatment nonresponse. *Cognitive and Behavioral Practice*, *18*, 394–402. https://doi.org/10.1016/j.cbpra.2010.07.007

Devlin, M. (2017). Binge eating disorder. In K. D. Brownell & T. B. Walsh (Eds.), *Eating disorders and obesity: A comprehensive handbook* (3rd ed., pp. 192–195). Guilford Press.

Devlin, M. J., Goldfein, J. A., Petkova, E., Jiang, H., Raizman, P. S., Wolk, S., Mayer, L., Carino, J., Bellace, D., Kamenetz, C., Dobrow, I., & Walsh, B. T. (2005). Cognitive behavioral therapy and fluoxetine as adjunts to group behavioral therapy for binge eating disorder. *Obesity*, *13*(6), 1077–1088. https://doi.org/10.1038/oby.2005.126

DuBois, R. H., Rodgers, R. F., Franko, D. L., Eddy, K. T., & Thomas, J. J. (2017). A network analysis investigation of the cognitive-behavioral theory of eating disorders. *Behaviour Research and Therapy*, *97*, 213–221. https://doi.org/10.1016/j.brat.2017.08.004

Fairburn, C. G. (1981). A cognitive behavioural approach to the treatment of bulimia. *Psychological Medicine*, *11*(4), 707–711. https://doi.org/10.1017/S0033291700041209

Fairburn, C. G. (1995). *Overcoming binge eating*. Guilford Press.

Fairburn, C. G. (2013). *Overcoming binge eating: The proven program to learn why you binge and how you can stop* (2nd ed.). Guilford Press.

Fairburn, C. G. (2002). Cognitive-behavioral therapy for bulimia nervosa. In C. G. Fairburn & K. D. Brownell (Eds.), *Eating disorders and obesity: A Comprehensive handbook* (2nd ed., pp. 302–307). Guilford Press.

Fairburn, C. G. (2017). Cognitive behavior therapy and eating disorders. In K. D. Brownell & T. B. Walsh (Eds.), *Eating disorders and obesity: A comprehensive handbook* (3rd ed., pp. 284–289). Guilford Press.

Fairburn, C. G., Cooper, Z., Doll, H. A., O'Connor, M. E., Bohn, K., Hawker, D. M., Wales, J. A., & Palmer, R. L. (2009). Transdiagnostic cognitive-behavioral therapy for patients with eating disorders: A two-site trial with 60-week follow-up. *American Journal of Psychiatry*, *166*(3), 311–319. https://doi.org/10.1176/appi.ajp.2008.08040608

Fairburn, C. G., Cooper, Z., Doll, H. A., O'Connor, M. E., Palmer, R. L., & Dalle Grave, R. (2013). Enhanced cognitive behaviour therapy for adults with anorexia nervosa: A UK-Italy study. *Behaviour Research and Therapy*, *51*(1), R2–R8. https://doi.org/10.1016/j.brat.2012.09.010

Fairburn, C. G., Cooper, Z., & Shafran, R. (2003). Cognitive behavior therapy for eating disorders: A "transdiagnostic" theory and treatment. *Behavior Research and Therapy*, *41*(5), 509–528. https://doi.org/cdjcss

Fairburn, C. G., Cooper, Z., Shafran, R., & Wilson, G. T. (2008). Eating disorders: A transdiagnostic protocol. In D. H. Barlow (Ed.), *Clinical handbook of psychological disorders: A step-by-step treatment manual* (4th ed., pp. 578–614). Guilford Press.

Fairburn, C. G., Marcus, M. D., & Wilson, G. T. (1993). Cognitive-behavioral therapy for binge eating and bulimia nervosa: A comprehensive treatment manual. In C. G. Fairburn & G. T. Wilson (Eds.), *Binge eating: Nature, assessment, and treatment* (pp. 361–404). Guilford Press.

Fairburn, C. G., & Wilson, G. T. (2013). The dissemination and implementation of psychological treatments: Problems and solutions. *International Journal of Eating Disorders*, *46*(5), 516–521. https://doi.org/10.1002/eat.22110

Galsworthy-Francis, L., & Allan, S. (2014). Cognitive Behavioural Therapy for anorexia nervosa: A systematic review. *Clinical Psychology Review*, *34*(1), 54–72. https://doi.org/10.1016/j.cpr.2013.11.001

Garner, D. M., & Bemis, K. M. (1982). A cognitive-behavioral approach to anorexia nervosa. *Cognitive Therapy and Research*, *6*, 123–150. https://doi.org/10.1007/BF01183887

Garner, D. M., & Bemis, K. M. (1985). Cognitive therapy for anorexia nervosa. In D. M. Garner & P. E. Garfinkel (Eds.), *Handbook of psychotherapy for anorexia nervosa and bulimia* (pp. 107–146). Guilford Press.

Goncalves, M. D., Moore, R. H., Stunkard, A. J., & Allison, K. C. (2009). The treatment of night eating: The patient's perspective. *European Eating Disorders Review*, *17*(3), 184–190. https://doi.org/10.1002/erv.918

Grilo, C. M. (2017). Psychological treatment of binge eating disorder. In K. D. Brownell & T. B. Walsh (Eds.), *Eating disorders and obesity: A comprehensive handbook* (3rd ed., pp. 314–319). Guilford Press.

