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Addressing Weight Suppression to Improve Treatment Outcome for Bulimia Nervosa

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Abstract

Cognitive behavioral therapy (CBT) is regarded as the gold-standard treatment for bulimia nervosa (BN), yet despite impressive empirical support for its effectiveness, over 50% of patients fail to achieve abstinence from binge eating and purging by the end of treatment. One factor that may contribute to reduced efficacy rates in CBT is weight suppression (WS; the difference between a person's highest weight ever at their adult height and current weight). A growing body of research indicates that WS in patients with BN may have a clinically significant effect on symptomatology and prognosis. However, the current cognitive behavioral framework for BN does not explicitly acknowledge the role of WS in the onset or maintenance of BN symptoms and does not provide guidance for clinicians on how to address WS during treatment. The relationship between WS, biological pressure to regain lost weight, and the maintenance of BN symptoms suggest that current cognitive behavioral models of BN may be improved by considering the role of WS and exploring needed treatment modifications. Indeed, a reconceptualization of existing models may offer insight into potential strategies that can be used to reduce the susceptibility to treatment dropout, nonresponse, and relapse. It is therefore necessary to consider whether, and how, clinicians' consideration of WS during case conceptualization and treatment planning could serve to improve CBT outcomes. The current review explores ways in which high WS could contribute to poor CBT outcomes, provides preliminary clinical recommendations for incorporating WS into existing cognitive behavioral treatments based on extant data and clinical wisdom, and proposes suggestions for future research needed in this domain.

Keywords

bulimia nervosa; weight suppression; cognitive and behavioral treatment; treatment modifications

Cognitive behavioral therapy (CBT) is currently the most empirically supported treatment approach for bulimia nervosa (BN), a disorder characterized by binge eating, compensatory behaviors, and an overvaluation of the importance of body shape and weight (American

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Psychiatric Association, 2000; Shapiro et al., 2007; Wilson, Grilo, & Vitousek, 2007). CBT is primarily a behavioral treatment approach that uses techniques such as psychoeducation, self-monitoring of food intake, establishing regular eating, and binge analysis to reduce bulimic symptoms (Fairburn, 2008). A recent enhanced version (CBT-E) incorporates information on additional maintenance mechanisms of the eating disorder psychopathology, including clinical perfectionism, core low self-esteem, difficulties coping with mood states, and interpersonal difficulties (Fairburn, 2008).

Despite the successful results of CBT for eating disorders, many patients remain partially symptomatic by the end of treatment, and relapse is common (Halmi et al., 2002). By 2 years posttreatment, only 30%–50% of CBT patients stop binge eating altogether, leaving a majority of patients still experiencing binge episodes (Keel, Mitchell, Miller, Davis, & Crow, 1999; Mitchell et al., 2002; Poulsen et al., 2014). Recent trials of CBT-E show similar rates of response (Byrne, Fursland, Allen, & Watson, 2011; Fairburn et al., 2015; Fairburn et al., 2009). While CBT is a successful treatment for many individuals, the number of patients who remain partially or fully symptomatic after a full course of treatment indicates a need to continue adapting CBT to better address the needs of the individuals who fail to benefit. Identifying subgroups of patients who respond poorly to CBT and developing more effective interventions that address relevant maintenance factors among nonresponders is one strategy that could improve outcomes.

One subgroup of patients who may benefit from augmentations to CBT are individuals who are weight suppressed. Weight suppression (WS) represents the discrepancy between the highest weight reached since attaining adult height and current weight. While patients with BN are typically in the normal weight range when presenting for treatment, many have lost a large amount of weight during the development of their disorder (Lowe, Davis, Lucks, Annunziato, & Butryn, 2006). As described in more detail below, intentionally keeping one's weight far below a previous high point can lead to a host of cognitive, emotional, and biological consequences that can drive continued eating pathology. For these reasons, WS has consistently been shown to predict the onset and maintenance of eating pathology (Butryn, Juarascio, & Lowe, 2011; Butryn, Lowe, Safer, & Agras, 2006; Garner & Fairburn, 1988; Keel & Heatherton, 2010; Lowe, Thomas, Safer, & Butryn, 2007; Mitchell et al., 2011) and length of time to remission from BN (Lowe et al., 2011). WS has also predicted CBT treatment outcomes in some trials (Butryn et al., 2006), though findings are conflicting (Carter, McIntosh, Joyce, & Bulik, 2008) and will be discussed in detail below.

