Negative Affective Experiences in Relation to Stages of Eating Disorder Recovery

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Abstract

The purpose of this study was to examine a collection of negative affect symptoms in relation to stages of eating disorder recovery. Depressive symptoms, anxiety symptoms, loneliness, and perceived stress are known to be present in individuals with eating disorders; however, less is known about the presence of such constructs throughout the recovery process. Does this negative affect fog continue to linger in individuals who have recovered from an eating disorder? Female participants seen at some point for an eating disorder at a primary care clinic were categorized into one of three groups using a stringent definition of eating disorder recovery based on physical, behavioral, and psychological criteria: active eating disorder ($n = 53$), partially recovered ($n = 15$; psychological criteria not met), and fully recovered ($n = 20$; all recovery criteria met). Additionally, data were obtained from 67 female controls who had no history of an eating disorder. Self-report data indicated that controls and women fully recovered from an eating disorder scored significantly lower than partially recovered and active eating disorder groups in perceived stress, depression, and anxiety. Controls and the fully recovered group were statistically indistinguishable from each other in these domains, as were the partially recovered and active eating disorder groups, suggesting an interesting divide depending on whether psychological criteria (e.g., normative levels of weight/shape concern) were met. In contrast, controls and fully recovered and partially recovered groups all reported feeling significantly less lonely relative to those with an active eating disorder suggesting that improved perceptions of interpersonal, social support may act as a stepping stone toward more comprehensive eating disorder recovery. Future research may want to longitudinally determine if an increase in actual or perceived social support

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facilitates the movement toward full recovery and whether this, in turn, has salutatory effects on depression, anxiety, and perceived stress.

Keywords

Eating disorder; recovery; depression; anxiety; loneliness; stress

1. Introduction

Negative affect has strong connections with disordered eating. From a theoretical standpoint, Heatherton and Baumeister (1991) propose that binge eating provides temporary relief from negative emotional distress that accompanies ego threats. Empirically, experience sampling methodology has found that the highest rates of binge eating and purging appear to occur on days characterized by stable high negative affect or increasing negative affect across the day (Crosby, Wonderlich, Engel, Simonich, Smyth, & Mitchell, 2009). Other research has found that negative affect, defined as the experience of subjected distress, predicts higher levels of restrained eating (Paa & Larson, 1998).

Given the role that negative affect may play in the development and maintenance of disordered eating and considering the historically poor treatment prognosis and high relapse rates among individuals diagnosed with eating disorders (Grilo et al., 2007; Steinhausen, 2002), a priority for researchers is to better understand the role of negative affective experiences in the process of recovery from an eating disorder. For example, individuals with a history of anorexia nervosa (AN) that appear weight-restored and outwardly recovered may be on the precipice of relapse if experiencing psychological distress, as this distress may have the potential to hamper therapeutic progress, motivation to continue recovery, and positive interpersonal interactions. Similarly, for those with a history of bulimia nervosa (BN) abstinence from maladaptive eating behaviors may discontinue under affective distress as such behaviors often serve as a method of coping with uncomfortable affect. Given that psychological distress may contribute to where one lands on the eating disorder recovery continuum and may be a barrier to ongoing progress toward recovery, it is important to better understand the affective experiences of women across recovery groups. This paper explores the self-reported negative affective experiences of depression, anxiety, loneliness, and perceived stress in relation to stages of eating disorder recovery.

Depression has been an extensively studied correlate of disordered eating. Multiple studies have found major depressive disorder to be a common comorbid diagnosis in individuals with eating disorders such that 50–75% of those with a lifetime history of an eating disorder also have a lifetime history of depression (APA Workgroup on Eating Disorders, 2006; Fernandez-Aranda et al., 2007; Fichter & Quadflieg, 2004). Depressive symptoms are related to self-criticism of weight and shape as well as overvaluation of weight and shape, highlighting how the negative, generalized thinking associated with depression may manifest within a body dissatisfied population (Dunkley & Grilo, 2007). Depressive symptoms have been found to prospectively predict both the onset and increases in binge eating in female adolescents and young women (Skinner, Haines, Austin, & Field, 2011; Spoor, Stice, Bekker, Van Strien, Croon, Van Heck, 2006; Stice, Presnell, & Spangler, 2002). Depressive symptoms also appear to increase as a result of disordered eating as elements of eating disorders may promote feelings of shame and isolation (Skinner et al., 2011; Stice & Bearman, 2001; Stice, Hayward, Cameron, Killen, & Taylor, 2000). Further, shared genetic factors may contribute to the development of both eating disorders and depression, implicating genes as predisposing an individual to both disorders and partly

explaining the relation between the two (Slane, Burt, & Klump, 2011; Wade, Bulik, Neale, & Kendler, 2000).