Grilo, C. M., Masheb, R. M., & Crosby, R. D. (2012). Predictors and moderators of response to cognitive behavioral therapy and medication for the treatment of binge eating disorder. *Journal of Consulting and Clinical Psychology*, *80*(5), 897–906. https://doi.org/10.1037/a0027001

Grilo, C. M., Masheb, R. M., White, M. A., Gueorguieva, R., Barnes, R. D., Walsh, B. T., McKenzie, K. C., Genao, I., & Garcia, R. (2014). Treatment of binge eating disorder in racially and ethnically diverse obese patients in primary care: Randomized placebo-controlled clinical trial of self-help and medication. *Behaviour Research and Therapy*, *58*, 1–9. https://doi.org/10.1016/j.brat.2014.04.002

Haedt-Matt, A. A., & Keel, P. K. (2011). Revisiting the affect regulation model of binge eating: A meta-analysis of studies using ecological momentary assessment. *Psychological Bulletin*, *137*(4), 660–681. https://doi.org/10.1037/a0023660

Haedt-Matt, A. A., Keel, P. K., Racine, S. E., Burt, S. A., Hu, J. Y., Boker, S., Neale, M., & Klump, K. L. (2014). Do emotional eating urges regulate affect? Concurrent and prospective associations and implications for risk models of binge eating. *International Journal of Eating Disorders*, *47*(8), 874–877. https://doi.org/10.1002/eat.22247

Ham, J. C., Iorio, D., & Sovinsky, M. (2015). Disparities in bulimia nervosa: Who is left behind? *Economics Letters*, *136*, 147–150. https://doi.org/10.1016/j.econlet.2015.09.017

Hay, P. P., Bacaltchuk, J., Stefano, S., & Kashyap, P. (2009). Psychological treatments for bulimia nervosa and binging. *Cochrane database of systematic reviews*, *4*, CD000562. https://doi.org/10.1002/14651858.CD000562.pub3

Keel, P. K. (2007). Purging disorder: Subthreshold variant or full-threshold eating disorder? *International Journal of Eating Disorders*, *40*(Suppl.), S89–S94. https://doi.org/10.1002/eat.20453

Kessler, R. C., Berglund, P. A., Chiu, W. T., Deitz, A. C., Hudson, J. I., Shahly, V., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M. C., Benjet, C., Bruffaerts, R., de Girolamo, G., de Graaf, R., Maria Haro, J., Kovess-Masfety, V., O'Neill, S., Posada-Villa, J., Sasu, C., Scott, K., . . . Xavier, M. (2013). The prevalence and correlates of binge eating disorder in the World Health Organization World Mental Health Surveys. *Biological Psychiatry*, *73*(9), 904–914. https://doi.org/10.1016/j.biopsych.2012.11.020

Kober, H., & Boswell, R. G. (2018). Potential psychological & neural mechanisms in binge eating disorder: Implications for treatment. *Clinical Psychology Review*, *60*, 32–44. https://doi.org/10.1016/j.cpr.2017.12.004

Lampard, A. M., & Sharbanee, J. M. (2015). The cognitive-behavioural theory and treatment of bulimia nervosa: An examination of treatment mechanisms and future directions. *Australian Psychologist*, *50*(1), 6–13. https://doi.org/10.1111/ap.12078

McIntosh, V. V., Jordan, J., Carter, F. A., Luty, S. E., McKenzie, J. M., Bulik, C. M., Frampton, C. M., & Joyce, P. R. (2005). Three psychotherapies for anorexia nervosa: A randomized, controlled trial. *The American Journal of Psychiatry*, *162*(4), 741–747. https://doi.org/10.1176/appi.ajp.162.4.741

Mitchison, D., Rieger, E., Harrison, C., Murray, S. B., Griffiths, S., & Mond, J. (2018). Indicators of clinical significance among women in the community with binge-eating disorder symptoms: Delineating the roles of binge frequency, body mass index, and overvaluation. *International Journal of Eating Disorders*, *51*(2), 165–169. https://doi.org/10.1002/eat.22812

Murphy, R., Straebler, S., Basden, S., Cooper, Z., & Fairburn, C. G. (2012). Interpersonal psychotherapy for eating disorders. *Clinical Psychology & Psychotherapy*, *19*(2), 150–158. https://doi.org/10.1002/cpp.1780

Murphy, R., Straebler, S., Cooper, Z., & Fairburn, C. G. (2010). Cognitive behavioral therapy for eating disorders. *Psychiatric Clinics of North America*, *33*(3), 611–627. https://doi.org/10.1016/j.psc.2010.04.004

National Institute for Health and Care Excellence (NICE). (2017). *Eating disorders: Recognition and treatment: clinical guideline methods, evidence and recommendations, version 2.0*. Retrieved August 31, 2018, from https://www.nice.org.uk/guidance/ng69/

