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Emotion Dysregulation and Anorexia Nervosa: An Exploration of the Role of Childhood Abuse

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Abstract

Objective—Theoretical models of emotion regulation difficulties in anorexia nervosa (AN) specify a role for factors that predispose to or precipitate emotion dysregulation. The current study considered whether childhood abuse (i.e., emotional, sexual, physical) might be related to emotion regulation difficulties and eating disorder symptom severity in patients with AN. Childhood abuse was hypothesized to relate to AN symptoms indirectly via emotion dysregulation.

Method—Participants were 188 patients with AN presenting to an intensive treatment facility. The Childhood Trauma Questionnaire, Difficulties in Emotion Regulation Scale, and Eating Disorder Examination were used to assess childhood abuse, emotion dysregulation, and AN symptom severity, respectively.

Results—Of the three forms of childhood abuse, reports of emotional abuse were most strongly related to emotion regulation difficulties and AN symptom severity. Mediation analyses revealed that emotion dysregulation significantly explained the relationship between childhood emotional abuse and AN symptomatology, and mediation effects did not differ by AN subtype (i.e., restricting versus binge-eating/purging).

Discussion—Findings provide initial support for a model in which childhood emotional abuse precipitates emotion dysregulation and the development of AN. Future studies with longitudinal designs and control groups are necessary to examine the direction and specificity of these cross-sectional associations.

Keywords

anorexia nervosa; emotion dysregulation; childhood abuse; emotional abuse; mediation

Interest in the role of emotion regulation difficulties in the development, maintenance, and treatment of individuals with anorexia nervosa (AN) is burgeoning (1; 2). Individuals with AN exhibit broad impairments across domains of emotion regulation (3), and emotion

dysregulation predicted the maintenance of AN symptoms in a recent longitudinal study (4). Theoretical models of emotion regulation difficulties in AN specify a role for factors that predispose to or precipitate emotion dysregulation (2; 5), and one potentially important factor is childhood abuse. Abusive experiences can lead to emotional avoidance, ambivalence, and suppression when children are verbally or physically punished for emotional expression (6). Further, abusive parents are likely to model poor distress tolerance and aggressive behavior, resulting in a limited repertoire of emotion regulation strategies in children (7).

Although childhood abuse often has been considered as a risk factor for bulimia nervosa (BN; e.g., 8), less research has examined abuse experiences in individuals with AN. We conducted the first investigation of relationships among self-reported childhood abuse (i.e., emotional, sexual, physical), emotion regulation difficulties, and eating disorder symptom severity in a large sample of patients with AN. We hypothesized that childhood abuse is related to AN symptom severity indirectly through emotion dysregulation. Given that our cross-sectional design does not allow for causal or directional inferences, findings are meant to generate hypotheses about factors that may precipitate emotion dysregulation in individuals with AN in order to inform theoretical models and treatment development efforts for this debilitating disorder.

Methods

Participants

Participants were 188 patients with AN receiving inpatient or day hospital treatment (9). Inclusion criteria were: age ≥ 16 years ($M (SD) = 26.44 (10.03)$), body mass index < 18.5 ($M (SD) = 15.69 (1.83)$), and medical stability. Most participants were female (95.7%) and Caucasian (95.2%) with a long average duration of illness ($M (SD) = 8.41 (8.87)$ years). Consent forms approved by the Institutional Review Board (assent for participants under 18 years) were completed.

Measures

Interviewers were trained to administer two structured interviews, listed below. Weekly consensus meetings were held, and 10% of interviews were re-coded by independent clinicians to establish inter-rater reliability.

Structured Clinical Interview for DSM-IV-TR Axis I Disorders (SCID-I; 10)—

Using the SCID-I, AN diagnoses were established consistent with DSM-IV-TR criteria except: 1) amenorrhea was not required; and 2) 16 individuals with a BMI < 17.5 , but who denied fear of fatness, were included. AN-binge/purge (AN-B/P) subtype ($n = 105$; 55.9%) was defined as the endorsement of at least one objective binge episode or purging episode per month for the past 3 months. Inter-rater reliability estimates for the presence of AN and AN-B/P subtype were $\kappa = 1.0$.

Eating Disorder Examination, 16th edition (EDE; 11)—The EDE Global score was examined as an index of AN symptom severity over the past 28 days. The EDE Global score

is calculated as the mean of four subscales (Restraint, Eating Concern, Shape Concern and Weight Concern). The psychometric properties of the EDE are well-established (12). Internal consistency ($\alpha = .94$) and inter-rater reliability ($\rho = 0.97$) for the EDE Global score were excellent in the current study.

