A Preliminary Examination of a Nonpurging Compensatory Eating Disorder

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Abstract

Objective—To evaluate correlates of a compensatory eating disorder (CED) characterized by recurrent nonpurging compensatory behaviors in the absence of objectively large binge episodes among normal weight individuals who endorse undue influence of weight/shape on self-evaluation as possible indicators of clinical significance and distinctiveness.

Method—Women with CED (n=20), women with bulimia nervosa (BN) (n=20), and controls (n=20) completed an interview and questionnaires assessing eating disorder and general psychopathology and weight history.

Results—Compared to controls, women with CED reported significantly greater body image disturbance and disordered eating, higher anxiety proneness, increased perfectionism, and greater weight suppression. Compared to BN, CED was associated with significantly less body image disturbance, disordered eating, weight suppression, and lower likelihood of being overweight in childhood. However, CED and BN did not differ on anxiety proneness or perfectionism.

Discussion—CED merits further examination to determine whether it is a clinically significant and distinct eating disorder.

Keywords

compensatory behaviors; exercise; fasting; eating disorder

Excessive exercise and fasting represent prominent features of anorexia nervosa (AN) and nonpurging compensatory behaviors in bulimia nervosa (BN); however, not all individuals who engage in these unhealthy weight-control strategies fulfill diagnostic criteria for these disorders.[1-3] It is unclear whether nonpurging compensatory behaviors are associated with sufficient distress to constitute central features of a compensatory eating disorder (CED)[1] in the absence of low weight that defines AN or binge episodes that define BN. The purpose of the present study was to determine the clinical significance and distinctiveness of this particular Unspecified Feeding and Eating Disorder (UFED)[4] by comparing individuals with CED to controls and to individuals with BN. For the purpose of the current study, we have defined CED by the use of excessive exercise and/or fasting for the primary purpose of compensating for food intake or controlling weight/shape at least twice/week for the past three months, the presence of undue influence of weight and shape on self-evaluation, absence of low weight, and absence of objectively large binge episodes (OBE).

Several findings support the potential clinical significance of CED.[1-3,5] However, previous studies have not consistently controlled for the presence of OBEs or purging or for a history

of AN or BN, [1-3] and have employed a control group characterized by no efforts to influence weight or shape.[6-7] Thus, elevated pathology in the CED group reported in previous studies may be better explained by a history of AN or BN, the presence of OBEs or purging, or comparisons to an unusually healthy control group.

Previous investigations have provided mixed evidence regarding the distinctiveness of CED. Some studies have reported that CED appears to be separate from other eating disorders,[8-9] while other studies have not (see Crow et al.[10] for review). In a study of eating disorder patients, CED demonstrated the greatest likelihood of psychiatric hospitalization compared to BN-purging, BN-nonpurging, and binge eating disorder.[1] In contrast, Mond et al.[2] reported that a CED-like syndrome did not differ in functional impairment or eating disorder severity compared with purging disorder (PD) or BN-like syndromes. Thus, data addressing the clinical distinctiveness of a CED group are needed.

The purpose of the present study was to compare a CED group with no history of other diagnosable eating disorders to healthy exercising and dieting controls and to a group with BN on measures of disordered eating, distress, and personal and family weight history. Regarding clinical significance of CED, we hypothesized that the CED group would show higher scores on the disordered eating assessments and more distress than controls. Regarding the distinctiveness of CED, we hypothesized that CED would differ from BN on weight history factors posited to contribute to OBEs in BN.

Methods

Participants

Female participants (N=60) were recruited from the community to fill three comparison groups: CED (n=20), BN (n=20), and controls (n=20). Ages ranged from 18 to 45 years (Mean (SD) = 21.12 (5.15)), and body mass index (BMI) ranged between 18.5 and 26.5 kg/m^2 (Mean (SD) =21.82 (2.20)), with no significant differences among groups. The majority of the sample was Caucasian (61.7%).

Participants in the CED group (n=20) reported excessive exercise (defined as vigorous exercise > 1 hour per session to compensate for food intake or to prevent weight gain) and/ or fasting (defined as not eating for 8 waking hours to compensate for overeating or to prevent weight gain) at least twice weekly over the previous 3 months and endorsed undue influence of weight and shape on self-evaluation. Participants in this group had no lifetime history of OBEs, purging, AN or BN as determined by interview.

Participants in the BN group (n= 20) met diagnostic criteria for DSM-5 BN based on interview assessment.[4] Thirteen of the 20 participants (65%) in the BN group endorsed purging behaviors, and 7 endorsed non-purging compensatory behaviors.