Individuals with comorbid eating disorder and major depression diagnoses were found to have poorer eating disorder outcomes, suggesting that depression may hamper recovery from an eating disorder (Berkman, Lohr, & Bulik, 2007; Lowe, Zipfel, Bucholz, Dupont, Reas, & Herzog, 2001). Interestingly, multiple studies have found that depressive symptoms may reemerge in individuals with AN as weight is restored, suggesting that the initial steps toward recovery from AN (i.e., weight regain) may indeed generate negative affect (Holtkamp, Muller, Heussen, Remschmidt, & Herpertz-Dahlmann, 2005; Mischoulon et al., 2010; Wagner, et al., 2006). Thus, it may be important to identify and understand the role of depressive symptoms in the process of recovery as the reemergence of depression may stymie recovery efforts.

Studies investigating the comorbidity of anxiety disorders and eating disorders have found that approximately two-thirds of individuals with AN or bulimia nervosa (BN) have had one or more lifetime anxiety disorders, with obsessive compulsive disorder and social phobia being the most common (Kaye, Bulik, Thornton, Barbarich, & Masters, 2004). In terms of temporal ordering, many individuals with eating disorders report experiencing anxiety prior to the onset of the eating disorder (Bulik, Sullivan, Fear, & Joyce, 1997; Kaye et al., 2004). Additional research corroborates the finding that anxiety may precede, and indeed be a risk factor for, an eating disorder. (Bulik, et al., 1997; Godart, Flament, Perdereau, & Jeammet, 2001). Anxiety symptoms not only emerge prior to the onset of an eating disorder, but may also persist after recovery. For example, one study found that women in long-term recovery (10 years) from adolescent-onset AN had higher rates of anxious and obsessive-compulsive features compared to controls (Holtkamp, et al., 2005). A similar pattern emerges for those with a history of BN such that anxiety symptoms are still present after recovery (Kaye et al., 1998; Stein et al., 2002; von Ranson, Kaye, Weltzin, Rao, & Matsunaga, 1999). Finally, in line with the finding that depressive symptoms and disordered eating may share common genetic factors, Silberg and Bulik (2005) found that anxiety also shares a genetic liability with eating disorders.

Loneliness refers to the subjective, distressing feeling that one's social needs are unmet and is accompanied by an inner desire to feel more closely connected to others (Hawkley & Cacioppo, 2010). Multiple studies have emphasized the connection between loneliness and eating pathology. For instance, feeling lonely is related to increased body dissatisfaction and weight/shape concerns in both adolescents and college women (Pritchard & Yalch 2009; Sinton, et al., 2012). Some studies have shown that feelings of loneliness are particularly related to bulimic symptomology such that loneliness is associated with increased food consumption and the desire to binge, particularly in individuals vulnerable to binge eating (i.e., restrained eaters) (Rotenberg & Flood, 1999; Tuschen-Caffier & Vogele, 1999; Zeeck, Stelzer, Linster, Joos, & Hartmann, 2011). These feelings of loneliness may emerge prior to disordered eating as adult women with current or past AN binge-purge subtype were more likely to retrospectively report feeling lonely during adolescence compared to control groups with no eating disorder history, and reported feelings of loneliness emerging prior to the onset of their eating disorder (Troop & Bifulco, 2002). Interestingly, Stewart (2004) concluded that feelings of loneliness and isolation may contribute to eating disorder relapse and called for additional research directly investigating levels of loneliness and the recurrence of eating disordered symptoms.

