Restrictive Eating Is Associated with Emotion Regulation Difficulties in a Non-clinical Sample

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Abstract

The relationship between emotion regulation difficulties and restrictive eating has not been established in non-clinical samples. In this study, undergraduates ($n = 98$) provided information regarding general and specific emotion regulation difficulties on the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2006) and whether they had engaged in recent restrictive eating. Generalized linear models were used to determine if individuals endorsing versus denying recent restrictive eating differed on emotion regulation problems. Results indicated that individuals endorsing restrictive eating had elevated DERS Total ($p < .001$), Goals ($p = .001$), Impulse ($p < .001$), and Strategies ($p < .001$) scores. Results remained primarily unchanged after controlling for the related construct of dietary restraint. Findings indicate that endorsement of restrictive eating among non-clinical individuals is uniquely associated with emotion regulation deficits, especially those reflecting emotional under-control. Interventions targeting emotion regulation may enhance prevention and treatment of restrictive eating across severity.

Keywords

Restrictive eating; Restriction; Emotion Regulation; Emotion Dysregulation; Non-clinical; Subthreshold

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The relationship between emotion regulation difficulties and eating disorders is well established (Lavender, Wonderlich, Engel, Gordon, Kaye, & Mitchell, 2015). In addition, growing evidence suggests that individuals who endorse subthreshold eating disorder symptoms also experience problems with regulating emotions. Difficulties in emotion regulation have been associated with binge eating, compensatory behaviors, body image concerns, and general eating disorder symptoms among non-clinical populations (Buckholdt et al., 2015; Cooper, O'Shea, Atkinson, & Wade, 2014; Cooper & Wade, 2015; Eichen, Chen, Schmitz, Arlt, & McCloskey, 2016; Lavender & Anderson, 2012; Shriver, Wollenberg, & Gates, 2016; Wollenberg, Shriver, & Gates, 2015). When examining specific emotion regulation deficits in these samples, problems with accepting emotions and implementing adaptive emotion modulation strategies appear to be particularly linked to general eating disorder symptoms (Lavender & Anderson, 2012; Shriver et al., 2016; Wollenberg et al., 2015) and affect-related impulsivity to eating disordered behaviors (Cooper et al., 2014; Shriver et al., 2016).

Although research has established links between emotion regulation difficulties and various subthreshold eating disorder symptoms, the relationship between emotion regulation and restrictive eating in non-clinical samples remains unknown. Restrictive eating is a disordered behavior that occurs across eating disorder presentations (Elran-Barak et al., 2015) and severity levels (Haynos & Fruzzetti, 2015). Restrictive eating predicts negative physical and psychological outcomes, even among those without a diagnosable eating disorder (Neumark-Sztainer, Wall, Story, & Standish, 2012; Stice, Davis, Miller, & Marti, 2008). Emerging evidence suggests that restrictive eating may serve an emotion regulation function in anorexia nervosa (Haynos et al., 2016); however there are no data indicating whether restrictive eating may serve an emotion regulation function in other populations with disordered eating. Research on the relationship between emotion regulation and restrictive eating in non-clinical samples could provide initial evidence regarding whether restrictive eating may function to manage emotions across severity. Such data could also inform whether a focus on enhancing emotion regulation could bolster transdiagnostic prevention and early intervention efforts. Emotion regulation difficulties have been associated with constructs related to restrictive eating, such as dieting (Wollenberg et al., 2015) and dietary restraint (Stapleton & Whitehead, 2014). However, dieting and dietary restraint have been found to better reflect *intention* to reduce eating, rather than actual caloric restriction (Haynos, Field, Wilfley, & Tanofsky-Kraff, 2015). Therefore, there is currently no research on whether endorsement of restrictive eating behavior is associated with general or specific emotion regulation deficits among individuals without an eating disorder.

Thus, the current study assessed whether endorsement of restrictive eating was associated with emotion regulation problems in a non-clinical sample. We hypothesized that individuals endorsing restrictive eating would have elevated emotion regulation deficits and that this relationship would be significant after controlling for covariates and the related construct of dietary restraint. We also ran exploratory analyses to determine if endorsement of restrictive eating was associated with specific emotion regulation deficits (e.g., problems with emotional awareness, clarity, goal-directed behavior, impulsivity, acceptance, and regulation strategies).

Methods

Participants and Procedure

Participants were 98 undergraduates $\geq$ 18 years old recruited for a study advertised as assessing health behaviors. The sample consisted primarily of college-aged ($M = 21.62$, $SD = 6.34$ years) females (80.6%). Average participant BMI was within normal limits ($M = 21.62$, $SD = 6.34$ kg/m^2), although the BMI range was considerable (16.95 to 38.97 kg/m^2). Participants received extra course credit for participation. Following informed consent, participants completed questionnaires and interviews and had weight measured by researchers. A local institutional review board approved all procedures.