Participants in the control group (n=20) reported engaging in regular, healthy exercise (defined as 30-45 minutes per day) at least twice weekly and/or dieting to influence weight for the past three months. Controls denied excessive exercise (never >60 min in one session), fasting (never going 8 or more waking hours without eating anything), or the undue influence of weight or shape on self-evaluation and did not have a history of an eating disorder as determined by interview. The Institutional Review Board approved this study, and participants completed informed consent documents prior to completing assessments (described below).

Procedure

Participants were recruited from: (1) a callback list for individuals from community-based recruitment of a study on eating disorders, and (2) a mass screening of students in psychology courses offering credit for research participation at a large university. Prospective participants completed a confidential telephone interview to determine initial eligibility. Eligible individuals were invited for in-person assessment. Participants' height and weight were measured, and a brief interview was administered. Participants then completed questionnaires measuring demographic information, eating and related pathology.

Measures

Oxford Risk Factor Interview Section 2.3 Obesity Risk Items (RFI)[11] was used to measure personal and family weight history based on evidence of its reliability and validity.[12]

Body Shape Questionnaire (BSQ)[13] was used to measure body image disturbance. Internal consistency in the current study was .98.

Eating Attitude Test-26 (EAT-26) [14] was used to measure severity of eating pathology. Internal consistency in the current study was .93.

State Trait Anxiety Inventory (STAI)[15] trait subscale was used to measure ongoing distress. Internal consistency in the current study was .94.

Eating Disorder Inventory (EDI)[16] Perfectionism subscale was used to measure a personality feature previously linked specifically to fasting and excessive exercise.[17-20] Internal consistency in the current study was .85.

Data Analyses

One-way Analysis of Variance (ANOVA) was conducted to compare groups on measures of eating disorder, distress, and related features (BSQ, EAT-26, STAI Trait Scale, and EDI Perfectionism subscale) and personal and family weight history (weight suppression and RFI item scores). A Bonferroni-adjusted p-value was used to evaluate statistical significance of post-hoc comparisons. For variables that violated homogeneity of variance (weight suppression and elementary school weight), independent samples *t*-tests were used for post-hoc comparisons with degrees of freedom adjusted and a Bonferroni-adjusted p-value to evaluate statistical significance of differences.

Results

Descriptive Data

Among CED participants, 19 (95%) reported excessively exercising, and 4 (20%) reported fasting. This value exceeds 100% because 3 participants (15%) reported both excessive exercise and fasting. Participants reported exercising on average 4.3 times per week (range 2 to 10 times), for a mean of 107.8 minutes (range of 70 to 150 minutes), representing an average of 7.73 hours/week devoted to exercise to compensate for food intake or control weight/shape. Mean (SD) age of onset for CED was 18.23 (5.53) years, and mean (SD) duration of illness was 3.60 (3.08) years.

Eating Disorder Symptomology and Related Factors

As shown in Table 1, there were statistically significant differences in BSQ, EAT-26, STAI Trait Scale, and EDI Perfectionism subscale scores among groups. Post-hoc comparisons revealed that both women in the CED and BN groups had significantly higher BSQ and EAT-26 scale scores than controls and that women in the BN group scored significantly

higher on these measures compared to women in the CED group. Women in the CED group scored significantly higher on the EDI Perfectionism subscale compared to controls ($p<.05$); however, there were no significant differences in perfectionism between the BN and control or BN and CED groups.

There was no significant difference between CED and BN groups for age of onset (t(df)=-.28(38), $p=.78$) or duration of illness (t(df)=-.16(38), $p=.88$). Women with CED and BN scored significantly higher than controls ($p<.001$) on the STAI trait scale. However, there was no significant difference in trait anxiety between the CED and BN groups ($p=.25$), indicating significant ongoing anxiety in both groups.

Personal and Family Weight History

As shown in Table 2, there was a statistically significant difference in weight suppression and elementary school weight among groups. Post-hoc comparisons revealed that both women in the CED and BN groups had significantly higher weight suppression than controls ($p<.01$) and that women in the BN group had significantly higher weight suppression than women in the CED group ($p<.01$). Women in the BN group weighed significantly more in elementary school than controls ($p=.02$) and differences in elementary school weight between women in the CED and control group was significant at trend level ($p=.076$). No other differences in personal or family weight history were found.

