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Clinical Case Discussion: Binge Eating Disorder, Obesity and Tobacco Smoking

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Keywords

substance use disorders; nicotine dependence; binge eating disorder; obesity; comorbidity; cognitive-behavior therapy

This clinical case involves an obese woman requesting treatment for her binge eating and obesity. The information is presented to expert clinicians who provide their thoughts regarding the case, assessment, treatment formulation, and associated clinical and research issues.

Case Description

A 48-year old African American woman presented for treatment for binge eating and weight loss. She presented for treatment following a recent routine physical examination during which her primary care physician noted concerns about her increasing weight. The physician recommended that she try to lose weight but did not provide any specific or further guidance. In light of her previous “failed” experiences with commercial weight loss programs, she decided to seek treatment at a university-based program. At initial evaluation, she was 64 inches tall and weighed 230 pounds yielding a body mass index (BMI) of 39.5, which reflects obesity. She had moderately elevated blood pressure and high cholesterol but was otherwise in good health. The patient completed college and a master's degree in education and had been employed as a special education teacher in the same job for 11 years. She lived with her husband of 24 years, and one of her two adult children. She reported that her relationships with her husband and family were good, that her job was enjoyable and rewarding, and that she had a good circle of close relationships.

Weight and dieting history

The patient reported an onset of overweight during adulthood. She reported having been involved in sports throughout childhood, and although she viewed herself as ‘big-boned’, she did not have body image concerns nor did she recall feeling dissatisfied with her weight or shape when younger. She denied any significant dieting behaviors until age 29. She reported maintaining a weight of approximately 150 pounds (BMI = 25.7) until age 28, at which age she became pregnant with her second child. She reported that she never fully lost the ‘baby

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weight' and subsequently began to gradually gain weight throughout her 30s despite numerous dieting efforts. She reported a rapid weight gain of approximately 25 pounds in the past 6 months.

Binge eating

The patient reported an onset of "eating binges" at approximately age 16. The binge eating began soon after she began babysitting for neighborhood children. She estimated that she would engage in binge eating approximately 1-2 times per month which occurred during times that she babysat at night and had access to assorted snack foods. During those times she would 'load up on junk food' that the family had provided. She recalled that she would eat chips, cookies, and brownies "non-stop," and that these eating episodes often lasted throughout the evening. She recalled feeling a loss of control during these episodes and stated that she would continue to eat despite not feeling physically hungry and that she would not stop until feeling physically ill. She reported that she was very embarrassed and secretive about these eating behaviors. She also recalled feeling embarrassed when worried that it was likely that the missing food was apparent to the family for whom she was babysitting. She denied any history of extreme inappropriate weight control or purging behaviors such as self-inducing vomiting or misusing laxatives.

The patient reported infrequent and sporadic binge eating throughout her late teens and early 20s, estimating a frequency of once per month which tended to correspond with social functions. During her 30s, however, the frequency of her binge eating increased considerably and became more regular except during periods of dieting efforts. The patient reported that she had enrolled in commercial weight loss programs approximately five different times, and had, in addition, tried to follow multiple self-help diets. She reported that when she was following a weight loss plan, she could successfully lose approximately 10 pounds, but that she would 'hit a wall' and discontinue after about one month of dieting. She reported that in-between diets, her binge eating would resume at a frequency of 2 to 3 times per week, and persist at that level until the next dieting attempt. The patient reported that she had not engaged any formal dieting in the past 18 months, although she frequently skipped meals in an effort to reduce her weight.

Recent course

The patient noted an increase in binge eating frequency approximately six months ago, corresponding with her mother's hospitalization and rapid physical decline. The patient was the primary caregiver for her mother, and noted that the months preceding her mother's death were extremely stressful. She reported that her binge eating increased in frequency to 3 to 4 times per week during her mother's illness, and increased to 6 to 7 times per week following her mother's death.