Perceived stress, or the extent to which a situation in one's life is deemed distressing, may place some individuals at greater risk for developing disordered eating patterns. Unlike objective assessments of life stressors, reports of perceived stress incorporate an individual's

cognitive and emotional response to her environment (i.e., the situation is demanding and she believes she has inadequate resources to cope with the situation) (Cohen, Kamarck, & Mermelstein, 1983). Elevated levels of perceived stress have been found to precede the onset of binge eating disorder in females, suggesting that perceived stress may indeed be a risk factor for the onset, or potentially the reemergence, of eating disorder symptoms (Striegel-Moore, Dohm, Kraemer, Schreiber, Taylor, & Daniels, 2007). Emotional eating, conceptualized as eating in response to negative affect, was elevated in an ethnically diverse sample of adolescents who reported higher rates of perceived stress than their peers (Nguyen-Rodriguez, Unger, & Spruijt-Metz, 2009). Interestingly, perceived stress appeared to influence emotional eating in female adolescents but not males, implying that young women may be more susceptible to overeating in the presence of stress. Focusing on restrictive eating, women with a history of AN reported stressful life events as a primary perceived cause of the development of their eating disorder (Tozzi, Sullivan, Fear, McKenzie, & Bulik, 2003). Further, one experimental paradigm found that when faced with a public speaking task, women with AN reported higher levels of stress and negative arousal than healthy controls although both groups showed similar heart rate and cortisol responses. This finding suggests that increased stress reported by those with eating disorders may stem from psychological rather than physiological factors (Zonnevylle-Bender, van Goozen, Cohen-Kettenis, Jansen, van Elburg, & van Engeland, 2005).

In general, perceived stress may stimulate disordered eating behaviors, particularly in individuals at risk for developing an eating disorder (e.g., females with low self-esteem or perfectionistic tendencies) (Beukes, Walker, & Esterhuyse, 2010; Sassaroli & Ruggiero, 2005). Further, stress may not only act as a risk factor for disordered eating but may also be amplified as a result of an eating disorder, thus exacerbating the cycle between perceived stress and eating pathology (Ball & Lee, 2002; Rosen, Compas, & Tacy, 1993). For those with a history of disordered eating, the heightened experience of stress may continue past the active stage of the eating disorder. One study found that psychological reports of stress from partially and fully weight-restored individuals with a history of AN were similar to those with acute AN (Miller, Erickson, Branom, & Steiner, 2009). In women with a history of BN, those who had not engaged in maladaptive eating patterns for over a year reported elevated levels of reactivity to stress compared to healthy controls (Stein et al., 2002). Given the complex relations between stress and disordered eating, it is important to better understand perceptions of life stress particularly in relation to recovery from an eating disorder.

In sum, previous research suggests that negative affective experiences such as depression, anxiety, loneliness, and perceived stress related to disordered eating. However, less is known in terms of these experiences and recovery from an eating disorders, and, to our knowledge, no work has taken the approach of defining recovery comprehensively, including a psychological recovery component, and examining negative affective experiences in a continuous fashion. Indeed, the prior findings related to recovery must be tempered by the lack of a comprehensive, consensus definition of recovery (Bardone-Cone et al., 2010). Further, although research indicates that negative affective experiences may put individuals at risk for eating disorder relapse, few studies have examined the experiences of "partially recovered" or remitted individuals who are arguably more prone to relapse than individuals recovered across physical, behavioral, and psychology dimensions. Given the importance of psychological health in achieving and maintaining full recovery, better understanding the negative affective experiences encountered during recovery may be important in helping prepare clients to cope with psychological impediments associated with the road to recovery.

In the current study, we hypothesize that for all the negative affective experiences assessed (i.e., depression, anxiety, loneliness, and perceived stress) those that are fully recovered will report significantly fewer negative affective experiences relative to those in the active eating disorder group and will look comparable to controls on these dimensions. We also predict that those in the partially recovered group will fall between the active and fully recovered groups in terms of their subjective negative affective experiences.

