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Rituals and preoccupations associated with bulimia nervosa in adolescents: Does motivation to change matter?

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Abstract

This study evaluated the effects of two treatments for adolescent bulimia nervosa (BN), Family-Based Treatment (FBT-BN) and Cognitive Behavioral Therapy (CBT-A), on both attitudinal and behavioral outcomes at end-of-treatment. These associations were examined specifically relative to motivation for change in obsessive-compulsive (OC) features of eating disorder (ED) symptoms. Adolescents ($N = 110$) were randomly assigned to FBT-BN or CBT-A and completed assessments of eating pathology and OC-ED behavior. Across both treatments, greater motivation for change in OC-ED behavior was associated with improved attitudinal features of ED at end-of-treatment. Motivation for change did not demonstrate a direct or interaction effect on BN behavioral outcomes. Results suggest that adolescents with BN who are more motivated to change OC-ED behaviors at the start of treatment, FBT-BN or CBT-A, are more likely to demonstrate improvements in cognitions, but not behaviors associated with EDs, at treatment conclusion.

Keywords

Bulimia Nervosa; Obsessive-Compulsive; Motivation for Change; Family-Based Treatment; Cognitive Behavioral Therapy

Bulimia nervosa (BN), defined by uncontrolled binge eating episodes followed by compensatory behaviors such as self-induced vomiting, excessive exercise, or laxative misuse, is an eating disorder (ED) with significant physiological and psychological consequences (Golden et al., 2003). Similar to restrictive EDs, BN is marked by obsessions and compulsions related to eating behaviors (Sunday & Halmi, 2000). Obsessions, defined as intrusive thoughts or preoccupations, may include concerns across several domains, including eating, weight, shape, appearance, and clothing. Compulsions, or rituals, may involve driven behaviors surrounding food, binge eating, purging, weight, exercise, body-checking, hoarding and list-making (Jordan et al., 2009; Mazure, Halmi, Sunday, Romano,

& Einhorn, 1994). Together, these preoccupations and rituals are referred to as obsessive-compulsive (OC)-ED symptoms.

The Yale-Brown-Cornell Eating Disorder Scale (YBC-EDS) was developed to measure the presence, type, and severity of OC-ED symptoms (Mazure, Halmi, Sunday, Romano, & Einhorn, 1994). Severity of YBC-EDS scores has demonstrated a positive correlation with ED pathology based upon the Eating Disorder Examination (EDE; Cooper & Fairburn, 1987; Jordan et al., 2009). The YBC-EDS assesses the degree to which preoccupations and rituals are ego-syntonic, although it also assesses an individual's motivation to change these OC-ED symptoms, specifically defined as resistance, insight, and desire to change (Mazure et al., 1994; Sunday & Halmi, 2000).

Although family-based treatment for BN (FBT-BN) and cognitive behavioral therapy adapted for adolescents (CBT-A) may be efficacious for BN (Le Grange, Lock, Agras, Bryson, & Jo, 2015), greater severity of OC-ED pathology may negatively affect ED treatment (Halmi et al., 2002; Le Grange et al., 2012; Lock, Bryson & Kraemer, 2005). More explicitly, motivation to change the preoccupations and rituals associated with ED behavior may broadly influence treatment outcome (Clausen, Lübeck, & Jones, 2013; Fitzpatrick & Weltzin, 2014; Halmi et al., 2002). Further, recent models of BN among adults suggest that initial impulsive behaviors within individual BN presentation may lead to patterns of compulsivity over time (Pearson, Wonderlich, & Smith, 2015). As such, an increased understanding of patterns in compulsive behavior, and the motivation that may maintain these behaviors within BN may hold particular clinical utility.

Reduction of both harmful thoughts as well as maladaptive behaviors serves as a goal of evidence-based treatments for EDs. Complete abstinence from binge eating and purging behavior within the context of treatment is an important predictor of maintaining recovery (Halmi et al., 2002), but it remains unclear if motivation for change can definitively influence a decrease in BN behavioral symptoms (Clausen et al., 2013). While attitudinal symptom remission (i.e., remission of cognitive and psychological symptoms associated with ED) remains an important marker of recovery, they are slower to remit and may persist even when remission of BN behaviors occurs (Bardone-Cone, et al., 2007; Ciao, Accurso, Fitzsimmons-Craft, & Le Grange, 2015). However, early changes in attitudinal symptoms in the context of BN treatment have demonstrated a positive mediating effect on behavioral treatment outcomes, highlighting the importance of attitudinal change within BN treatment (Wilson, Fairburn, Agras, Walsh, & Kraemer, 2002). Further, a prospective study of relapse in a transdiagnostic, young- adult ED sample showed that greater body image disturbance contributed to relapse among women diagnosed with BN (Keel, Dorer, Franko, Jackson, & Herzog, 2005). Motivation for change in patients diagnosed with BN is of particular interest, as unlike counterparts with other ED diagnoses such as anorexia nervosa, patients with BN may experience shame and guilt related to their binge and purging behavior, and find their symptoms less ego-syntonic (Le Grange, 2010). To date, no studies have directly assessed how degree of motivation to change OC-ED behaviors can specifically impact both attitudinal sequelae as well as abstinence from BN symptomology at the conclusion of evidence-based treatment among adolescents with BN.