The patient described her typical binge episode as starting with an evening meal and extending for several hours. Her daily pattern of eating was to skip breakfast, and to consume a standard school cafeteria lunch at 11:30 a.m. She would then not eat again until preparing the evening meal, at which point she would 'graze' while cooking. The patient reported that most nights she would eat a 'normal' meal with her family, consisting of 5-6 ounces of meat, 2 or 3 types of vegetables, and bread. However, she would then eat the 'leftovers' while cleaning up after the meal, such that overall she would have consumed the equivalent of two full meals. She would then eat various foods throughout the rest of the evening until bedtime. During these episodes, she would alternate between salty and sweet snacks. One example binge episode, occurring approximately 30 minutes after the evening meal and spanning the two hours before bedtime, included: a roll of Ritz crackers with 6 ounces of cheese, 2 doughnuts, 4 handfuls of Chex mix, and ½ of a large (12 oz.) Cadbury candy bar.

Smoking History and Cessation

The patient reported that she had recently quit smoking ‘cold turkey’ and had successfully maintained abstinence for four months. She reported quitting smoking following the death of her mother because she died of cancer. She quit smoking without any professional help and without the use of any nicotine replacements or medications to assist with the smoking cessation.

In terms of her smoking history, the patient reported that she began smoking at age 18, that she had successfully quit smoking upon becoming pregnant at age 24, but resumed when she returned to work 11 years ago. She reported a daily smoking frequency of 15 to 20 cigarettes per day. She reported no serious efforts to stop smoking during the past 11 years prior to this recent period of complete abstinence. The patient reported that since quitting smoking, she has experienced more frequent and intense urges to binge eat, and that in the few weeks prior to intake the urges to smoke had increased in frequency and intensity. She reported urges to smoke primarily in the evenings.

Diagnostic Instrument

In addition to a standard intake history, the patient was administered the Eating Disorder Examination (EDE; Fairburn and Cooper, 1993). The EDE is a semi-structured investigator-based interview that evaluates current eating behaviors and eating disorder psychopathology. The EDE focuses on the previous 28 days, except for diagnostic items – such as binge eating behaviors - which are assessed for the duration stipulations for each ED. More specifically, the EDE assesses the frequency of different forms of overeating, including objective bulimic episodes (binge eating defined as unusually large amounts of food with a subjective sense of loss of control) and various inappropriate weight control methods (e.g., purging, laxative abuse, etc). The EDE contains four scales reflecting different aspects of ED psychopathology (dietary restraint, eating concerns, weight concern, and shape concern). The EDE is considered the best-established method for assessing and tracking over time the behavioral and cognitive features of EDs and has psychometric support specifically with BED (Grilo, Masheb, Lozano-Blanco, & Barry, 2004; Grilo, Masheb, & Wilson, 2001). The interview was administered before treatment and at treatment conclusion to evaluate treatment gains.

Treatment

The patient was treated with 12 weekly individual sessions of cognitive behavioral therapy (CBT) for binge eating. Expert opinion (Wilson, Grilo, & Vitousek, 2007) and quantitative meta-analytic reviews (NICE, 2004) conclude CBT is the best-established and treatment-of-choice for BED. CBT, a focal and structured treatment, consists of three overlapping phases conducted in a collaborative and interactive method with patients. The first phase focused on educating the patient about the nature of binge eating. Standard behavioral strategies such as self-monitoring and record keeping were used to help the patient identify better her disordered eating patterns while working towards the central goal of normalizing and achieving a structured regular pattern of eating (i.e., not skipping meals). The second phase integrated cognitive procedures to help the patient identify and challenge maladaptive cognitions regarding her eating, possible triggers for dyscontrol, and associated eating/shape concerns. The final phase focuses on consolidating and maintaining the changes and relapse prevention issues.

During the overview of treatment and the ‘meal pattern prescription,’ the patient became tearful, stating that she is not organized enough to follow a meal pattern consisting of three meals and three snacks. She expressed a fear that eating more frequent meals would result in more weight gain, and stated that she was fearful of failing at another weight loss effort. The patient was encouraged to follow the meal and snack pattern as an ‘experiment’ for the first

week of treatment. When the patient's fears were alleviated (i.e., disproved owing to weight maintenance during the first week of treatment), she moved through the treatment steps without difficulty. Although she initially voiced concern about the self-monitoring she eventually regarded it as one of the most essential tools that she gained during the treatment.

Overall, at treatment completion the patient's binge eating had remitted fully. She reported no objective bulimic episodes in the last 4 weeks of treatment. Her weight remained relatively stable, with a post-treatment weight loss of five pounds (final weight = 225; BMI = 38.6). Although the patient was pleased to have stopped binge eating, she reported continued distress over her weight and a persisting desire to lose weight.