Peterson, C. B., Berg, K. C., Crosby, R. D., Lavender, J. M., Accurso, E. C., Ciao, A. C., Smith, T. L., Klein, M., Mitchell, J. E., Crow, S. J., & Wonderlich, S. A. (2017). The effects of psychotherapy treatment on outcome in bulimia nervosa: Examining indirect effects through emotion regulation, self-directed behavior, and self-discrepancy within the mediation model. *International Journal of Eating Disorders*, *50*(6), 636–647. https://doi.org/10.1002/eat.22669

Peterson, C. B., Mitchell, J. E., Crow, S. J., Crosby, R. D., & Wonderlich, S. A. (2009). The efficacy of self-help group treatment and therapist-led group treatment for binge eating disorder. *American Journal of Psychiatry*, *166*(12), 1347–1354. https://doi.org/10.1176/appi.ajp.2009.09030345

Polivy, J., & Herman, C. P. (1985). Dieting and binging: A causal analysis. *American Psychologist*, *40*(2), 193–201. https://doi.org/10.1037/0003-066X.40.2.193

Runfola, C. D., Allison, K. C., Hardy, K. K., Lock, J., & Peebles, R. (2014). Prevalence and clinical significance of night eating syndrome in university students. *Journal of Adolescent Health*, *55*(1), 41–48. https://doi.org/10.1016/j.jadohealth.2013.11.012

Schmidt, U., Magill, N., Renwick, B., Keyes, A., Kenyon, M., Dejong, H., Lose, A., Broadbent, H., Loomes, R., Yasin, H., Watson, C., Ghelani, S., Bonin, E. M., Serpell, L., Richards, L., Johnson-Sabine, E., Boughton, N., Whitehead, L., Beecham, J., . . . Landau, S. (2015). The Maudsley Outpatient Study of Treatments for Anorexia Nervosa and Related Conditions (MOSAIC): Comparison of the Maudsley Model of Anorexia Nervosa Treatment for Adults (MANTRA) with specialist supportive clinical management (SSCM) in outpatients with broadly defined anorexia nervosa: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*, *83*, 796–807. https://doi.org/10.1037/ccp0000019

Spitzer, R. L., Yanovski, S., Wadden, T., Wing, R., Marcus, M. D., Stunkard, A., Devlin, M., Mitchell, J., Hasin, D., & Horne, R. L. (1993). Binge eating disorder: Its further validation in a multisite study. *International Journal of Eating Disorders*, *13*(2), 137–153.

Stunkard, A. J. (1959). Eating patterns and obesity. *Psychiatry Quarterly*, *33*, 284–295. https://doi.org/10.1007/BF01575455

Tholin, S., Lindroos, A., Tynelius, P., Akerstedt, T., Stunkard, A. J., Bulik, C. M., & Rasmussen, F. (2009). Prevalence of night eating in obese and nonobese twins. *Obesity*, *17*(5), 1050–1055. https://doi.org/10.1038/oby.2008.676

Udo, T., & Grilo, C. M. (2018). Prevalence and correlates of DSM-5-defined eating disorders in a nationally representative sample of U.S. adults. *Biological Psychiatry*, *84*(5), 345–354. https://doi.org/10.1016/j.biopsych.2018.03.014

Vall, E., & Wade, T. D. (2015). Predictors of treatment outcome in individuals with eating disorders: A systematic review and meta-analysis. *International Journal of Eating Disorders*, *48*(7), 946–971. https://doi.org/10.1002/eat.22411

Vocks, S., Tuschen-Caffier, B., Pietrowsky, R., Rustenbach, S. J., Kersting, A., & Herpertz, S. (2010). Meta-analysis of the effectiveness of psychological and pharmacological treatments for binge eating disorder. *International Journal of Eating Disorders*, *43*(3), 205–217.

Wilfley, D. E., Schwartz, M. B., Spurrell, E. B., & Fairburn, C. G. (2000). Using the eating disorder examination to identify the specific psychopathology of binge eating disorder. *International Journal of Eating Disorders*, *27*(3), 259–269. https://doi.org/btzshh

Yager, J., Devlin, M. F., Halmi, K. A., Herzog, D. B., Mitchell, J. E., Powers, P., & Zerbe, K. F. (2012). *Guideline watch: Practice guideline for the treatment of patients with eating disorders* (3rd ed.). American Psychiatric Association.

Zipfel, S., Wild, B., Groß, G., Friederich, H. C., Teufel, M., Schellberg, D., Giel, K. E., de Zwaan, M., Dinkel, A., Herpertz, S., Burgmer, M., Löwe, B., Tagay, S., von Wietersheim, J., Zeeck, A., Schade-Brittinger, C., Schauenburg, H., Herzog, W., & the ANTOP study group. (2014). Focal psychodynamic therapy, cognitive behaviour therapy, and optimised treatment as usual in outpatients with anorexia nervosa (ANTOP study): Randomised controlled trial. *The Lancet*, *383*(9912), 127–137. https://doi.org/10.1016/S0140-6736(13)61746-8