Difficulties in Emotion Regulation Scale (DERS; 13)—The DERS Total score was examined as an index of self-reported emotion regulation difficulties. The DERS includes 36 items assessing the following: lack of emotional clarity, lack of emotional awareness, non-acceptance of emotions, impulse control difficulties when upset, difficulties engaging in goal-directed behavior when upset, and limited access to emotion regulation strategies. Reliability and validity of the DERS have been established (13). Internal consistency for the DERS Total score was excellent in the current study ($\alpha = .93$).

Childhood Trauma Questionnaire-Short Form (CTQ-SF; 14)—The CTQ-SF is a 28-item self-report measure that retrospectively assesses a history of childhood emotional (CEA), sexual (CSA), and physical (CPA) abuse. The CTQ demonstrates a replicable factor structure, stability over time, convergent and discriminant validity with structured interviews, and correspondence with independent data (e.g., therapist ratings of abuse; 14; 15). Internal consistency in the current study was excellent: CEA: $\alpha = .90$; CSA: $\alpha = .96$; CPA: $\alpha = .83$.

Statistical Analyses

Pearson correlations were used to index zero-order relationships among childhood abuse, emotion dysregulation, and AN symptom severity. Mediation models examining the hypothesis that emotion dysregulation underlies childhood abuse-AN symptom relationships were tested using PROCESS Model 4 (16). Bias-corrected bootstrapped confidence intervals (CIs) based on 10,000 bootstrap samples were used to test the significance of the indirect effect (i.e., effect of abuse on AN symptoms through emotion dysregulation), as bootstrapping does not assume normality of the sampling distribution of the indirect effect (16). AN subtype (AN-restricting (AN-R) vs. AN-B/P) was examined as a moderator of the indirect effect using PROCESS Model 14.

Results

Descriptive statistics and correlations are presented in Table 1. Reports of CEA and CSA were significantly correlated with emotion dysregulation and AN symptom severity, with the magnitude of the CEA-emotion dysregulation relationship being significantly larger than the CSA-emotion dysregulation relationship (Steiger's $Z = 2.00$, $p = .02$). CPA was not associated with emotion dysregulation or AN symptoms and was not examined further.

Table 2 presents mediation model results. Emotion dysregulation significantly mediated the relationship between both CEA and CSA and AN symptom severity, as 95% CIs for indirect effects did not overlap with 0 (see Models 1 and 2). CEA was not related to AN symptom severity after controlling for emotion dysregulation, whereas CSA had a significant independent association with AN symptoms. Models 3 and 4 examined the indirect effect of abuse on AN symptoms via emotion dysregulation when CEA and CSA were included

together as independent variables. When controlling for CSA, emotion dysregulation continued to mediate the CEA-AN symptom relationship (see Model 3), but the reverse was not true (see Model 4).

Finally, moderated mediation model results indicated that the indirect effect of CEA on AN symptoms through emotion dysregulation did not significantly differ in patients with AN-R (b (SE) = 0.14 (0.05); 95% CIs: 0.06 to 0.25) versus those with AN-B/P (b (SE) = 0.13 (0.04); 95% CIs: 0.06 to 0.23; index of moderated mediation: b (SE) = -0.006 (0.05); 95% CIs: -0.10 to 0.08).

Discussion

Relationships among self-reported childhood abuse, emotion dysregulation, and eating pathology were investigated in a large sample of patients with AN with the goal of generating hypotheses about factors influencing the development of emotion dysregulation in AN. Individuals who reported CEA, in particular, reported greater emotion dysregulation and AN symptom severity. Emotion dysregulation mediated CEA-AN symptom relationships, and the nature and magnitude of this mediation did not differ by AN subtype. Our preliminary results are suggestive of a model in which CEA precipitates emotion dysregulation, and AN symptoms develop and are maintained due to their emotion regulating functions. Nonetheless, longitudinal data are needed to validate this model.

Results from our large AN sample confirm and extend prior research in non-clinical and BN/mixed eating disorder samples suggesting that CEA is a particularly salient form of abuse for eating pathology and that emotion dysregulation and related constructs significantly mediate CEA-disordered eating relationships (17-19). Similar to these prior studies, the primary limitation of our research is the cross-sectional design. We cannot establish the directionality implied in our mediation model (i.e., CEA predicts emotion dysregulation, emotion dysregulation predicts AN symptom onset). Although retrospective reports of abuse are common, information about the timing of abuse experiences and the onset of emotion regulation difficulties can help infer temporal precedence.