Discussion

Carlos M. Grilo, Ph.D.

This clinical case involves a combination of a behavioral (BED) and a physical medical problem (obesity) that often co-occur. This case is also notable for a positive lifetime history of a pharmacological addiction (nicotine) despite not being “active” at the time of presentation for treatment for the eating/weight concerns might nonetheless have important implications. In several respects, this case is fairly typical of BED in obese persons and serves to illustrate a number of important issues facing clinicians and researchers.

Background: Diagnosis, Distribution, and Clinical Features of BED—BED is a specific example of eating disorder not-otherwise-specified (EDNOS) and was included as a “research category” with provisional research diagnostic criteria in Appendix B of the *DSM-IV* (American Psychiatric Association, 1994). BED is defined primarily by recurrent episodes of binge eating without the regular use of inappropriate compensatory weight control methods (such as purging) that characterize bulimia nervosa (BN). Binge eating is defined as eating unusually large amounts of food while experiencing a subjective sense of loss of control. The research criteria require marked distress about the binge eating and that the binge eating occurs on at least two days per week over the past six months. Unlike the two “formal” eating disorders (anorexia nervosa and bulimia nervosa), the *DSM-IV* does not include a cognitive criterion pertaining to disturbed body image (i.e., overvaluation of shape or weight) for the diagnosis of BED although such disturbances are present in many patients with BED (Grilo, Hrabosky, White, Allison, Stunkard, & Masheb, 2008). Research has supported the distinctiveness of BED from both other eating disorders (BN) and from obesity without co-existing binge eating (Grilo, Crosby et al., in press; Grilo, Masheb, & White, in press). A recent critical review of the literature concluded that there exists sufficient empirical evidence to support the inclusion of BED as a distinct and formal ED diagnosis in the *DSM-V* (Striegel-Moore & Franko, 2008).

Recent epidemiological research has reported a prevalence rate for BED of roughly 3.5% in adult women, which is greater than anorexia nervosa and bulimia nervosa combined (Hudson, Hiripi, Pope, & Kessler, 2007). The distribution of BED is much broader and more diverse than that of the other eating disorders. BED is evenly distributed throughout adulthood and is common in both men and women as well as across ethnic and racial groups (Hudson et al., 2007; Grilo, Lozano, & Masheb, 2005). BED is strongly associated with obesity (which is not a required criterion) (Hudson et al., 2007) and therefore with substantially increased morbidity associated with excess weight (e.g., diabetes, metabolic problems). The excess weight in patients with BED is attributable to a combination of binge eating in the absence of weight compensatory behaviors in addition to a general lack of dietary “restraint” that is salient and characteristic of the other eating disorders (Grilo, 2010). Patients with BED who seek treatment are typically older than patients with other eating disorders despite the fact that many report a longstanding duration of the binge eating often dating back to adolescence (Reas & Grilo,

2007). Moreover, unlike the case for the other eating disorders, which most frequently begin following intensive dieting attempts, nearly half of patients with BED report that the onset of their binge eating preceded their first diet (Reas & Grilo, 2007). Regardless of the exact longitudinal sequence, the binge eating and the associated weight gain over time motivate multiple diet attempts over time many of which are not successful (Reas & Grilo, 2007; Roehrig, Masheb, White, & Grilo, 2009).

Observations About the Specific Case—I will offer a number of observations regarding this specific case that are illustrative regarding selected issues of relevance to clinicians and researchers. This case is typical in a number of important respects yet it differs in several important ways that I will note with a view of characterizing the heterogeneity of this behavioral disorder. Evolving research has identified a number of treatments that have efficacy for a majority of such patients although two major challenges remain. First, many patients with BED do not get accurately identified, and few receive empirically-supported treatments (Wilson, Grilo, & Vitousek, 2007).

