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Restraint feeds stress: The relationship between eating disorder symptoms, stress generation, and the interpersonal theory of suicide ☆

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ABSTRACT

Integrating research on stress generation and the interpersonal theory of suicide we examined whether eating disorder symptoms are related to stress generation and whether negative life events (stressors) contribute to feelings of burdensomeness and low belongingness. At two time points (approximately 1 month apart), participants ($n = 186$; 75% female) completed questionnaires measuring eating disorder symptoms, negative life events, burdensomeness, and belongingness. Regression analyses indicated that while controlling for depression, anxiety, and baseline frequency of negative events, dietary restraint significantly predicted negative events at follow-up. Dietary restraint indirectly influenced higher levels of perceived burdensomeness and low belongingness through its influence on negative events. Thus, dietary restraint may contribute to stress generation, and in turn exacerbate feelings of burdensomeness and low belongingness, two important constructs of the interpersonal theory of suicide. Greater understanding of these factors could lead to more effective and targeted suicide interventions for individuals who restrict food intake.

1. Introduction

Eating disorders are serious mental illnesses (Klump, Bulik, Kaye, Treasure, & Tyson, 2009) that occur in a small percentage of the population and are associated with an increased risk of mortality (Franko et al., 2013; Smink, van Hoeken, & Hoek, 2012). This increased mortality risk can be partially attributed to an elevated risk for death by suicide among individuals with eating disorders (Arcelus, Mitchell, Wales, & Nielsen, 2011; Bodell, Joiner, & Keel, 2013; Crow et al., 2009; Preti, Rocchi, Sisti, Camboni, & Miotto, 2011). Risk for death by suicide is particularly elevated among individuals with anorexia nervosa (AN). Large meta-analyses have revealed that one out of five deaths among those with AN are from suicide (Arcelus et al., 2011), and that individuals with AN are 40 times more likely to die by suicide compared to individuals in the general population (Preti et al., 2011). Given the high rates of suicide among individuals with eating disorders, and particularly AN, it is important to understand why and how eating disorder symptoms lead to this outcome.

The interpersonal theory of suicide (IPTS) suggests that people die by suicide when three factors are present: low belongingness, high perceived burdensomeness, and acquired capability for suicide (Joiner, 2005; Van Orden et al., 2010). Understanding how eating disorder behaviors affect the three constructs of the IPTS may offer insight into the elevated rates of suicide among individuals with eating disorders. Previous work has found a positive relationship between eating disorders and acquired capability for suicide (ACS) (Selby et al., 2010; Smith et al., 2013). Importantly, this positive relationship may not be generally applicable to all eating disorders, but rather, specific eating disorder behaviors may differentially increase ACS. For example, there is evidence to suggest that repetitive, painful, and provocative behaviors such as self-induced vomiting and laxative use are associated with suicidal behavior among individuals with the binge–purge subtype of AN, while the painful experience of continuous starvation is associated with suicidal behavior among individuals with the restricting subtype of AN (Selby et al., 2010). Further, over-exercise is associated with ACS and suicide attempts among individuals with bulimia nervosa (Smith et al., 2013). However, no research to date has directly examined the relationship between eating disorder behaviors and the other IPTS constructs: perceived burdensomeness and low belongingness. Thus, one aim of the present study is to examine the relationship between various eating disorder symptoms and perceived burdensomeness and low belongingness.

Informed by research on the stress generation hypothesis (Hammen, 1991, 2006), the present study also aims to examine a third variable that may indirectly affect (Preacher & Hayes, 2004) the relationship between eating disorder symptoms and the IPTS constructs of perceived burdensomeness and low belongingness: negative life events. The

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stress generation hypothesis theorizes that individuals with depression actively generate additional stress in their lives, particularly interpersonal stress, which subsequently worsens depressive symptoms (Hammen, 1991, 2006). The depression literature provides substantial support for the stress generation hypothesis (Liu & Alloy, 2010). Meanwhile, research has consistently found that eating disorder behaviors are associated with significant psychosocial impairment (Klump et al., 2009; Mond, Hay, Rodgers, & Owen, 2009), that stressful life events contribute to eating disorder development and relapse (Grilo et al., 2012), and that low social support and negative life events can predict increases in eating disorder symptoms (Bodell, Smith, Holm-Denoma, Gordon, & Joiner, 2011). Given the links between stress and eating disorder maintenance and relapse, it would be important to know if behaviors and experiences specific to eating disorders are not only associated with stress, but also contribute to stress generation, as is the case with depression.

Previous research examining the potential connection between eating disorders and stress generation (Bodell et al., 2012) found that in a sample of 290 female undergraduates, bulimic symptoms and drive for thinness at baseline did not predict, above and beyond depressive symptoms, negative life events approximately 8 weeks later. However, it is important to note that Bodell et al. (2012) examined only three aspects of eating disorders (bulimic symptoms, body dissatisfaction, and drive for thinness) in relation to stress generation. Notably missing from their examination was actual dietary restraint, or attempts to reduce caloric intake, which is a prominent feature of both anorexia and bulimia (American Psychiatric Association, 2013). As previously discussed, there appear to be different routes to increased ACS across eating disorder behaviors and diagnoses (Selby et al., 2010; Smith et al., 2013). This research suggests that distinct eating disorder behaviors contribute differently to IPTS constructs, and that eating disorder behaviors associated with AN may be particularly harmful. Although bulimic symptoms, body dissatisfaction, and drive for thinness did not generate stress above and beyond depressive symptoms in the Bodell et al. (2012) study, other eating disorder symptoms (i.e., restraint) may. Thus, an additional aim of the present study was to replicate and extend the Bodell et al. (2012) study by examining whether restraint might contribute to increased stress generation. In keeping with previous studies (Bodell et al., 2012; Hammen, 1991; Joiner, Wingate, Gencoz, & Gencoz, 2005) we operationalized stress generation in the current study as an increased occurrence of negative life events over a particular time span.