2. Method

2.1. Participants and recruitment

Attempts were made to contact all current and former female eating disorder patients (ages 16 and older) seen at the University of Missouri Pediatric and Adolescent Specialty Clinic ($N = 273$) between 1996 and 2007, the year of data collection. This clinic is a primary care and referral clinic specializing in the care of children and adolescents (ages 10–25 years) that has physicians with expertise in eating disorders. Of the 273 eating disorder patients, 96 (35.2%) were successfully contacted and recruited. Fifty-five (20.1%) of the 273 were contacted but did not participate due to other time commitments or lack of interest. Of the remaining patients, four (1.5%) were deceased and 118 patients (43.2%) could not be contacted due to absent or incorrect mailing addresses or inability to make phone contact. These rates are fairly comparable to those of other studies doing a follow-up of eating disorder patients over a range of about 10 years (Reas, Williamson, Martin, & Zucker, et al., 2000; Yackobovitch-Gavan et al., 2009). In sum, of the 151 eating disorder patients we were able to contact, 63.6% participated. Controls were recruited from two sources: the clinic from which the eating disorder patients were recruited ($n = 17$) and the university campus ($n = 50$). Eligible controls were females ages 16 and older with no current or past eating disorder symptoms.

2.2. Procedures

After providing written consent, all participants first completed a set of questionnaires and then, typically one week later, an interview that included a diagnostic clinical interview. Most participants completed the questionnaires (71.2%) and interview (82.9%) in person. Those who lived too far away to travel to the study site completed the questionnaires via mail and did a phone interview. Participants were provided financial remuneration after completing the interview. All aspects of this study were approved by the university's Institutional Review Board.

2.3. Measures

2.3.1. Measures used to define eating disorder status—The Structured Clinical Interview for DSM-IV, Patient Edition (SCID; First, Spitzer, Gibbon, & Williams, 1995) was used to determine lifetime and current eating disorders (AN-excluding the amenorrhea requirement, BN, and Eating Disorder Not Otherwise Specified (EDNOS)). For the physical component of recovery, weight and height were measured (or self-reported for the minority who did not complete the interview in person) to determine body mass index (BMI). Behavioral components of recovery were assessed with portions of the Eating Disorders Longitudinal Interval Follow-up Evaluation (LIFE EAT II; Herzog, Sacks, Keller, Lavori, von Ranson, & Gray, 1993), where participants were asked to recount, week by week, their disordered eating behaviors (e.g., binge eating, restricting) for the past three months. To collect data on the psychological components of recovery, the restraint, eating concern, weight concern and shape concern subscales of the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994) were used.

2.3.2. Measures used to assess negative affective experiences—Depressive symptoms were assessed using the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). This 20-item scale measures affective and somatic symptoms associated with depression within a one-week period. The symptom frequency scale ranges from 0 (*rarely or none of the time, less than one day*) to 3 (*most or all of the time, 5–7 days*) with higher scores indicating a higher degree of depressive symptomology. Scores of 16 or greater are used as an established cut-off indicative of depression (Radloff, 1977). The CES-D has demonstrated good internal consistency (alpha = .85 in the general population and alpha = .90 in a clinically depressed population; Radloff, 1977). In the current study, coefficient alpha was .93.

Trait anxiety, which refers to the "relatively stable individual differences in anxiety proneness" (Spielberger, Gorsuch, & Lushene, 1970, p. 3), was assessed using the trait anxiety scale of the Spielberger State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970). Participants responded to this 20-item scale about their general tendency to display anxiety (e.g., feel nervous or tense) using a 4-point scale ranging from 1 (*almost never*) to 4 (*almost always*). The STAI has been found to have good discriminant validity, and the trait anxiety scale has been found to have good test–retest reliability (.97—Metzger, 1976; .86— Rule & Traver, 1983). Construct validity is demonstrated by the fact that scores for the state anxiety scale items consistently vary in the face of different stressors, while the scores for the trait scale items do not (Hedberg, 1972). Further, the STAI trait anxiety scale has been found to correlate highly with other self-report measures of negative affectivity in samples experiencing both high and low anxiety (Watson & Clark, 1984) and to differentiate between individuals with and without anxiety disorders (Taylor, Koch, & McNally, 1992). In the current study, alpha was .95.

Loneliness was assessed with the UCLA Loneliness Scale (Version 3) (Russell, 1996). This 20-item scale has a response scale that ranges from 1 (*never*) to 4 (*always)* with higher scores indicating greater degrees of loneliness. Sample items include: "How often do you feel that there is no one you can turn to?" and "How often do you feel isolated from others?" The UCLA Loneliness Scale has demonstrated high reliability (coefficient alphas ranging from .89 to .94; Russell 1996) and has demonstrated appropriate convergent and construct validity in samples of college students, older adults, nurses, and teachers (Russell, 1996). In the current study, coefficient alpha was .96.