Treatment-Seeking: Although obese patients with BED have elevated psychiatric and medical problems and greater health care utilization patterns relative to their obese peers who do not binge eat, they infrequently seek specialized psychological or psychiatric care for their binge eating. Obese persons who binge eat, along with many generalist health care providers, frequently see the binge eating problem as merely reflecting their obesity and need for better diet and weight loss. In this case, the patient and her physician discussed the need for weight loss, although her binge eating problem was not specifically addressed. Despite not being able to provide the patient with specific guidance, this interaction nonetheless represents an important first step. Many health care providers are uncomfortable in raising or discussing excess weight issues with their patients. This is likely due to a many reasons including, for example, negative biases or views about obesity, personal discomfort, perceived lack of expertise, and concerns about “harming” the therapeutic relationship (Puhl & Heuer, 2009). The patient-physician interaction in this case seemed positive enough to support and motivate the patient to seek more specialized care. It is critically important for generalist health care providers to be receptive and open when discussing their patients' excess weight and potential treatment avenues.

Clinical Presenting Picture: This patient presented with co-occurring obesity and BED. Although she had moderately elevated blood pressure and high cholesterol, she had not yet developed metabolic syndrome although she was clearly at risk to do so along with other medical problems. Thus, her proactive treatment-seeking is certainly a very positive step. This is noteworthy because some research has suggested that black women who are obese and who binge eat are less likely to seek treatment than their white peers until both problems are substantially worse (Grilo, Lozano, & Masheb, 2005; Pike, Dohm, Striegel-Moore, Wilfley, Fairburn, 2001). Her primary concern was her increasingly weight gain that started in her 30s despite numerous dieting attempts. More recently, her weight gain had increased markedly and this seemed related, in part, to her increased binge eating behaviors. Based on her clinical history, she did not seem to suffer from body image dissatisfaction or from body image disturbance that are characteristic of eating disorders. The EDE interview provides specific quantification of different aspects of body image disturbance and would yield detailed information regarding behavioral, affective, and cognitive aspects of body image to inform both treatment interventions and to assess changes over time (Grilo et al., 2001). Although the absence of such body image problems in this specific patient signals a less disturbed variant of BED (Grilo et al., 2008) with a positive prognosis (Masheb & Grilo, 2008a), treating the obese patient with BED will still remain challenging relative to treating obesity only (Grilo et al., 2008). She did not appear to have significant psychosocial problems either independent or

associated with the obesity and BED. Her psychosocial functioning seemed rather positive and this is not uncharacteristic of many patients with BED. Conversely, since it is not uncommon for many patients to have associated psychosocial problems, clinicians should routinely assess for any on-going difficulties as context for formulating and implementing treatment. Importantly, the patient did report a specific life stressor (her mother's death) which seemed associated with an intensification of her binge eating.

Psychiatrically, no additional lifetime or current problems were reported, although no formal structured diagnostic interview was administered. Patients with BED have elevated lifetime rates of psychiatric disorders, including most notably mood, anxiety, and substance use disorders (Grilo, White, & Masheb, 2009), although roughly 25% have never experienced another psychiatric problem. For comprehensive treatment formulation and planning, the presence of other psychiatric disorders should be carefully ascertained. However, it is noteworthy that psychiatric co-morbidity has not emerged as a significant predictor or moderator of outcomes for BED treatments that have empirical support (Masheb & Grilo, 2008b; see Wilson et al., 2007).

The positive smoking history is especially noteworthy in this patient. Unfortunately, the significance of smoking in this patient group is still poorly understood and is often overlooked by clinicians and researchers alike. This case suggests some potentially important associations among smoking, eating, and weight domains. First, preliminary research suggests that smoking histories are not uncommon in patients with BED and, if present, signal increased risk for psychiatric problems, most notably anxiety disorders (White & Grilo, 2006). Although this patient was not determined to have anxiety disorder co-morbidity, both binge eating and smoking may serve to regulate affect. The exacerbation of the patient's binge eating immediately following her mother's death and her smoking quit attempt can perhaps be conceptualized in this way (i.e., increased binge eating to cope with increased negative affect). Second, preliminary research also suggests that BED patients with smoking histories are characterized by heightened levels of maladaptive and rigid eating and dieting behaviors as well as heightened food "cravings" that must be addressed along with the binge eating (White & Grilo, 2007). Third, weight gain following smoking cessation is common and may be especially problematic for obese patients with BED. A recent study found that obese patients with BED reported gaining significantly more weight following a smoking quit attempt than their non-binge-eating obese peers (White, Masheb, & Grilo, in press). This patient's rapid recent weight gain following her most recent smoking quit attempt is consistent with this finding and represents an important clinical challenge because it potentially represents a challenge to continued abstinence.