Current Study

Analyses in the current study were secondary exploratory analyses, intended to generate, rather than confirm hypotheses. Specifically, we tested the relation between treatment type and outcomes for adolescent BN treatment, relative to motivation for change in OC-ED behavior. We used two separate models to examine associations between treatment group and either 1) EDE Global scores, or 2) abstinence from behavioral indicators of BN syndrome (i.e., binge eating; self-induced vomiting; misuse of laxatives, diuretics or diet pills; fasting; compulsive exercise). In each model, motivation for change in OC-ED behavior at baseline was examined as a moderator, and outcomes were tested at end-of-treatment (EOT). Across both treatment groups, we expected that those individuals who demonstrated lower *Motivation for Change* (MC) subscale scores (i.e., indicating greater motivation to change OC-ED behaviors) at baseline assessment, would be more likely to be report lower EDE Global scores, and reduced behavioral symptoms at EOT. We also hypothesized an interaction effect such that for those receiving FBT-BN, level of motivation would not differentially impact behavioral outcome as caregivers are positioned as the agent of behavior change in this model. In contrast, we predicted that for those receiving CBT-A, individuals higher in motivation would demonstrate greater behavioral abstinence as compared with less motivated counter-parts.

Method

Participants and procedure

Participants included 110 adolescents (93.6% female) aged 12–18 from two outpatient treatment centers in large academic institutions who met DSM-IV criteria for BN or BN-type eating disorder not otherwise specified (APA, 2000). In the current study, reported BN behaviors (i.e., binge eating; self-induced vomiting; misuse of laxatives, diuretics, other medication; excessive exercise; fasting) over the past three months were tallied and divided by 12 to produce a weekly average, which was used to determine DSM-5 diagnosis; all participants met criteria for a diagnosis of BN, according to DSM-5. Participants were randomized to one of two treatments, CBT-A ($n = 58$) or FBT-BN ($n = 52$). Baseline diagnoses were determined by interview with trained assessors using the EDE. Symptom report was also evaluated with the EDE at baseline and EOT. The EDE is a semi-structured, investigator-based interview designed to assess two main features: 1) the core attitudinal and 2) the core behavioral features of patients presenting with eating disorders. Attitudinal features are calculated with the mean of the four subscale scores included within the EDE (i.e., Restraint, Eating Concern, Weight Concern, Shape Concern), which yields an EDE Global score. In the current study, and in line with the main outcome paper (Le Grange et al., 2015), abstinence was calculated by evaluating the presence or absence of the core symptoms of BN (i.e., subjective and objective binge eating episodes and all compensatory behaviors) in the month prior to EOT, as per EDE interview; maintaining behaviors (e.g., body checking) were not specifically included in the current study.

Participants were further assessed with the semi-structured interview YBC-EDS (Mazure et al., 1994) to evaluate OC features of eating symptoms and behaviors at baseline. The current study specifically focused on the YBC-EDS MC subscale for use within analyses, which

constitutes the sum of the resistance, insight, and desire for change for both preoccupations and rituals. All appropriate Institutional Review Boards approved study protocols and all participants provided informed consent or assent (in the case of minors) prior to participation. Full study design description can be referenced in the main report (Le Grange et al., 2015).

Analytic Plan

Preliminary analyses included evaluation of DSM-5 diagnosis of BN, and bivariate correlations to assess relations between variables of interest. Two separate regression models, linear and logistic, were used to examine relations between treatment group assignment with outcomes of either EDE Global scores (continuous variable), or abstinence from BN symptoms (dichotomous variable) at EOT, relative to baseline motivation to change OC-ED behavior. Abstinence was calculated by summing both subjective and objective binge eating episodes, as well as all compensatory behaviors included in the DSM-5, and then considered categorically (0 = not abstinent, 1 = abstinent). In line with prior studies of motivation for change, and of BN, body mass index (BMI) and age were included as covariates in all regression analyses (Fitzpatrick & Weltzin, 2014; Grilo et al., 2009). Analyses were conducted using SPSS software (Version 21).