Perceived stress was assessed with the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) assesses the degree to which situations in one's life during the past month are appraised as stressful. This 14-item scale has a response scale that ranges from 0 (*never*) to 4 (*very often*) with higher scores indicating higher degrees of perceived stress. Sample items include: "In the last month how often have you been upset because of something that happened unexpectedly?" and "In the last month, how often have you found that you could not cope with all the things that you had to do?" The PSS has demonstrated adequate reliability (coefficient alphas ranging from .84 to .86) and validity in samples of college students and participants in a community smoking-cessation program (Cohen et al., 1983). In the current study, coefficient alpha was .92.

2.4. Analytic strategy

Based on data from the SCID, the LIFE EAT II, the EDE-Q, and BMI, individuals with an eating disorder history were categorized into one of three groups following the guidelines established and validated by Bardone-Cone and colleagues (2010): fully recovered, partially recovered, or active eating disorder.[1] The fully recovered group (*n* = 20) comprised women without a current eating disorder who had a BMI of at least 18.5 kg/m^{2} (the minimum of what is considered normal by the World Health Organization; Bjorntorp, 2002), reported no

binge eating, purging, or fasting in the prior 3 months, and scored within 1 standard deviation (*SD*) of age-matched community norms on each of the EDE-Q subscales (Mond, Hay, Rodgers, & Owen, 2006). Individuals were considered partially recovered (*n* = 15), if they met all the criteria of full recovery except for psychological recovery (i.e., at least one EDE-Q subscale greater than 1 *SD* of age-matched norms). Active eating disorder cases (*n* = 53) had a current eating disorder diagnosis (AN, BN, or EDNOS) and controls (*n* = 67) had no history of an eating disorder. One-way analysis of variance (ANOVA) was used to examine potential differences between groups on the various negative affect dimensions. Significant effects (p < 0.05) were followed up with Tukey HSD tests for pair-wise comparisons.

3. Results

The age of participants ranged from 16–40 (*M* = 21.78 years, *SD* = 4.28). The majority identified as Caucasian (91.6%) with few women identifying as Asian (1.9%), African American (1.3%), or biracial-ethnic (5.0%). Highest parental education attained was used as a proxy of socioeconomic status and ranged from 11 to 21 years (*M* = 16.60 years, *SD* = 2.73). The four groups were similar in terms of ethnicity and socio-economic status, but differed in age (*F*(3, 151) = 15.44, *p* < .001), with controls significantly younger than the eating disorder recovery groups. However, controlling for this age difference did not impact the patterns of significance so results without age as a covariate are presented for parsimony. In addition, the three eating disorder groups (fully recovered, partially recovered, and active eating disorder) did not significantly differ in number of years since the onset of eating disorder symptoms, BMI at start of treatment, or their percentage with a lifetime diagnosis of AN. Of the fully recovered group, lifetime prevalence of an eating disorder was reported as follows: 45% only ever had AN, 25% only ever had BN, 10% had both AN and BN, and 20% only ever had EDNOS. Of the partially recovered group, lifetime prevalence of an eating disorder was reported as follows: 60% only ever had AN, 13.3% only ever had BN, 13.3% had both AN and BN, and 13.3% only ever had EDNOS. And finally, of the active eating disorder group, 17% currently had AN, 6% had BN, and 77% had EDNOS (primarily bulimic-type presentations). In order to examine whether participants differed from non-participants (i.e., those that could not be contacted and those that were contacted but did not participate), information was gathered from clinic chart data of non-participants for comparison. Participants were not significantly different from non-participants in terms of age or BMI at first clinic visit, eating disorder diagnoses, and number of years since last clinic visit, indicating that current participants are representative of the clinic eating disorder population on these measures.