While the data on the role of WS in the etiology and maintenance of BN and the impact of WS on treatment outcomes is still in its infancy, there is a growing consensus in the field that WS is a relevant construct in BN pathology. However, thus far, CBT models of BN have not accounted for WS as a relevant factor in the maintenance of BN pathology. Existing CBT for BN fail to provide clinicians with sufficient guidance about the potential impact WS can have on normal-weight BN patients or how to incorporate WS into the case conceptualization and treatment plan. In this paper, we aim to (a) discuss how WS contributes to the etiology and maintenance of eating disorder symptoms and impacts treatment outcome; (b) address the need for a reconceptualization of CBT to incorporate WS as a maintenance factor for some individuals with BN pathology; (c) discuss methods for

augmenting CBT for individuals with WS based on the data available to date; and (d) identify areas for future research needed to broaden understanding of the role of WS in the development and treatment of BN and related eating disorders.

Weight Suppression and the Etiology and Maintenance of Eating Pathology

Most individuals with BN present for treatment with some degree of WS, with a reported mean WS of 9.4 kg (3 BMI units) among BN outpatients (Butryn et al., 2006) and a higher average WS of 12.0 kg among BN inpatients (Lowe, Davis, et al., 2006). Researchers have hypothesized that WS may predict the onset and maintenance of BN symptoms due to the impact WS has on biological pressure to regain lost weight (Astrup et al., 1999; Leibel, Rosenbaum, & Hirsch, 1995; Rosenbaum, Kissileff, Mayer, Hirsch, & Leibel, 2010; Rosenbaum & Leibel, 2010). Weight loss, even among healthy individuals, leads to reduced energy expenditure, which can increase vulnerability to weight gain (Rosenbaum et al., 2010). The metabolic slowing that occurs following WS can contribute to strong biological pressures to regain the previously lost weight (Carter et al., 2008; Herzog et al., 2010; Lowe, Annunziato, et al., 2006; Lowe, Davis, et al., 2006; Stice, Durant, Burger, & Schoeller, 2011), which is distressing for individuals who fear weight gain. Reductions in body weight have also been associated with changes in energy intake, food preference, and reported satiety that lead to greater caloric consumption (Rosenbaum et al., 2010). More recent research has identified an inverse relationship between WS and leptin, a hormone associated with decreased energy intake, and a positive relationship between WS and the reinforcement level of food, indicating that WS may be a marker of both appetitive and metabolic risk for future weight gain (Bodell & Keel, 2015).

Consistent with these predictions, WS predicts weight gain in BN patients during and after treatment (Carter et al., 2008; Herzog et al., 2010; Lowe, Davis, et al., 2006). Gwirtsman et al. (1989) found that normal-weight women with BN require fewer calories to maintain a stable body weight compared to women without BN, which may be due to the elevated levels of WS in women with BN. The strong biological pressure to regain lost weight may explain why WS consistently predicts the frequency of binge eating episodes (Butryn et al., 2011; Lowe et al., 2007; Mitchell et al., 2011) in patients with BN. Efforts to maintain WS or counteract weight gain may also explain why WS predicts restrictive dieting and purging behaviors (Butryn et al., 2011; Butryn et al., 2006; Garner & Fairburn, 1988; Lavender et al., 2015). Patients with WS appear to be stuck in a “bio-behavioral bind,” because BN patients high in WS are more susceptible to weight gain (due to metabolic efficiency and binge eating) but also find weight gain highly threatening, leading to more weight loss attempts and fueling a self-perpetuating cycle. Importantly, more recent literature suggests WS is predictive of clinical impairment in social, cognitive and personal domains (Hagan, Clark, & Forbush, 2017). It is noted that the association between WS and BN behaviors may also be in part driven by attempts to suppress fears of weight gain. For example, research suggests BN patients engage in thought and/or emotion suppression, or the tendency to avoid negative or unpleasant cognitions (Lavender, Jardin, & Anderson, 2009; Svaldi, Caffier, & Tuschen-Caffier, 2010); fear of weight gain among weight-suppressed patients could therefore also increase the likelihood of engaging in bulimic behaviors.