This patient's eating behavior and patterns are fairly representative of patients with BED. First, binge eating occurs most frequently during evenings, although many patients report having episodes at varying times throughout the day. The large amount consisting of mixed foods often based on availability and ease is typical. Also typical in this patient group is that the binge eating often follows eating behaviors or episodes that are occurring without a sense loss of control. Unlike bulimia nervosa where the binge eating episodes are very clear episodes following excessive restraint, patients with BED are characterized by a more chaotic and amorphous eating pattern. This patient attempts some dietary restraint (skipping breakfast, not eating for long period following lunch) but her eating is fairly continuous throughout the evening. Rather than eating a clear meal (dinner), she appears to eat continuously and during part of this time also experiences a sense of loss of control. Thus, these patients require assistance in several complex tasks including: normalizing and scheduling their eating (i.e., not skipping meals), lessening certain maladaptive restraint behaviors (i.e., not going long periods without eating), increasing certain adaptive restraint behaviors (i.e., not overeating

during meals, not grazing or nibbling at odd times), in addition to eliminating the binge eating episodes (Allison, Grilo, Masheb, & Stunkard, 2006; Masheb & Grilo, 2006).

Treatment Options: Critical meta-analytic (NICE, 2004) and qualitative reviews (Wilson et al., 2007) of the treatment literature have concluded that cognitive behavioral therapy is the treatment of choice for BED. Studies of CBT for BED consistently report remission rates of 50% or greater along with broad improvements in associated psychological and psychosocial functioning, although weight loss tends to be minimal (Wilson et al., 2007). Different research groups have documented that CBT is superior to other active treatments, including behavioral weight loss therapy (Grilo & Masheb, 2005; Wilson et al., in press) and pharmacotherapy with fluoxetine (Grilo et al., 2005; Ricca et al., 2001), and that the benefits of CBT for BED are well-maintained through 24-months (Wilfley, Wilson, & Agras, 2008) following treatment. There is also some empirical support for two alternative psychotherapies (interpersonal psychotherapy and dialectical behavior therapy) which also produce substantial reductions in binge eating but, like CBT, fail to reduce weight (Wilson et al., 2007). Finally, there is also empirical support for behavioral weight control therapy (structured manualized treatment delivered by professionals but not necessarily for the widely-available commercial programs or self-help diets) for reducing binge eating although findings regarding weight losses are also surprisingly mixed (Grilo & Masheb, 2005; Wilson et al., 2007). Lastly, a critical meta-analysis of pharmacotherapy treatment research concluded that certain medications have a clinically significant advantage over placebo for producing short-term remission from binge eating and for reducing weight, although the weight losses tend to be quite modest and of uncertain clinical significance (Reas & Grilo, 2008). The meta-analysis highlighted the potential efficacy of an anti-obesity agent (sibutramine) and anti-epileptic medications (particularly topiramate) but suggested more limited utility of SSRIs given their smaller effects on binge eating and essentially no effect on weight. Unlike the psychosocial treatments, the longer-term effects of these medications are unknown. The few available data from blinded (Grilo, Masheb, & Wilson, 2005) and open-label (Ricca et al., 2001) trials directly comparing the effectiveness of pharmacotherapy and psychological treatments indicate that CBT is significantly superior to SSRIs. In terms of combining approaches, most studies have found that adding pharmacotherapy to psychological approaches has generally not enhanced outcomes (Reas & Grilo, 2008). Noteworthy exceptions are studies that reported adding orlistat (Grilo, Masheb, & Salant, 2005) or topiramate (Claudino et al., 2007) to CBT significantly enhanced the weight losses.