ANOVA findings related to negative affective experiences reported by each of the eating disorder groups and controls are located in Table 1. Group differences were apparent in the negative affect domains of depression, anxiety, and perceived stress, such that the active and partially recovered groups reported higher levels of these negative affective experiences compared to the controls and fully recovered groups. Of note, the mean depressive symptom scores for the partially recovered and active eating disorder groups were both above the threshold of 16, indicating depression, while the fully recovered group had a mean depression score of about 9. Interestingly, while group differences also emerged for

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[1]Eight of the 96 current and former eating disorder patients did not meet criteria for a current eating disorder or either definition of recovery (i.e., partial recovery of physical and behavioral recovery, but not psychological recovery, or full recovery of physical, behavioral, and psychological recovery). These were primarily individuals who had reported some (though minimal) binge eating or purging, typically once or twice in the past three months. We excluded these individuals from analyses in order to produce "cleaner" recovery groups and in order to include a recovery group more typical of what is seen in the literature (i.e., physical and behavioral recovery). However, when analyses were run including these eight individuals in the "partial recovery" group, the same pattern of results emerged as presented in this work using the stricter definition of partial recovery.

loneliness, pair-wise comparison revealed different relations among the groups; controls, fully recovered individuals, and partially recovered individuals were statistically indistinguishable from each other, with each group reporting significantly lower levels of loneliness than those in the active eating disorder group.

4. Discussion

The current study investigated the negative affect experiences of depression, anxiety, loneliness, and perceived stress in samples of women with a history of an eating disorder at different stages of recovery. A pattern emerged where controls and fully recovered individuals reported comparable levels of depression, anxiety, and perceived stress (indeed, remarkably similar mean scores; see Table 1), that were lower than the levels reported by those in the partially recovered and active eating disorder groups. However, a different finding surfaced for the loneliness construct in that controls, fully recovered, as well as partially recovered individuals, reported similar levels of loneliness that were lower than the level reported by those in the active eating disorder group.

These findings regarding feelings of loneliness are supported by previous research that found that, in this same sample, fully recovered individuals, partially recovered individuals, and controls look similar in terms of relationship functioning as defined by participants' self-reported impairment in a variety of relationships (mother, father, romantic, and friends) (Bardone-Cone et al., 2010). Improved interpersonal functioning relative to those with an eating disorder likely precedes or coincides with decreases in loneliness. How might this work for those at a recovery stage of an eating disorder? Individuals in full or partial recovery may exhibit lower levels of loneliness than those with an eating disorder if, when an individual makes changes that are visible (e.g., weight regain, cessation of extreme dieting), people in her social circle, such as family, friends, and romantic partners, respond positively. As such, these close others may act more warmly towards and socially reengage with the individual, which may facilitate decreased feelings of loneliness. Together, these studies provide hope that interpersonal relationships may improve during recovery and loneliness lessen and further, this improvement may provide the social backbone often needed for progressing toward more comprehensive recovery. Indeed, one study found that women recovered from an eating disorder described feeling connected to others as vital in the recovery process, suggesting that social support may offer women a route to overcoming the disorder (Linville, Brown, Sturm, & McDougal, 2012).

Despite attaining physical and behavioral recovery, those in the partially recovered group still experienced high levels of psychological distress in the domains of depression and anxiety. The current findings regarding depressive experiences, assessed on a continuum, coincide with previous work that used this same sample, but investigated depression as a DSM-IV-TR diagnosis across stages of eating disorder recovery (Bardone-Cone et al., 2010). In particular, Bardone-Cone et al. (2010) found that fully recovered individuals had rates of current mood disorder that were comparable to non-eating disorder controls (0% and 3%, respectively) and significantly lower than the rates of current mood disorder for the partially recovered group (20%) and the active eating disorder group (30%). Given that depressive symptoms, such as low motivation and harboring negative thoughts about one's self, may not only impede recovery but also coexist with the eating disorder itself, it may not be surprising that those in the fully recovered group experienced lower levels of depressive symptoms than those in the partially recovered and active eating disorder groups.

In contrast, a diagnostic approach to anxiety found that the fully recovered group more closely resembled the partially recovered group rather than the controls indicating that anxiety disorders such as panic disorder, social phobia, specific phobia, obsessive

compulsive disorder, and generalized anxiety disorder still may be present even after comprehensive recovery from the eating disorder (Bardone-Cone et al., 2010). These diagnostic findings differ from the current study's findings that fully recovered individuals and controls look similar on anxiety when approached dimensionally. Perhaps those fully recovered from an eating disorder experience less anxiety in their daily activities but have yet to recover from more environmentally-specific anxieties such as social phobia.