Results

Descriptive statistics

For the current report, we focused on motivation to change OC-ED behaviors at baseline (M =13.36, SD = 6.36), and attitudinal and behavioral characteristics of BN recovery. These variables of interest at end-of-treatment included EDE Global scores (M = 1.82, SD = 1.46), and abstinence from binge eating and compensatory behaviors (n abstinent = 25; 29%). At baseline, there were no significant differences between treatment groups in MC subscale scores, $t(108) = .36$, $p = .72$), or in either of the covariates included in the models. Pearson bivariate correlations among variables of interest are available in Table 1.

Effects of treatment group and motivation for change on attitudinal features

Findings from linear regression analyses indicated that for estimating effects at EOT, the overall model was statistically significant $F(5, 87) = 3.84$, $p = .003$, $R^2 = .18$ (Table 2). Only MC subscale scores were significant individual predictors of EDE Global scores, $b = .08$, $se = .02$, $t(87) = 3.73$, $p < .01$, 95% CI [.04, .13]. Notable for interpretation, lower scores on the MC subscale indicate *higher* motivation for change. None of the other predictors, nor the interaction effect were statistically significant (all p's > .05).

Effects of treatment group and motivation for change on behavioral abstinence

Findings from logistic regression analyses indicated that for estimating effects at EOT, the full model was not statistically significant, $\chi^2(5) = 7.38$, $p = .19$, and there was no significant effect on abstinence relative to MC scores, $p = .67$ (Table 3). However, there was a significant effect for treatment group, $b = -2.45$, $p = .04$, OR = .09, 95% CI [.01, .93]. Categorical coding within analyses determined significant effects were evidenced for FBT-BN, but not for CBT-A, such that those who received FBT-BN were more likely to

demonstrate abstinence at EOT. Other predictors within this model, and the interaction effect were not statistically significant.

Discussion

This study sought to examine the influence of motivation to change OC-ED symptoms on both attitudinal and behavioral markers of treatment outcome in adolescents participating in a randomized clinical trial comparing CBT-A and FBT-BN. In addition to self-report measures of attitudinal pathology, behavioral indicators of treatment outcome in BN are important signifiers of recovery. Specifically, abstinence from core symptoms of BN, such as binge eating and purging, has been associated with lower rates of relapse among adults (Halmi et al., 2002). It is therefore critical to consider binge/purge abstinence when evaluating treatment outcomes. Results from this study indicate that across both treatments, adolescents who endorse a higher level of motivation for change in ED-related preoccupations and rituals at baseline are more likely to have reduced attitudinal ED features at EOT. However, baseline motivation to change OC-ED behavior had no effect on abstinence from BN symptoms at EOT.

We expected to find an interaction between treatment group and motivation, such that motivation would not impact rates of abstinence and cognitive features in FBT-BN, and that those with lower motivation in CBT-A would not fare as well as those who are more motivated. In CBT-A, the adolescent is the primary agent of change whereas in FBT-BN, the primary treatment strategy is to engage the adolescent to work in collaboration with their parents to promote behavioral change (Le Grange et al., 2015). We anticipated that the enhanced support and increased external motivation from parents in FBT-BN would drive behavior change irrespective of adolescent motivation, whereas for those receiving CBT-A (i.e., where motivation is less externally supported), we expected that behavior change would only be evidenced for those adolescents with more intrinsic motivation. The lack of interaction effect in the current study suggests that in the context of low motivation to change OC-ED behaviors, adolescents in both treatment groups were equally likely to remain higher in attitudinal features. Further, there was no effect of baseline motivation to change on behavioral markers of BN recovery.

There are several possibilities that may help explain our findings. The current study focused specifically on motivation to change OC-ED behaviors; this type of motivation is not necessarily a proxy of broader motivation within ED treatment. Of note, when considering motivation more comprehensively within ED treatment, little evidence exists that motivational interventions play a role in increasing the motivation of ED patients (Waller, 2012), and that readiness to change in cognitive symptoms may lag in comparison with readiness to change behavioral symptoms (Geller, Zaitsoff, & Srikamenswaran, 2005). Further, the most effective index of motivation in predicting treatment outcome is not necessarily verbal confirmation of motivation (Waller, 2012) but rather, early behavior change (Linardon, Brennan, & De la Piedad Garcia, 2016). As such, focusing on strategies to support early behavioral change and basing the perception of motivation on active efforts in this area may be particularly important. It is possible that those who demonstrated less motivation in the current study would report greater functional or reward value associated

with the behaviors, a hypothesis that warrants further exploration. As well, employing external structures (e.g., parents or other environmental interventions) to fuel early behavior change may be critical. Preliminary evidence has been indicated for autonomy support in improving both motivation and outcomes within a sample of adults in treatment for ED, which might be a recommended focus for clinicians striving to increase self-motivation in their patients, and should be tested in adolescent samples (Steiger et al., 2017).