Weight Suppression, Time to Remission, and Treatment Outcome

Several studies have found that WS predicts time to remission and treatment outcome for BN patients (Butryn et al., 2006; Keel & Heatherton, 2010; Lowe et al., 2011). An 8-year longitudinal study followed progression of BN treatment-seeking patients and found that patients with higher WS took a longer time to reach full remission (Lowe et al., 2011). Keel and Heatherton (2010) also investigated the magnitude of WS and found that higher WS predicted symptom maintenance at 10-year follow-up. Butryn et al. (2006) found WS to be a significant predictor of CBT treatment outcome, including likelihood of dropout and persistence of BN symptoms following treatment. It should be noted that despite these associations, findings on WS as a predictor of outcome have been somewhat inconsistent. For example, both Carter et al. (2008) and Zunker et al. (2011) did not find WS to be a predictor of treatment response. In both these studies, however, the degree of WS was not as great, or as variable, as those reported in Butryn et al. (2006), suggesting that WS may need to be relatively high before it begins to impact treatment. However, a more recent study also failed to find a relationship between WS and treatment outcome, despite a similar magnitude of mean WS (Dawkins, Watson, Egan, & Kane, 2013). As such, data elucidating how substantial WS needs to be before it begins impacting time to remission or treatment outcomes is lacking. Despite the mixed findings reported above, the impact of WS on time to remission and treatment outcome appears worthy of additional study.

Incorporating WS Into CBT for BN

The current cognitive behavioral framework for BN does not explicitly acknowledge the role of WS in the onset or maintenance of BN symptoms. Existing CBT and CBT-E models classify BN as a “cognitive disorder,” suggesting that the development of BN symptoms is primarily driven by overvaluation of shape and weight (Fairburn, 2008). While these models do acknowledge the physical effects of weight loss in underweight patients as a mechanism of this disorder and support rigid dieting as a core maintenance factor in BN, they fail to acknowledge that WS in healthy-weight individuals can encourage continued BN symptoms. CBT suggests that the primary effect of dieting on BN symptoms is cognitively mediated; CBT models note a possible influence of short-term deprivation (e.g., fasting) but do not consider that the biological aspects of WS could support the maintenance of both binge eating and compensatory behaviors. The relationship described above between WS, biological pressure to regain lost weight, and the maintenance of BN symptoms suggest that current models of BN may be improved by acknowledging the role of WS and exploring needed treatment modifications. Indeed, a reconceptualization of existing models may offer insight into potential strategies that can be used to reduce the susceptibility to treatment dropout, nonresponse, and relapse. In the remainder of this paper, we will provide preliminary clinical recommendations for incorporating WS into existing cognitive behavioral treatments based on clinical theory and existing data (when available), as well as suggestions for future research to better understand how WS can be addressed in CBT.

Case Conceptualization/Identification

Given evidence that BN patients have elevated premorbid BMIs (Fairburn, Welch, Doll, Davies, & O'Connor, 1997; Garner & Fairburn, 1988; Shaw et al., 2012), and the evidence that degree of WS is related to frequency of binge eating and compensatory behaviors (Butryn et al., 2011; Butryn et al., 2006; Lavender et al., 2015; Lowe et al., 2007; Mitchell et al., 2011), we believe that clinicians should assess for and incorporate WS into their clinical conceptualizations for patients with BN. Below we describe aspects of a patient's weight history and trajectory that could inform case conceptualization and treatment planning. A modified schematic of the CBT for BN model including factors relevant to weight suppression is available in Figure 1. As noted below, all additions to this model should be considered tentative based on the existing state of research, and additional study is needed to confirm these proposed relations.

Clinical Recommendations—We recommend that clinicians collect a detailed time line of weight trajectory early in treatment. Fairburn's CBT already recommends that therapists assess for certain aspects of weight history, including weight before and after the eating disorder, and lowest and highest weight since developing the eating disorder (Fairburn, 2008). However, this approach assigns little meaning to weight history in the course of treatment, providing the majority of patients with the same information about weight. Further, CBT only emphasizes weight gain for patients below a certain weight, and argue that encouraging greater amounts of weight gain is "unrealistic" (p. 159, Fairburn, 2008). In addition to these variables, we suggest that clinicians more thoroughly assess weight history and variability, including current weight, multiple past weights (highest, lowest, and relevant fluctuations in between), and length of time at each weight, as a measure of the patient's weight change. The use of a standardized assessment tool such as the Dieting and Weight History Questionnaire (Witt, Katterman, & Lowe 2013), which assesses for relevant weight history, may help to facilitate collection of this information. A more complete assessment of weight history will help clinicians identify patterns of weight change and consider the implications of a patient's current WS in the context of other variables. Prior research has demonstrated that WS's impact on BN symptoms may interact with other aspects of weight history, including current BMI (Bodell & Keel, 2015; Butryn et al., 2011). In addition to the factors of weight history that existing data suggest interact with WS, there are others that, in theory, could also be relevant for case conceptualization but have yet to be empirically evaluated. For instance, the effects associated with WS may be more pronounced if the patient was at her highest weight for several years before experiencing BN-related weight loss. Conversely, a patient who has remained significantly weight suppressed for several years following a brief period of weight gain early in college and whose subsequent weight loss was not due to BN symptoms may experience less negative effects due to WS. While data are not currently available to demonstrate that the length of WS or period of time the patient remained at their highest weight are relevant factors, clinical wisdom suggests that these constructs may be relevant for therapists to consider when assessing the potential impact of WS on current symptoms.