To summarize, the present study aims to integrate research on stress generation, disordered eating, and the IPTS. The main aim of this study is to examine whether dietary restraint may be related to stress generation, defined as an increased occurrence of negative life events. Additionally, given the often interpersonal nature of stress generation, as well as the existing literature on stress generation in depression and eating disorders, the present study examines whether the experience of negative life events is related to burdensomeness and low belongingness. Specifically, we examine the relationship between various disordered eating behaviors at Time 1 (T1), and burdensomeness and belongingness at Time 2 (T2; approximately 1 month later) in an undergraduate population, and further, we examine whether that relationship is indirectly affected by negative life events at T2.

2. Methods

All procedures described below were approved by the university's institutional review board.

2.1. Participants

One hundred ninety-four undergraduates from a large southeastern university participated in exchange for course credit. To be eligible for participation, participants had to be at least 18 years old. There were no other inclusion or exclusion criteria. Participants that did not complete the Time 2 study visit ($n = 8$) were not included in the present analyses, which resulted in a final sample size of 186. A one-way ANOVA revealed that there were no significant differences between T2 completers and non-completers on any T1 scale or subscale scores included in the analyses, or on demographic variables (all $ps > .09$). Majority of participants were female (78.0%; $n = 145$). Participants primarily self-reported their race as White (76.3%; $n = 142$), followed by Black or African-American (8.6%, $n = 16$), Asian (3.8%, $n = 7$), Hawaiian/Other Pacific Islander (.5%, $n = 1$), and other or unanswered (10.8%, $n = 20$). The participants ranged in age from 18 years old to 25 years old (mean age = 18.7 years, $SD = 1.2$ years).

2.2. Procedure

Participants chose to enroll in the present study after reading an online list of studies (including brief descriptions of each study) for which they could receive research participation course credit in exchange for participating. All study activities were completed online via a secure website. Participants read an informed consent form and then provided informed consent via an electronic signature. Study participation involved filling out self-report questionnaires on two occasions. The study was designed to have a minimum of 28 days between Time 1 and Time 2; however, seven participants prematurely completed Time 2 and thus had a slightly shorter interval between time points. The mean length of time between T1 and T2 was 31 days ($SD = 4.38$ days, range: 19–58 days).

2.3. Measures

The Beck Depression Inventory II (BDI-II) is a 21-item scale designed to measure the severity of self-reported depression (Beck, Steer, & Brown, 1996). Respondents are asked to indicate, on a scale from 0 to 3, how much each item describes the way the respondent has been feeling in the past 2 weeks. Items ask about many common depressive symptoms (e.g., feeling indecisive, irritable, or worthless; experiencing changes in sleeping patterns or appetite). The BDI-II yields a total score from 0 to 63, with higher scores indicating more severe depression. Specifically, scores below 13 indicate no depression, scores from 13 to 19 indicate mild depression, and scores from 20 to 63 indicate depression (Dozois, Dobson, & Ahnberg, 1998). The BDI-II has been shown to have good psychometric properties (Beck, Steer, Ball, & Ranieri, 1996) and has been used with undergraduate samples (Dozois et al., 1998). For the purposes of the present study, one item from the BDI-II (item #9, which asks about suicidal thoughts and wishes) was removed from the instrument. The nature of the study (e.g., participation occurring exclusively online) was such that investigators could not guarantee clinically sufficient and prompt assessment and intervention if suicidality was endorsed. Furthermore, the information assessed for by the BDI-II suicidality item was not necessary for the present analyses. Therefore, in the interest of participant safety the investigators opted to omit the BDI-II suicidality item. The BDI-II was used as the measure of depression in the present study; it was administered at Time 1. Cronbach's alpha for the present sample was .81 at T1.

The Beck Anxiety Inventory (BAI) is a self-report, 21-item survey designed to assess severity of anxiety in the past 2 weeks (Beck, Epstein, Brown, & Steer, 1988). The BAI asks about many common symptoms of anxiety (e.g., fear of losing control, inability to relax, feelings of nervousness, psychosomatic symptoms such as feeling dizzy or experiencing a racing heart). Using a 4-point Likert scale (from “not at all” to “severely”) respondents indicate how much they have been affected by particular symptoms in the past 2 weeks. The BAI yields a score from 0 to 63, with higher scores indicating more severe anxiety. Specifically, scores below 8 indicate minimal anxiety, scores ranging from 8 to 15 indicate mild anxiety, scores ranging from 16 to 25 indicate moderate anxiety, and scores 26 and higher indicate