Treatment Course: Thus, it is fortunate that this patient sought treatment at a university-based program where she was offered an empirically-supported treatment. This patient's response to CBT was fairly typical in that she experienced an early and rapid response to the treatment (Grilo, Masheb, & Wilson, 2006; Masheb & Grilo, 2007), stopped binge eating entirely by the end of treatment, but unfortunately did not lose weight. Many obese patients with BED fail to lose clinically meaningful amounts of weight despite the substantial reductions in binge eating achieved via CBT, which is not unlike the case for other psychological (Wilson et al., 2007) and pharmacological treatments (Reas & Grilo, 2008). Although the patient failed to lose significant weight (only five pounds), the CBT and presumably the cessation of binge eating were associated with a stabilization of weight. The patient entered treatment following a period of rapid and marked weight gain so the weight stabilization does represent a potentially important first step. Unfortunately, the failure to produce weight loss does leave this patient at risk for developing medical problems and given her frustration and distress about the weight may put her at heightened risk for relapse in both the binge eating and the smoking domains.

Future Directions: Finding ways to produce or enhance weight loss in obese patients with BED represents a major research priority (Grilo, 2010). Interestingly, research has found that combining treatments, for example combining pharmacotherapy, has generally not enhanced

outcomes (Reas & Grilo, 2008). Possible notable exceptions have included findings from controlled trials suggesting that adding orlistat (Grilo, Masheb, & Salant, 2005) or topiramate (Claudino et al., 2007) may enhance weight losses achieved with CBT for BED. It has been suggested that greater attention to non-normative eating behaviors and patterns (Masheb & Grilo, 2006) in addition to the CBT focus on normalization of eating meals and reducing binge eating may facilitate greater weight loss. Future treatment studies should include analyses of mediators of outcomes in order to guide the process of improving further our existing treatments (Wilson et al., 2007).

Stephanie S. O'Malley, Ph.D.

This case history highlights the important interface between smoking and binge eating behavior and suggests how treatment of binge eating may have beneficial effects on maintenance of smoking abstinence.

Co-occurring Conditions and Complicating Factors—While smokers tend to be leaner compared to nonsmokers, a significant proportion of obese individuals smoke, placing them at increased risk of attendant health consequences such as diabetes and cardiovascular disease. Smoking related health consequences, experienced by the smoker or another family member, often motivate a smoker to quit as was the case for this patient. However, women compared to men are less likely to remain abstinent from smoking despite a motivating “health shock” for a variety of reasons, including concerns about weight gain. Smoking cessation can result in weight gain at one year of about 11 pounds on average, due to decreased energy expenditure, increased appetite and greater food intake. The degree of weight gain, however, is variable. Binge eating appears to be an important risk factor. In a retrospective study of overweight individuals who had quit smoking, those with significant binge eating problems gained substantially more weight in the year following smoking cessation (24.6 pounds) compared to those without binge eating (11 pounds) (White, Masheb & Grilo, in press).

Consistent with this report, this patient recently experienced rapid weight gain that initially began during the stressful period of her mother's illness and coincided with a four-month period of smoking abstinence. Her weight gain of 25 pounds over the recent six months, four of which followed smoking cessation, suggests that without intervention her binge eating is a major risk factor for continued weight gain.

Her maladaptive eating may also place her at risk of smoking relapse. Indeed, she reports that her urges to smoke had increased in recent weeks and were more intense in the evenings. Her pattern of depriving herself of food during the day and then binge eating in the evening could undermine maintenance of smoking abstinence in several ways. Food deprivation can increase the reinforcing effects of drugs, including nicotine, making any lapses to smoking more likely to promote continued smoking. Her efforts to resist eating may also tax her self-control resources and undermine her ability to resist smoking. The evening binge eating episodes she reports follow restricted eating during the day and may result in abstinence violation effects in which she experiences demoralizing recriminations over her loss of control. The resulting increase in negative affect and decreased self-efficacy could promote smoking urges and place her at risk of resorting to smoking to cope with negative affect, a common risk factor for smoking relapse. Finally, the expectation that smoking can limit binge eating is another risk factor for smoking relapse.

Treatment Considerations—Given this conceptualization, the treatment plan for her binge eating may help her also remain abstinent from smoking. The “meal prescription” of regular meals and several small snacks should prevent periods of food deprivation that could increase smoking urges, and diminished frequency of binge eating should increase feelings of self-

efficacy and remove the compensatory need for smoking to limit binge eating. The remission of her binge eating and the resulting stabilization of her weight may remove the motivation to resume smoking in an effort to manage her weight.