Measures

Covariates.—Participants reported age and gender. BMI was calculated using measured weight and self-reported height. The Eating Disorder Examination (EDE) Restraint Scale

(Fairburn & Cooper, 1993) assessed dietary restraint. The EDE is a widely used interview measure of eating disorder symptoms. It provides a global and four subscale scores, including the Restraint subscale. The psychometrics of the EDE are well established (Berg, Peterson, Frazier, & Crow, 2012). Cronbach's α for the EDE Restraint scale was .77 in this sample.

Restrictive eating.—The Dietary Restriction Screener (DRS; Haynos & Fruzzetti, 2015) assessed restrictive eating status. The DRS is a single-item measure designed to categorize individuals by whether or not they have recently engaged in restrictive eating. The DRS clearly defines problematic restrictive eating (i.e., consuming objectively or contextually too little in order to impact body image), provides examples of restrictive eating (e.g., fasting, eating a small salad when very hungry, eating a diet frozen meal at Thanksgiving dinner), and asks participants to indicate whether they have engaged in restrictive eating in the past month. The DRS produces a dichotomous variable (Yes/No) that classifies individuals according to whether they endorse versus deny engaging in any restrictive eating in the past month. Endorsement of restrictive eating on the DRS has been found to predict eating disorder symptoms and reduced objective caloric intake better than the EDE Restraint scale (Haynos & Fruzzetti, 2015).

Emotion regulation difficulties.—The Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2006) measured emotion regulation deficits. The DERS is a 36-item scale that provides a total score and six subscale scores, reflecting the following problems in emotion regulation: (1) Awareness (limited ability to identify emotions) (α = .81); (2) Clarity (problems differentiating emotional states) (α = .83); (3) Goals (difficulty engaging in goal-directed behavior when distressed) (α = .91); (4) Impulse (problems controlling behaviors when distressed) (α = .78); (5) Non-acceptance (difficulties accepting negative emotions) (α = .85); and (6) Strategies (limited access to adaptive emotion regulation skills) (α = .90). The DERS has been shown to have high internal consistency and test-retest reliability, and good predictive and construct validity (Gratz & Roemer, 2006). Cronbach's α for the DERS was .93 in this sample.

Data Analyses

Generalized Linear Modeling, involving gamma with log link models to account for positively skewed dependent variables, was used to determine how groups organized by restrictive eating status on the DRS (No versus Yes) compared on general (DERS Total) and specific (DERS Awareness, Clarity, Goals, Impulse, Non-acceptance, and Strategy subscales) emotion regulation difficulties. Model 1 controlled for relevant covariates of age, gender, and BMI. Model 2 additionally controlled for EDE Restraint to determine if self-reported restrictive eating behavior was uniquely associated with emotion regulation difficulties above self-reported intention to restrict. The Benjamini-Hochberg (1995) procedure with a false discovery rate at 5% was used to correct for multiple comparisons.

Results

Within the sample, 48.0% of participants endorsed engaging in recent restrictive eating on the DRS and EDE Restraint Scale scores ranged from 0.00 to 4.60 ($M = 1.24$, $SD = 1.35$). As highlighted in Table 1, after adjusting for age, gender, and BMI, individuals endorsing restrictive eating demonstrated significant elevations on DERS Total score ($p < .001$), and Impulse ($p < .001$), Strategy ($p < .001$), and Goals ($p = .001$) subscale scores, compared to those not endorsing recent restrictive eating.

When analyses were repeated additionally controlling for EDE Restraint scores, individuals endorsing restrictive eating continued to have significant elevations on DERS Total (*Wald $\chi^2(1)$* = 7.66, $B = 0.16$, $SE = 0.06$, $p = .006$), Impulse (*Wald $\chi^2(1)$* = 7.84, $B = 0.19$, $SE = 0.07$, $p = .005$), and Strategy (*Wald $\chi^2(1)$* = 6.57, $B = 0.24$, $SE = 0.09$, $p = .010$) scores. In this model, Clarity subscale scores were also elevated among individuals endorsing restrictive eating (*Wald $\chi^2(1)$* = 6.57, $B = 0.20$, $SE = 0.08$, $p = .011$). In contrast, dietary restraint was not significantly associated with DERS Total score (*Wald $\chi^2(1)$* = 0.08, $B = 0.06$, $SE = 0.02$, $p = .775$), or any subscale score ($ps = .162$ to $.589$), after controlling for restrictive eating status.

Discussion

This study demonstrated that individuals without a diagnosed eating disorder who endorse restrictive eating have elevated difficulties with general emotion regulation and specific emotion regulation skills, such as engaging in goal-directed behavior, inhibiting impulsive behavior, and selecting appropriate emotion management strategies when distressed. These relationships were of medium to large effect sizes and generally maintained significance after controlling for dietary restraint, suggesting that restrictive eating behavior is strongly linked with emotion regulation problems beyond the contribution of restrictive eating intention.