In addition to gathering objective information about weight history, a patient's subjective interpretation of weight, such as current and past weight goals and levels of distress

associated with past weight fluctuations, should also be considered. For instance, if a patient considers his/her body weight to be of supreme importance and has been historically intolerant of minor weight gain, this patient may react to even a very small weight gain during treatment with an increase in maladaptive compensatory behaviors to reduce weight. A patient might also assume that any weight gain means that she is very likely to return to her highest previous weight, an outcome the patient may greatly fear. As such, this patient may be at risk for dropout or relapse in the event of weight gain, and treatment may need to be augmented to ensure that this patient does not drop out during the introduction of regular eating. While little is known empirically about the interaction between WS and fears of weight gain during treatment, clinical wisdom would suggest that an interaction between these factors is worth considering.

Future research: Research is needed to determine what level of WS should be considered clinically significant and likely to impact symptom maintenance. Although a number of studies have demonstrated that greater WS is associated with more bulimic symptoms (Butryn et al., 2011; Butryn et al., 2006; Lavender et al., 2015; Mitchell et al., 2011) and longer time to remission (Lowe et al., 2011), there is currently no recommended value for clinicians to use when determining the clinical significance of WS in any one individual patient. Part of the challenge in identifying what level of WS should warrant concern is that WS is unlikely to function purely in isolation, and instead likely interacts with several other facets of weight history (e.g., current BMI; Lavender et al., 2015).

Although CBT encourages the collection of some facets of weight history, additional research is needed to document whether a more in-depth assessment of weight history could improve case conceptualization and treatment outcomes for BN patients. As described above, while there is some evidence to suggest that WS may interact with other factors (e.g., current BMI) to predict symptom maintenance, we have yet to empirically evaluate many cognitive (e.g., beliefs about likelihood of future weight gain or the effectiveness of compensatory behaviors in preventing weight gain), affective (fear or anxiety about weight gain), and biological variables (history of weight variability, length of time patient has been below their past high weight, length of time at previous high weight) that clinical wisdom would suggest could be relevant factors. For example, starting weight or current BMI could affect the clinical implications of WS: A weight-suppressed patient whose highest weight was in a normal BMI range and whose current weight is in a low BMI range may be more prone to weight gain than a weight-suppressed patient whose highest weight was considered overweight, and whose current weight is on the high end of normal. Additional research is clearly needed to identify the potential moderating variables that could inform how WS influences the maintenance of BN symptoms and treatment outcomes.

Finally, while the DWHQ gathers objective information on prior weight changes, it does not presently assess for age and length of time at each weight (thereby capturing a timeline of weight fluctuations and corresponding BMI), methods of weight loss at each time point, concurrent symptom severity, or subjective interpretation of a weight at each time-point (e.g., whether the patient found this weight acceptable or unacceptable, whether she wanted to lose more or maintain this weight, etc.). The development of additional questions for the DWHQ, or other standardized tools to assess for these specific constructs at intake and

throughout treatment, may facilitate better understanding of the weight-related mechanisms involved in treatment outcome.

Modifying Interventions to Address Weight Suppression

In addition to integrating historical and current body weight as factors of importance in case conceptualization, clinicians may also use this information to alter aspects of CBT or incorporate additional intervention components to better address WS in treatment. To date, there exist no empirically supported treatment techniques designed to address WS in the context of BN symptoms; the techniques we describe below therefore represent possible augmentations to treatment based on theory and clinical experience. We also describe in detail the additional research that is needed to fully inform how best to modify existing CBT for individuals with WS.

The strategies described below may be particularly useful for patients who appear to be prone to weight gain during treatment (e.g., individuals with a sizable degree of WS, clinically significant weight gain observed while initiating regular eating interventions) or individuals who have trouble tolerating the distress associated with potential weight gain and who are therefore unwilling or unable to reduce dietary restraint. The clinical recommendations discussed below involve (a) incorporating education about weight trajectories and the efficacy of BN symptoms in preventing weight gain into early treatment interventions, (b) fostering a willingness to gain a small amount of weight using psychological strategies, and (c) providing patients with healthy dieting and weight-maintenance strategies.