Cognitive behavioral therapy for eating disorders, including binge eating, also addresses the development of alternative coping skills for handling negative affective states and other triggers of maladaptive eating patterns. Given that many smokers use smoking to cope with negative affective states, teaching her alternative coping skills for handling negative affect is likely to have benefits that generalize and help her maintain abstinence from smoking. The therapist could make this connection explicit by examining the circumstances that elicit the urge to smoke, noting any parallels with the circumstances that provoke binge eating as a coping strategy and emphasizing that the new coping skills learned as alternatives to maladaptive eating could serve as alternatives to smoking as a coping response. Evidence for coping skills therapy targeted to one maladaptive behavior generalizing to another behavior is evident in a study of cognitive behavioral therapy for alcoholism, in which improvements in eating disturbances occurred in addition to reductions in alcohol intake (O'Malley et al., 2007). Learning new coping skills and introducing a regular pattern of eating during the day could ultimately minimize stress, a major precipitant of binge eating and smoking.

In the smoking literature, a recent meta-analysis concluded that smoking interventions that incorporate a weight control component result in short-term (< 3 months) improvements in smoking abstinence and reduced weight gain compared to smoking cessation interventions alone (Spring et al., 2009). In one study, for example, a cognitive behavioral intervention designed to reduce over-concern with weight gain improved smoking quit rates and reduce weight gain compared to standard care or a weight control intervention (Perkins et al., 2001). Further development of CBT interventions for weight concerned smokers may be well served by incorporating additional elements of CBT for binge eating, such as meal patterning, especially for those with a history of binge eating or other eating disorder that may predispose for the development or worsening of eating problems during a quit attempt. Likewise, the clinician should consider smoking history in the management of obese patients who present for treatment of binge eating disorder. As a group, these individuals have higher overall psychiatric co-morbidity and more severe binge eating pathology than overweight individuals without a history of smoking and may require specialized care (White & Grilo, 2006, 2007).

Marc N. Potenza, M.D., Ph.D.

Diagnostic Considerations—The current case describes the treatment of an individual who has demonstrated seemingly excessive engagement in two domains – tobacco use and food consumption. In anticipation of DSM-V, there exist discussions about how best to define and categorize disorders seemingly addictive in nature, and whether excessive engagement in non-drug behaviors (e.g., pathological gambling) might be grouped together with substance use disorders as addictions (Petry, 2006; Potenza, 2006). The current case raises questions about whether excessive eating behaviors manifesting in BED and/or obesity might similarly be considered within an addiction framework, and, if so, how such a conceptualization might influence studies into the etiology, prevention and treatment of “behavioral” and drug addictions (Grant et al., 2006; Holden, 2001).

Historically, the term “addiction” has undergone multiple changes in usage. Derived from the Latin word meaning “bound to” or “enslaved by”, the term was originally used independent of drug use. However, several hundred years ago the term became linked to excessive patterns of alcohol use and more recently drug use such that by the time when DSM-III-R was being generated, expert consensus was that “addiction” referred to compulsive drug-taking (O'Brien et al., 2006). More recently researchers have proposed core elements of addiction (continued engagement despite adverse consequences, a compulsive quality, an appetitive urge typically

preceding engagement in the behavior, and diminished self-control over the behavior) (Potenza, 2006; Shaffer, 1999). If these features are seen as the defining qualities of addiction, then conditions like BED and obesity might be considered as addictions (Volkow and O'Brien, 2007; Volkow and Wise, 2005).