These results have important implications. First, prior work has demonstrated that individuals with eating disorders have emotion regulation deficits (Lavender et al., 2015) and that restrictive eating may function to regulate emotions in these populations (Haynos et al., 2016). The findings of the current study, in concert with this past research, indicate that emotion regulation deficits characterize individuals engaging in restrictive eating with varied clinical presentations. Therefore, such deficits may be transdiagnostic mechanisms promoting restrictive eating across severity. If this is the case, intervention efforts focused on enhancing emotion regulation abilities may assist in reducing problematic restrictive eating across eating disorder diagnosis and severity. Additionally, prevention efforts targeting emotion regulation among subthreshold restricting individuals may reduce the risk of developing more severe disordered eating. These clinical implications should be considered cautiously since they were not directly tested. Further, because the analyses were cross-sectional, findings could reflect emotion regulation difficulties being consequences or correlates, rather than causes, of restrictive eating. However, our findings highlight the need for more research on the emotion regulation functions of restrictive eating in non-clinical

samples and the utility of emotion regulation prevention and intervention for individuals who engage in restrictive eating across clinical presentations.

Second, our finding that individuals who endorsed restrictive eating had specific elevations on the DERS Impulse and Strategies subscales is in line with prior research linking these aspects of emotion regulation to eating disordered behaviors (Cooper et al., 2014; Lavender & Anderson, 2012; Shriver et al., 2016; Wollenberg et al., 2015). It has been hypothesized that individuals with disorders characterized by restrictive eating, such as anorexia nervosa, may have more problems of emotional over-control (i.e., poor emotional awareness, understanding, and acceptance), rather than under-control (Chen et al., 2015). In contrast to this supposition, individuals endorsing restrictive eating in this sample had emotion regulation deficits more characteristic of emotional under-control than over-control. These findings could indicate that restrictive eating is functionally similar to more obviously under-regulated behaviors (e.g., binge eating), at least among non-clinical individuals. This interpretation could explain why restrictive eating is also associated with disorders characterized by elevated impulsivity, such as bulimia nervosa (Elran-Barak et al., 2015), as well as why restrictive eating is elevated among the binge eating/purging subtype of anorexia nervosa compared to the restricting subtype (De Young et al., 2013). Thus, specifically targeting enhanced emotional control might maximize prevention and intervention efforts for restrictive eating; however more research in this area is needed.

Contrary to prior research (Lavender & Anderson, 2012; Shriver et al., 2016; Wollenberg et al., 2015), this study did not find a relationship between the DERS Non-acceptance subscale and restrictive eating. Further, after controlling for dietary restraint, the Goals subscale was no longer significant and the Clarity subscale became significant. These results could suggest that certain deficits (e.g., difficulty understanding emotions) may be more specifically associated with restrictive eating, whereas other deficits (e.g., problems with emotion acceptance and goal-directed behavior) may be more specifically linked with other symptoms. More research is needed to understand the relationship between these specific deficits and restrictive eating.

Limitations of this study include use of self-report measures to assess restrictive eating and emotion regulation difficulties, which may have introduced participant bias, and cross-sectional design, which limited ability to establish causation. Further, although prior research has suggested the validity of the DRS in classifying individuals according to restrictive eating (Haynos & Fruzzetti, 2015; Haynos et al., 2016), it is possible that this measure identifies a construct other than objective restrictive eating. Future research on the relationship between emotion regulation deficits and restrictive eating in non-clinical samples should include objective measures of restrictive eating and emotion regulation, as well as longitudinal designs.

This study adds to the growing literature indicating that emotion regulation difficulties are linked to disordered eating in samples without an eating disorder and highlights the need to further study emotion regulation interventions across eating disorder diagnosis and severity.

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Table 1

Generalized Linear Models Comparing Groups on Emotion Regulation Difficulties According to Restrictive Eating Status

Dependent Variable	DRS restrictive eating		Wald $\chi^2(1)$	B	SE	p	d
	No (n = 51)	Yes (n = 47)					
DERS Total	61.63 (14.72)	73.40 (19.10)	13.69	0.18	0.05	<0.001 *	0.70
DERS Awareness	12.98 (4.73)	13.81 (4.53)	0.85	0.06	0.07	0.36	0.18
DERS Clarity	8.46 (3.08)	9.65 (3.00)	4.51	0.13	0.06	0.03	0.40
DERS Goals	11.88 (4.26)	14.15 (4.74)	11.21	0.24	0.07	0.001 *	0.51
DERS Impulse	7.48 (1.61)	9.52 (3.28)	19.12	0.24	0.06	<0.001 *	0.81
DERS Non-acceptance	9.75 (3.76)	11.06 (4.70)	2.94	0.13	0.07	0.09	0.31
DERS Strategies	11.81 (4.86)	15.38 (6.45)	12.86	0.26	0.07	<0.001 *	0.64

Note: All analyses controlled for age, gender, and BMI; DERS = Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2006); DRS = Dietary Restriction Screener (Haynos & Fruzzetti, 2015)

*
statistically significant after Benjamini-Hochberg corrections