Incorporating Education About Weight Trajectories and the Efficacy of BN Symptom Into Early Treatment Interventions—We recommend that clinicians integrate weight history into the current cognitive-behavioral framework by addressing its role in the etiology and maintenance of BN. A summary of current research findings presented to the patient in a straightforward and comprehensible format may be one means through which to share relevant information with patients and increase motivation. For example, in discussing a patient's disorder and weight history, therapists could describe common weight patterns identified in BN (e.g., WS and larger weight fluctuations), and note similar patterns in the patient's weight history (Butryn et al., 2006; Lowe, Davis, et al., 2006; Shaw et al., 2012). In doing so, the clinician may point out that the patient's prior efforts to lose weight actually contributed to the development of the disorder. Clinicians could then introduce the potential relationship between WS and subsequent weight gain, noting that while severe food restriction or rigid dietary rules may be necessary to prevent weight regain, they may actually impair long-term weight control. For example, the clinician could say to the patient, "People who have bulimia tend to lose a lot of weight early on in their disorder. However, the heavy restriction and resulting weight loss can influence a person's ability to keep weight off due to changes in their metabolic rate and changes in their reactions to food. These factors usually begin to lead to fluctuations in weight, which can be both distressing and eventually result in eventual weight gain. This process shows how the work you are doing to try to lose weight, such as the strict dietary rules you try to follow, will likely lead to weight gain in the long term." Additionally, clinicians could note

that while dieting “successes” (i.e., weight loss) may be temporarily relieving to the patient, it will likely also make weight regain more likely because of the effects of weight loss on metabolism (a decrease) and appetite (an increase), thereby inadvertently perpetuating the disorder. Here, clinicians could draw the patient’s attention to the “catch-22” that WS has placed them in, whereby large weight loss causes weight regain, which increases distress and perpetuates reliance on eating disorder behaviors to achieve dramatic weight loss (see Figure 2).

A visual demonstration of the patient’s individual weight trajectory over time and corresponding symptom severity may be helpful in conveying both the patient’s magnitude of WS and its potential implications. A model of the bio-behavioral bind associated with WS may also be presented as a visual demonstration of the relationship between WS and weight gain (see Figure 3 for a sample demonstration of psychoeducation). Discussion of WS as linked to both reduced metabolic efficiency and higher binge-frequencies and/or size could promote a patient’s motivation for treatment by giving them hope that they may be able to gain control over a self-perpetuating cycle that has been controlling them. Moreover, given that purging is much less effective at eliminating calories than most patients assume (Bo-Linn, Santa Ana, Morawski, & Fordtran, 1983; Kaye, Weltzin, Hsu, McConaha, & Bolton, 1993), clinicians should advise that even when followed by purging, the increased binge eating associated with WS will still likely contribute to positive energy balance, and subsequent weight gain (Butryn et al., 2006). Therefore, if a patient is highly concerned about future weight gain, presentation of the potential future weight-related implications of her current BN symptoms may encourage her to view these habits less favorably, and perhaps motivate her desire to identify and engage in other, more adaptive behaviors. In presenting these findings, clinicians should be careful to introduce these concepts gradually and supportively, perhaps addressing the shared goal of identifying other, more adaptive behaviors. Framing this as an attainable goal, one may not only provide hope to the patient that there are other ways of managing both their weight and their weight concerns, but may also help to build rapport between clinician and patient.

Future research: Future research is needed to elucidate whether education related to WS and weight history significantly impacts patient understanding, motivation, and treatment outcome. Moreover, if education about the impact of WS and weight history is established as a clinically effective treatment strategy (by improving motivation and increasing compliance with treatment recommendations), different methods of education should be tested to identify the most effective times and methods through which to implement this portion of treatment. For example, research evaluating methods of education could consider and compare ways to (a) present relevant research findings (e.g., visual or verbal presentations, determining the order in which to address findings), (b) facilitate discussion and identify similarities between findings and the patient’s experience (e.g., first introduce research and then identify similarities within the patient, or vice versa), and (c) respond to patient reactions (e.g., most effective ways to respond to frequent patient responses or questions). Other potential forms of education may also be recommended, and should be researched accordingly.