Regarding the findings for perceived stress, the partially recovered group had similarly elevated scores to those with an active eating disorder. For those in the partially recovered stage, adapting to and accepting a new weight/shape may be distressing, especially in the context of ongoing disordered thoughts (e.g., eating, weight, and shape concerns) without engaging in prior (maladaptive) coping strategies such as binge eating, purging, and severe food restriction to relieve these cognitions still present in this stage of recovery. Also, women in the partially recovered group may be expected by family, friends, teachers, and employers to re-enter their lives as their old selves given that they appear physically recovered. However, the internal psychological distress still very much present in terms of eating disorder cognitions (Bardone-Cone et al., 2010), depression, and anxiety, may foster feelings that one is falling short of others' expectations or cannot reveal her true self, which may contribute to perceived stress.

Overall, it is interesting to note that those in the partially recovered group appear quite similar to those in the active group in terms of depression, anxiety, and perceived stress. This may be especially concerning given that the broad construct of this study, negative affect, is a known risk factor for eating pathology and, body dissatisfaction, as well as a maintenance factor for binge eating (Stice, 2002). In other words, continued experiences of negative affect even after the remission of eating disorder behaviors and regained weight (for those with a history of AN), may pose a threat to full recovery. The negative affect experienced by those in the partially recovered group may in part contribute to their "limbo" status as partially recovered by road-blocking the steps to full recovery or may even play a role in relapse to the active eating disorder stage. For a subset of those in partial recovery, however, this stage is only a stepping stone toward full recovery; longitudinal research is needed to understand how negative affect and eating disorder cognitions (i.e., psychological recovery) may reciprocally influence each other in the process toward full recovery.

This study contributes to the existing literature on negative affect and eating pathology by examining various negative affective experiences in relation to eating disorder recovery and by using a comprehensive definition of recovery that includes psychological functioning and allows for the distinction between fully and partially recovered individuals. Also, the sample in the current study represented a broad range of eating disorder severity, being recruited from a primary care clinic, which adds to the generalizability of the results. In addition, all participants were administered a diagnostic interview to classify eating disorder status, rather than self-report questionnaire. Finally, by examining various aspects of negative affect (i.e., depressive symptoms, anxiety, loneliness, perceived stress), we sought to comprehensively examine this construct in relation to stages of recovery from an eating disorder.

Limitations of the current study include the cross-sectional design and the homogeneity of the sample with regard to race/ethnicity. In addition, although no differences were found between participants and non-participants based on information from clinic charts, such as BMI at start of treatment and diagnoses, other unmeasured constructs may have differed between groups. Further, we were unable to reach a proportion of potential participants due to changes in surnames after marriage and the lack of a public registry for cellular phone numbers. Additionally, the current sample size did not allow for diagnostic separation and

AN, BN, and EDNOS were examined as one eating disorder group. However, given that migration across eating disorder diagnostic categories is common (Tozzi et al., 2005) and that a transdiagnostic perspective highlights eating disorders' similarities and "core psychopathology" (Fairburn, Cooper, & Shafran, 2003), examining negative affect across combined diagnostic groups may be conceptually appropriate.

These findings have clinical implications for those treating individuals with eating disorders. Given that those who are fully recovered had similarly low levels of negative affect as controls, while those in partial recovery sustained elevations in depression, anxiety, and perceived stress, clinicians will want to be vigilant for signs of depression, anxiety, and perceived stress as these might be indicators of incomplete recovery from an eating disorder. Individuals still consumed with disordered eating cognitions about their weight and shape but who are no longer engaging in typical disordered eating coping strategies such as restricting and binge eating (i.e., those partially recovered in this study) may find that the loss of such familiar coping tools may exacerbate or maintain feelings of depression, anxiety, and stress. Targeting such negative affective experiences through cognitive restructuring and behavioral exposure while shaping progress within the client's inherent value structure (e.g., working towards building relationships with close others) may be helpful throughout the process of recovery. In addition, given the current findings that lower levels of loneliness were associated with both full and partial recovery, building and maintaining social connections may be an important early step in the recovery process. Clinicians may want to draw from theory and technique associated with interpersonal psychotherapy (IPT) in order to help clients foster social relationships.