Limitations

This study has several limitations that should be noted. Moderation effects were assessed from a baseline measure of self-reported motivation, thereby limiting evaluation of the effects of dynamic changes in motivation over the course of treatment. Further, the current study assessed only motivation for change in a specific domain (i.e., in behaviors related to preoccupation and ritual ED characteristics) and therefore cannot comment on motivation more comprehensively within BN treatment. Specifically, motivation to change OC-ED behaviors may not be captured within the EDE Global scores. Further, the extent to which the ED behaviors and cognitions assessed on the YBC-EDS overlap with those of the EDE is unclear. The YBC-EDS MC subscale may capture a desire to change more specific behaviors that cannot be generalized to the EDE. The current study did not assess for behavior that may be specific to maintenance of ED; as an example, future study might include assessment of the role of motivation for change in influencing body-checking. In addition, focusing on a conservative definition of behavioral recovery (i.e., complete abstinence from any reported binge eating or compensatory behavior) does not capture individuals who may have clinically meaningful reduction in symptoms over the course of treatment.

Conclusions

Motivation to change obsessive-compulsive features of BN may be an important predictor of cognitive recovery at EOT, regardless of treatment assignment. While enhanced motivation at the start of evidence-based treatment for BN may result in improved attitudinal outcomes, it does not lead to higher rates of abstinence from BN symptomology at EOT. Given the importance of helping individuals achieve recovery from both the cognitive and behavioral features that impact treatment course and outcome in BN, clinical interventions may benefit from a focus on enhancing motivation specifically aimed toward interruption of binge eating and compensatory behaviors.

Acknowledgments

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Table 1.

Pearson Product Bivariate Correlation for Variables of Interest

Variable	1	2	3	4	5	6
1 Age	-					
2 BMI	.06	-				
3 Treatment group	.08	.07	-			
4 MC subscale	−.16	.01	−.03	-		
5 EDE Global	−.12	.11	−.15	.38**	-	
6 Abstinent	−.01	−.05	.23*	−.08	−.61**	-

*
Note: Asterisk indicates significance at $p < .05$;

**
double asterisk indicates significance at $p < .01$;

BMI = Body Mass Index; EDE Global = Eating Disorder Examination Global score at end-of-treatment; MC subscale = Yale-Brown-Cornell Eating Disorder Scale, *Motivation for Change* subscale score; Abstinent = abstinence from binge eating and compensatory behavior at end-of-treatment.

Table 2.

Linear Regression Model Predicting EDE Global Scores at End-of-Treatment

Model	Variable	R^2	F	b	SE(b)	t	CI
EDE Global ($n = 92$)		.18	3.84[*]				
	Age			−.06	.09	−.63	[−.24, .13]
	BMI			.04	.03	1.25	[−.02, .10]
	Tx Group			−.50	.65	−.78	[−1.78, .78]
	MC			.08	.02	3.73[*]	[.04, .13]
	Tx X MC			.01	.04	.17	[−.08, .09]

[*] *Note:* Asterisk indicates significance of $p < .01$.

EDE= Eating Disorder Examination; BMI = Body Mass Index; Tx Group = Treatment group (i.e., FBT-BN or CBT-A); MC = Yale-Brown-Cornell Eating Disorder Scale, *Motivation for Change* subscale score at baseline; Tx X MC = interaction term for Treatment Group by Motivation for Change subscale score

Table 3.

Logistic Regression Model Predicting Abstinence at End-of-Treatment

Variable	b	se(b)	Exp(b)	CI for Exp(b)
Age	−.01	.16	.99	[.72, 1.36]
BMI	−.04	.05	.96	[.87, 1.07]
Tx Group	−2.45	1.22	.09*	[.01, .93]
MC	−.02	.04	.98	[.91, 1.07]
Tx X MC	−.12	.08	.90	[.77, 1.06]
Model X^2 =	7.38			
Pseudo R^2 =	.12			
N =	86			

*Note: Asterisk indicates significance of $p < .05$.

BMI = Body Mass Index; Tx Group = Treatment group (i.e., FBT-BN or CBT-A); MC = Yale-Brown-Cornell Eating Disorder Scale, *Motivation for Change* subscale score at baseline; Tx X MC = interaction term for Treatment Group by Motivation for Change subscale score