Fostering a Willingness to Gain a Small Amount of Weight Using

Psychological Strategies—As described above, patients with WS will often experience biological pressure to regain lost weight. Cessation of BN symptoms (particularly compensatory behaviors and strict/rigid dieting) combined with the regular eating intervention that is a core treatment strategy in CBT therefore may realistically lead to weight gain for many of these individuals. Continued efforts to keep weight at a suppressed level may require the patient to continue engaging in restrictive eating behaviors and/or compensatory behaviors that prevent a full recovery from BN symptoms. For example, a study of dietary restraint among 134 female BN patients found no significant change in less extreme restraint behaviors from pre- to posttreatment, despite a significant decrease in more extreme dietary restraint behaviors specific to eating disorders (Safer, Agras, Lowe, & Bryson, 2004), suggesting that remitted BNs may retain a high level of restraint after treatment. For these reasons, patients with WS may need to be willing to gain a small amount of weight during the course of CBT for treatment to be fully effective; this might particularly be the case if a patient's WS level is high and her current BMI is low (e.g., below 22). If patients' symptoms persist during treatment, slight weight gain may reduce the biological pressures toward weight gain associated with WS, which may in turn lessen the patient's need to engage in eating disorder symptoms to avoid weight gain. Clinicians could note to patients that some weight gain could reduce urges to binge and provide greater perceived control over eating behaviors. Emphasizing flexibility in their weight and encouraging acceptance of weight fluctuation during therapy could aid patients' ability to tolerate weight gain. To increase the patient's willingness to gain a small amount of weight, clinicians could introduce a weight "compromise," where the patient is encouraged to compromise between her perceived ideal weight, current weight, and her highest past weight. Patients' motivation could also be increased by discussing the pros and cons of weight change in more detail and emphasizing other important aspects of their lives.

Patients who acknowledge that weight fluctuation or even a small amount of weight gain could be beneficial in treatment may still have difficulty engaging in the behavioral changes needed to alter their eating behaviors due to difficulty tolerating the distress that occurs when changing binge eating behavior (Whiteside et al., 2007). These patients could benefit from the provision of distress tolerance techniques. Distress tolerance is a core construct of many third-wave behavioral treatments such as Dialectical Behavioral Therapy and Acceptance and Commitment Therapy, both of which have shown promise for the treatment of eating pathology (Hayes, Strosahl, & Wilson, 2011; Hill, Masuda, Melcher, Morgan, & Twohig, 2015; Juarascio et al., 2013; Juarascio, Manasse, Schumacher, Espel, & Forman, 2016; Linehan, 1993; Masuda & Hill, 2013; Safer & Jo, 2010). The integration of constructs from these treatment approaches into standard CBT for BN could be one option for augmenting treatment. If an individual becomes extremely anxious about discussing weight gain or refuses to try gaining weight, clinicians could address patient distress by educating her on the transient nature of emotions and encouraging the patient to be willing to tolerate distress in the service of achieving the long-term goal of reducing BN symptoms. Incorporating imaginal or in vivo exposures involving weight gain may also help to reduce anxiety over time. It may also be beneficial to ask patients to engage in distress tolerance by practicing, observing, and accepting uncomfortable internal experiences or by using planned

distraction activities based on patient's preferences (for distraction and self-soothing techniques, see Linehan, 1993). Specifically, therapists could help patients practice urge surfing, or to teach patients to notice physical discomfort associated with urges and wait for it to pass. Some examples of distraction strategies might include encouraging patients to engage in an enjoyable activity or hobby, such as calling a friend or reading a book.

In addition to the strategies listed above, the patient's overvaluation of weight and shape may also need to be addressed if it is reducing the patient's willingness to tolerate weight gain. It is possible that patients may not be aware of how significantly weight and shape influence their self-evaluation, which may impede their ability to adhere to weight-related treatment interventions. Clarifying the patient's current system of evaluation (i.e., their tendency to overvalue weight and shape) and their desired system of evaluation (i.e., evaluating themselves according to other valuable aspects of their lives) may be helpful. For example, the therapist could ask the patient, "On what aspects of your life do you evaluate yourself as a person right now?" and "Is there anything you would like changed? How would you like to evaluate yourself as a person? What else is important to you?" While overvaluation of weight and shape should be independently targeted in treatment, revealing the limitations and impairments caused by their current evaluation system and reminding the patient of other valued aspects of life could increase the patient's motivation for actual weight change. For example, the patient could be encouraged to refer to her tendency to overvalue weight and shape to anticipate difficulties or distress she will experience if and when weight gain occurs. Addressing concerns with both actual weight and the patient's system of self-evaluation is therefore advised to help the patient develop an approach to weight that is healthier and acceptable to the patient.

Future research: Research in this area needs to specify which, if any, of the treatment strategies suggested above are able to improve treatment outcomes in individuals with WS. While the suggestions above offer potential strategies to augment existing treatment for patients with WS, additional research should identify which interventions are best suited to help someone become more willing to gain weight if doing so could increase the likelihood of treatment success. Similarly, research may be employed to identify whether minimal weight gain in individuals with WS is associated with improved treatment response and symptom reduction, and also to establish clinically appropriate amounts of weight gain depending on weight history and current BMI.