Mechanisms and Treatment—Obesity, like addictions, appears to have multiple environmental and biological factors contributing to the disorder (Gearhardt, Corbin, & Brownell, 2009; Gold et al., 2009). For example, food availability and advertising may increase the societal rates of obesity (Brownell, 2004), and individual difference factors (e.g., specific genetic allelic variants) may predispose people to greater risks for obesity (Paracchini et al., 2005; van Deneen et al., 2009). Arguably, a historical focus on the biological mechanisms underlying obesity has involved metabolism and imbalanced energy homeostasis (i.e., “energy in” and “energy out”) (Abizaid et al., 2006). However, the application of motivational behavioral models to food consumption, like those that have been applied to drug use (Chambers et al., 2003; Everitt and Robbins, 2005), may lead to identification of novel factors involved in the pathophysiology of obesity and BED (Volkow and Wise, 2005; Hoebel et al., 2009). Given that neurocircuitry implicated in drug abuse appears similarly implicated in obesity (e.g., relatively diminished dopamine D2-like receptor availability in the striatum (Wang et al., 2004; Wang et al., 2009)), additional research is warranted to understand more completely the biological similarities and differences between drug addictions and obesity. The more complete and precise identification of these similarities and differences could help advance prevention and treatment strategies across disorders. Such a strategy has proven fruitful for pathological gambling, where proposed mechanisms underlying pathological gambling and substance addictions led to the hypothesis that opioid antagonists such as naltrexone, approved for the treatments of alcohol dependence and opioid dependence, would be efficacious in the treatment of pathological gambling (Brewer et al., 2008; Grant et al., 2008; Tamminga and Nestler, 2006). Analogously, glutamatergic agents (e.g. N-acetyl cysteine) have demonstrated initial promise with respect to weight loss, tobacco smoking, pathological gambling and cocaine dependence (Souza et al., 2008; Knackstadt et al., 2009; Grant et al., 2007; LaRowe et al., 2006), and further research is needed to further evaluate their efficacies and tolerabilities, particularly amongst dually diagnoses populations.

Co-occurring Conditions and Complicating Factors—Specific aspects of the case also warrant mention as they relate to the relationship between disorders, like drug dependence, typically have been conceptualized as addictions and others, like obesity and BED, that typically have not. For example, it is noteworthy that the patient reports having recently quit smoking prior to entering treatment, as well as having had several periods of time when she was smoking regularly and others when she had quit for prolonged durations. This pattern raises questions about the natural history of smoking and eating behaviors, both individually and in conjunction. Addictions have historically been considered chronic relapsing conditions, a conceptualization based in considerable part on clinical samples. Epidemiological data suggest that both “behavioral” and drug addictions might follow less pernicious natural histories than originally thought, with many individuals recovering without formal interventions (Slutske, 2006; Tamminga et al., 2006). Nonetheless, many individuals do require formal interventions, often on multiple occasions. Furthermore, how one behavioral domain might influence the other is incompletely understood. The phenomenon of “switching addictions”, as is suggested in other domains (e.g., alcoholism and problem gambling (Potenza et al., 2005)), may be reflected here in increased food cravings, food consumption and weight gain following smoking cessation, with multiple possible contributing mechanisms related to motivation, metabolic changes, stress reduction, or coping with uncomfortable or dysphoric states, as Dr. O'Malley indicates.

Life stressors appear to play an important role in the patient's clinical course, both with respect to smoking and eating. As such, therapies like CBT that include instruction in healthy coping strategies might be particularly relevant for the patient. From a biological perspective, the neural mechanisms underlying stress responses overlap with those implicated in impulse control and addiction (Kalivas and Duffy, 1989; Piazza and Le Moal, 1996). Consistently, identification of specific intermediary phenotypes or endophenotypes in the domains of stress responsiveness and impulsivity would appear to have important implications across a broad range of disorders, including obesity, BED and nicotine dependence (Blanco et al., 2009). As Dr. Grilo notes, combinations of pharmacological and behavioral therapies might be most helpful for BED, and consideration of pharmacological agents that target important intermediary phenotypes will represent important areas of future development.

Concluding Comments and Future Directions: The changes over time in the patient's smoking and eating behaviors highlight the importance of considering behaviors with addictive potential within a developmental framework, particularly as early problems have important implications for adult functioning (Chambers et al., 2003). Early life interventions aimed at developing healthy eating, exercise, stress-coping skills, emotional regulation and general health behaviors at early ages, and particularly involving youth who might be considered high-risk, will be important in preventing the development of a broad range of addictive disorders including obesity (Merlo et al., 2009). Public health interventions like those that appear effective in reducing youth smoking (e.g., increased taxation of cigarettes) warrant consideration for foods associated with obesity (Brownell et al., 2009). It is likely that only through multiple interdisciplinary approaches will we be able to effectively target the public health concerns of obesity and drug addictions, ones that currently are estimated to cost US society hundreds of billions of dollars annually and impart significant personal and familial suffering (Surgeon General, 2001; Uhl and Grow, 2004; Potenza and Taylor, 2009).

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