Additional limitations include the absence of a control group (e.g., individuals with another psychiatric disorder), such that the specificity of CEA for the presence of emotion regulation difficulties in AN versus other psychiatric disorders could not be established. Further, self-report was used for all variables. It may be that individuals with AN who report greater emotion regulation difficulties are more likely to recall or perceive CEA. Although retrospectively reported abuse corresponds with independent data (e.g., therapist ratings, state agency records), CEA is arguably more difficult to validate than CSA or CPA. Nonetheless, one's perception of CEA and growing up in an emotionally invalidating environment may be particularly damaging (20), and future studies would benefit from both self-reported and independently verified indices of abuse. Similarly, a larger assessment battery for emotion regulation (e.g., experimental paradigms, psychophysiological measurements) is encouraged. Finally, given that our participants were primarily female and Caucasian, were required to be 16 years old, and were recruited from inpatient and day hospital treatment settings, findings may have limited generalizability. In particular, future

studies must focus on individuals across the spectrum of AN illness severity (i.e., from a short illness course to severe/enduring AN)

In sum, of the abuse experiences examined, CEA appears to be particularly important for emotion dysregulation in individuals with AN. Given that emotion dysregulation fully mediated the CEA-AN symptom association, targeting emotion dysregulation in treatments for AN may reduce the burden associated with perceived or experienced CEA. Future research also should consider whether patients with a history of emotional abuse may benefit most from treatments for AN that aim to target emotion regulation difficulties.

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Table 1

Descriptive Statistics and Pearson Correlations

	M (SD)	EDE Global	DERS Total	CTQ Emotional Abuse	CTQ Sexual Abuse ^a	CTQ Physical Abuse ^a
EDE Global score	3.01 (1.45)	-	-	-	-	-
DERS Total score	110.48 (24.47)	.45***	-	-	-	-
CTQ Emotional Abuse	11.44 (5.88)	.26***	.34***	-	-	-
CTQ Sexual Abuse ^a	7.44 (4.03)	.21**	.19*	.43***	-	-
CTQ Physical Abuse ^a	7.56 (5.45)	.12	.11	.60***	.41***	-

EDE = Eating Disorders Examination; DERS = Difficulties in Emotion Regulation Scale; CTQ = Childhood Trauma Questionnaire

* $p < .05$;

**

$p < .01$;

$p < .001$

^a Log transformed variables were used to calculate correlations given the positive skewness and kurtosis statistics for these variables

Table 2
Mediation Models Testing the Hypothesis that Emotion Dysregulation Mediates the Relationship between Childhood Abuse and Anorexia Nervosa Symptoms

	b	SE	t	p	95% CIs
Model 1: Childhood Emotional Abuse					
Abuse and Emotion dysregulation	0.34	0.07	4.94	<.001	-
Emotion dysregulation and AN symptoms	0.41	0.07	5.90	<.001	-
Abuse and AN symptoms	0.26	0.07	3.68	<.001	-
Abuse and AN symptoms, controlling for emotion dysregulation	0.12	0.07	1.76	.08	-
Indirect effect of abuse on AN symptoms via emotion dysregulation	0.14	0.05	-	-	0.07 to 0.23
Model 2: Childhood Sexual Abuse^a					
Abuse and Emotion dysregulation	0.19	0.07	2.58	.01	-
Emotion dysregulation and AN symptoms	0.43	0.07	6.43	<.001	-
Abuse and AN symptoms	0.21	0.07	3.01	.003	-
Abuse and AN symptoms, controlling for emotion dysregulation	0.14	0.07	2.06	.04	-
Indirect effect of abuse on AN symptoms via emotion dysregulation	0.08	0.03	-	-	0.03 to 0.15
Model 3: Childhood Emotional Abuse, controlling for Childhood Sexual Abuse					
Abuse and Emotion dysregulation	0.32	0.08	4.17	<.001	-
Emotion dysregulation and AN symptoms	0.40	0.07	5.85	<.001	-
Abuse and AN symptoms	0.21	0.08	2.63	.009	-
Abuse and AN symptoms, controlling for emotion dysregulation	0.08	0.07	1.02	.31	-
Indirect effect of abuse on AN symptoms via emotion dysregulation	0.13	0.04	-	-	0.06 to 0.23
Model 4: Childhood Sexual Abuse^a, controlling for Childhood Emotional Abuse					
Abuse and Emotion dysregulation	0.05	0.08	0.61	.54	-
Emotion dysregulation and AN symptoms	0.40	0.07	5.85	<.001	-
Abuse and AN symptoms	0.13	0.08	1.60	.11	-
Abuse and AN symptoms, controlling for emotion dysregulation	0.11	0.08	1.48	.14	-
Indirect effect of abuse on AN symptoms via emotion dysregulation	0.02	0.03	-	-	-0.03 to 0.08

CIs = bias-corrected bootstrapped confidence intervals based on 10,000 bootstrap samples; AN = anorexia nervosa.

All variables were standardized prior to analysis in order to compare effects across models

Sexual abuse scores were log-transformed given the positive skewness and kurtosis statistics

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