Teaching Healthy Weight-Control Strategies—WS research supports the novel perspective that the regulatory challenges eating disorder patients face extend beyond dysregulated eating to dysregulated body weight. Given that eating and weight are inextricably linked, it may be most beneficial for some patients—particularly those vulnerable to future weight gain—to employ strategies that simultaneously address both difficulties. Therefore, in addition to addressing willingness toward weight gain, it may also be useful to teach patients adaptive strategies for healthy weight regulation. Such strategies could provide patients with the ability to regulate their caloric intake and expenditure to achieve an energy balance that will allow sustained weight. Teaching these strategies may also reduce some of the discomfort associated with weight gain by reducing the magnitude

of weight fluctuations. There is some experimental evidence that teaching individuals with BN healthy dieting habits reduces binge-eating more than treatment as usual, suggesting that healthy dieting may not only have positive health effects but could also help reduce bulimic symptoms (Burton & Stice, 2006; Stice, Martinez, Presnell, & Groesz, 2006; Stice, Presnell, Shaw, & Rohde, 2005). These strategies include teaching healthy dieting habits such as eating foods that are lower in energy density, eating smaller portions regularly throughout the day, eating a wide variety of foods (in moderation), encouraging moderate exercise, and identifying when dieting becomes unhealthy. Patients may feel more comfortable in gaining small amounts of weight if they know they will be learning healthy dieting strategies designed to limit the extent of weight gain. Clearly defining unhealthy practices (e.g., completely removing certain foods from a diet and refraining from eating for long periods of time) is also a priority when discussing weight-control strategies.

Future research: Research in this area needs to (a) identify potentially adaptive strategies for weight maintenance (e.g., exercise, healthy eating habits following less a less rigid set of guidelines), and (b) determine whether these strategies can be implemented in a healthy, nonmaladaptive way to reduce the incidence of BN symptoms during and after treatment. Research should also investigate the utility of these alternate strategies in BN patients with elevated WS.

Case Example of Patient Presenting With WS

Kate, a hypothetical patient, enters treatment weight suppressed 20 lbs (identified by completing the DWHQ during her intake), at a BMI of 20 (5' 5", 120 lbs) and reports dietary restriction combined with nightly binge eating and self-induced vomiting. Her overvaluation of the importance of shape and weight and the feelings of control that restricting provides her appear to maintain her symptoms. Treatment begins with typical CBT strategies including regularizing eating, self-monitoring, and addressing case formulation intervention points (Fairburn, 2008). Early in treatment, Kate and her therapist discuss the role of past and present WS as a potential maintenance factor and about the tendency of more weight-suppressed individuals to gain weight over time, a common trajectory of weight among BN patients. Initially, Kate commits to treatment and completes homework assignments. Although she begins eating more regularly and starts incorporating a small number of palatable food choices she previously avoided, she rarely reports feeling full after her meals and still experiences frequent urges to binge eat. Her weight has been fluctuating throughout treatment, and often small amounts of weight gain (e.g., of 1 or 2 lbs) appear to trigger restriction and subsequent binge episodes and compensatory behaviors. The patient reports feeling stuck and is fearful of making additional changes to her diet.

Kate's therapist decides that based on Kate's weight trajectory in treatment as well as her reported fears of weight gain combined with continued restrictive eating behaviors (particularly following times Kate experiences an increase in weight), WS may be interfering with treatment progress. In order to see additional progress, it may benefit Kate if she is willing to gradually gain a small amount of weight so she can (a) engage in a less restrictive diet, (b) experience fewer urges to binge eat, and (c) learn to challenge her beliefs that a small weight change will dramatically affect her life. Kate's therapist initiates a

collaborative dialogue with Kate and together they discuss the pros and cons of tolerating a small amount of weight gain. While Kate still identifies several cons to weight gain (e.g., feeling less attractive, fears that once she starts gaining weight she will keep gaining beyond her previous high point), she is also able to acknowledge that there could be some pros to weight gain (e.g., being able to eat more food at meals, feeling more in control of her eating if the urges to binge eating are less frequent, being able to eat with friends at a restaurant). She also notes that an overall reduction in her BN symptoms could help her function better at school and work, develop more friendships, worry less about her eating, and explore her other interests such painting and drawing.