Future research should include age-matched controls and be prospective in nature, so as to examine the temporal ordering of changes in negative affective experiences and eating disorder recovery. For example, does a reduction in negative affect lead to a decrease in eating disorder symptoms or vice versa; or do changes in these factors combine synergistically? Future research may be especially interested in the trajectory of those in the partially recovered group, specifically whether levels of negative affect among those partially recovered differentiate individuals who are simply on the road to full recovery versus those who seem to be in more of a long-term partially recovered state or at heightened risk for relapse. In addition, given the unique findings that loneliness may abate prior to other negative affective states during recovery, future research may also want to longitudinally determine if an increase in actual or perceived social support facilitates the movement toward full recovery and whether this, in turn, has beneficial effects on depression, anxiety, and perceived stress. Finally, the presence of diagnostic versus symptom levels of negative affect among recovery groups will be important to explore. Prior research has found that anxiety disorders persist in those that have achieved full recovery (Bardone-Cone et al., 2010). A close examination of which anxiety disorders remain among those fully recovered is warranted as well as whether the low trait anxiety found within this group in the current study is still somewhat protective from relapse despite the presence of a specific anxiety disorder.

The experience of negative affect does not necessarily persist in those with a history of an eating disorder. The current study found that the fully recovered group reported similar levels of depression, anxiety, loneliness, and perceived stress compared to controls, with both groups reporting fewer negative affective experiences compared to those with an active eating disorder. However, the negative affect experiences of depression, anxiety, and perceived stress all appear to linger among those in partial recovery after weight is restored (in the case of AN) and maladaptive eating behaviors are absent but disordered eating thoughts remain. Interestingly, during this partially recovered stage, individuals may feel more socially connected than they did when they had an eating disorder diagnosis, as levels

of loneliness were similar to those in the fully recovered and controls and significantly less than those with an active eating disorder. Targeting these negative emotional experiences in tandem with eating pathology may benefit those in the midst of recovering. Given that more complete psychological health may play an important role in recovery from an eating disorder (Bardone-Cone et al., 2010), better understanding negative affect within an eating disorder framework is important.

Acknowledgments

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Highlights

- We examined depression, anxiety, loneliness, and perceived stress in eating disorders

- Those fully recovered endorsed levels of negative affect similar to controls

- Those partially recovered endorsed lower levels of loneliness than expected

- Those in the active group reported greater negative affect compared to fully recovered

Table 1

Means, Standard Deviations, and Comparisons of Negative Affective Experiences in Relation to Stages of Eating Disorder Recovery

Negative Affect Construct	Active ED ($n = 53$)	Partially recovered ($n = 15$)	Fully recovered ($n = 20$)	Controls ($n = 67$)	Significance	Pair-wise comparisons
Depression	23.90 (11.27)	20.00 (11.30)	9.05 (8.96)	9.23 (7.19)	$F (3, 148) = 27.26; p < .001$; partial η2 = .36	C, FRED <PRED, AED
Trait Anxiety	55.06 (9.94)	48.63 (10.35)	36.75 (7.36)	34.76 (8.69)	$F (3, 148) = 52.24; p < .001$; partial η2 = .51	C, FRED <PRED, AED
Loneliness	59.71 (15.29)	47.27 (14.35)	40.80 (12.06)	40.27 (11.76)	$F(3,150)= 25.74; p < .001$; partial η^2 = .34	C, FRED, PRED <AED
Perceived Stress	31.78 (7.70)	30.27 (7.24)	20.75 (7.99)	19.86 (7.03)	$F(3, 151)= 30.27; p < .001$; partial η^2 =.38	C, FRED <PRED, AED

Note. ED = eating disorder. AED = active eating disorder. PRED = partially recovered eating disorder. FRED = fully recovered eating disorder. C = non-eating disordered controls. Possible ranges for the study variables are as follows: depression (Center for Epidemiological Studies Depression Scale; CES-D): 0–60; anxiety (Spielberger State-Trait Anxiety Inventory; STAI): 20–80; Loneliness (UCLA Loneliness Scale): 20–80; perceived stress (Perceived Stress Scale; PSS): 0–56. Pair-wise comparisons listed were significant at least at $p < .01$.