Discussion

The overarching goal of the current study was to conduct a preliminary investigation of the potential clinical significance and distinctiveness of CED, a UFED characterized by recurrent fasting/excessive exercise and undue influence of weight and shape on self-evaluation in the absence of low weight or OBEs. Compared to controls, women with CED endorsed significantly greater disordered eating behaviors, attitudes, and body image disturbance, the trademark characteristics of an eating disorder.[4] In addition, they endorsed enduring distress, and did not differ from participants with BN on this measure. These findings provide preliminary support for the clinical significance of CED, particularly as comparisons were made with a control group endorsing normative weight concerns and efforts to control weight. Additionally, CED women reported greater perfectionism and weight suppression compared to controls, suggesting that CED is characterized by correlates of an eating disorder that may reflect risk factors or consequences of symptoms.

Severity features distinguished CED from BN. CED was associated with significantly less body image disturbance, eating pathology, and weight suppression, and CED women had no history of being overweight in childhood. While CED individuals are weight suppressed, they lack a history of being overweight endorsed by BN participants. The average weight suppression in the CED group was 7.24 pounds, suggesting that even at their highest weights, CED participants remained within a healthy weight range. These differences may indicate that CED is a potentially distinct eating disorder and future studies should continue to explore it separately from BN.

There are several methodological strengths to this study, such as the inclusion of a more representative control group against which to evaluate the clinical significance of CED and the inclusion of a BN comparison group using DSM-5 criteria. Group assignment was based on diagnostic interviews, which allowed us to control for common confounds in previous studies such as history of binge-eating, purging, and other eating disorders. Finally, our measures demonstrated excellent psychometric properties.

It is important to note limitations of this preliminary study. Given the small sample size of the study, associations should be examined in larger samples for evidence of replication. Due to the cross-sectional nature of these data, we cannot make temporal or causal inferences regarding psychological correlates. Further, the absence of an assessment of impairment limits conclusions that can be made regarding clinical significance of CED. However, impairment is not the sole criterion for determining clinical significance, according to the DSM-5.[4] Future investigations of CED may invest resources to include broader assessments such as those assessing functional and psychosocial impairment directly attributable to the eating disorder, additional eating disorder comparison groups, and longitudinal designs to more thoroughly evaluate the prevalence, risk factors, and consequences of CED which would provide a full picture of the clinical significance and distinctiveness of this UFED.

Acknowledgments

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Table 1

Differences in Eating Disorder Symptomatology and Risk Factors Between Groups

	CED (*n*=20)		BN (*n*=20)		Control (*n*=20)		*F*	*df*	*p*
	M	SD	M	SD	M	SD			
Body Shape Questionnaire	113.15	23.47[a]	138.06	27.10[b]	65.30	18.20[c]	50.75	57	<.001
Eating Attitudes Test	17.21	11.14[a]	30.38	15.3[b]	4.10	3.55[c]	27.95	56	<.001
STAI Trait Scale	48.50	10.92[a]	53.38	7.70[a]	32.75	7.24[b]	30.2	57	<.001
EDI Perfectionism	11.45	5.24[a]	11.30	4.46[a]	7.70	4.44[b]	4.03	57	.023

Note: CED = Compensatory Eating Disorder; STAI = State Trait Anxiety Inventory; EDI = Eating Disorders Inventory

Note: Superscripts that differ represent significant differences of p < .016 between groups.

Table 2

Personal and Family Weight History

	CED (n=20)		BN (n=20)		Control (n=20)		F	df	p
	M	SD	M	SD	M	SD			
Weight suppression (lbs)	7.24	5.74[a]	21.26	20.63[b]	3.18	3.51[c]	11.24	57	<.001
Index Age	18.23	5.53	18.75	6.24	16.95	4.29	0.59	57	.56
Elementary school weight	1.90	0.79[a]	2.30	1.38[b]	1.40	0.94[a]	3.58	57	.03
Middle school weight	2.05	0.83	2.41	1.33	2.00	0.75	0.93	53	.40
High school weight	1.90	1.07	2.17	1.22	1.89	0.57	0.41	51	.66
Lifetime									
Mother's highest weight	0.80	0.95	1.05	0.89	0.85	0.93	0.41	57	.67
Mother's largest body type	5.00	1.24	5.37	1.34	4.92	1.61	0.59	57	.56
Father's highest weight	0.90	0.85	1.05	0.97	1.26	0.65	0.93	55	.40
Father's largest body type	5.60	1.52	5.88	1.35	5.91	0.94	0.35	55	.71
Before Index Age									
Mother's highest weight	0.75	0.91	0.75	0.91	0.65	0.99	0.08	57	.93
Mother's largest body type	4.60	1.31	4.84	1.36	4.56	1.64	0.22	57	.81
Father's highest weight	0.74	0.73	0.78	0.94	0.89	0.74	0.20	53	.82
Father's largest body type	5.20	1.53	5.44	1.57	5.50	1.08	0.25	53	.78

Note: Superscripts that differ represent significant differences of p < .016 between groups.