The primary barrier for Kate to begin changing her eating behaviors appears to be due to difficulty tolerating fears of uncontrolled weight gain when she is less rigid about her eating behaviors. Therefore, Kate's therapist decides to incorporate both distress tolerance techniques and healthy eating and exercise strategies into treatment. While the therapist acknowledges that she cannot perfectly predict how much weight Kate might gain if she begins to eat a less restrictive diet and resist using compensatory behaviors, she notes that most patients with BN who are weight suppressed and successfully remit their symptoms do not regain a significant amount of weight. This conclusion is supported by evidence that patients who have remitted from BN generally report BMIs in the middle of the healthy weight range (~ 21–23; Bergh, Brodin, Lindberg, & Södersten, 2002; Fichter & Quadflieg, 1997; Meule, von Rezori, & Blechert, 2014) and have not regained all of their previously lost weight (e.g., Frank et al., 2007; Oberndorfer et al., 2013; Wagner, Aizenstein, Venkatraman, & Bischoff-Grethe, 2010). Therefore, she encourages Kate to be willing to tolerate a weight gain that would still be below her highest weight as an adult, but that would also be above where her weight has most recently fluctuated (only 3 lbs). For Kate, this could be a weight gain of about 5 to 10 lbs (and a BMI of 21–22).

To build distress tolerance strategies, Kate and her therapist work on developing healthier strategies of tolerating negative emotions, like noticing other sensory experiences (e.g., focusing on breathing, sounds, or images in her environment, or placing something cold against her body). In addition, they develop a list of adaptive distraction activities that Kate could employ when she is experiencing fears of weight gain, including journaling, working on an art project, listening to music, talking to a friend, or going for a walk. The clinician encourages the patient to consider the areas of her life that she can devote more time to once she has reduced her constant struggle with her weight and eating behaviors. The clinician also teaches healthy dieting strategies while emphasizing the negative impact of unhealthy food restriction (i.e., going for periods without eating, food avoidance, and following strict rules). Kate, though verbally agreeing to tolerate a small amount of weight gain, initially experiences high levels of anxiety upon attempting to follow her dietary plan at home, which triggers subsequent restriction and binge eating. The clinician problem-solves the lapses with the patient, applying distress tolerance techniques to specific scenarios.

Over the remainder of treatment, Kate slowly gains approximately 8 lbs by eating foods she has previously avoided, consuming more calories, and including more snacks in her eating schedule. Kate's bulimic symptoms begin to remit, including her avoidance of certain foods and overall restriction. During the process of weight gain, Kate and the clinician set specific

goals designed to improve other areas of the patient's life, including signing up for a new art class, creating a schedule for her school work, and spending more time with friends. While the patient has an occasional lapse, she now has strategies to deal with negative emotion and has learned that she can tolerate a small amount of weight gain, which has reduced the overall emotional salience of weight change. Moreover, she is engaging in goal-directed behavior consistent with her values.

Conclusions

Because a majority of BN patients still experience bulimic symptoms after CBT (Keel et al., 1999; Mitchell et al., 2002; Poulsen et al., 2014), it is vital to incorporate novel and clinically relevant research findings in current treatment strategies for these individuals. Considering the large base of literature suggesting that WS is related to the etiology and maintenance of BN symptoms, addressing WS in treatment may enhance outcome. Weight history and current WS is rarely evaluated in a comprehensive way at the beginning of treatment or addressed explicitly as a treatment target in CBT. In this paper we have proposed strategies that clinicians could use to evaluate WS and related features in patients with BN and address WS directly in treatment. Future research is needed to evaluate whether addressing WS in the context of CBT can improve treatment outcomes and whether or not the techniques described in this paper could be one method for beginning to address WS in CBT.

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Highlights

- Cognitive behavioral therapy for bulimia nervosa (BN) has limited efficacy.
- Research suggests weight suppression (WS) contributes to BN symptoms and outcome.
- Current cognitive behavioral models may be improved by considering the role of WS.
- Preliminary clinical recommendations for addressing WS in treatment are provided.
- Directions for future research on WS and treatment outcome are proposed.

Figure 1.

Proposed schematic of current CBT model (from Fairburn, 2008) with additional factors related to weight suppression and weight history incorporated. Black represents the original CBT model and gray represents suggested additions. All additions represent considerations for future study based on existing research and will require additional research to replicate and confirm these relationships.

*events may include actual weight gain during treatment

Figure 2. Sample Diagram of WS Bio-behavioral bind “catch 22.”

Clinicians can use this diagram to describe how the weight loss leaves patients in a “catch 22” weight cycle that ultimately leads to weight gain and more weight-loss attempts.

Figure 3. Sample demonstration of psychoeducation

The clinician may employ a visual demonstration, such as the one above, to introduce the model of the bio-behavioral bind associated with WS and educate the patient on the relationship between WS and weight gain.