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Negative affect and binge eating: Assessing the unique trajectories of negative affect before and after binge-eating episodes across eating disorder diagnostic classifications

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Abstract

Objective: Ecological momentary assessment (EMA) studies suggest that among individuals who binge eat, emotional states and binge eating are functionally related. However, it is unclear whether the trajectory of negative affect (NA) is the same across diagnostic groups or if specific changes in affect are unique to each diagnostic category. This study examined the moderating effect of diagnosis on the trajectory of negative affect before and after binge eating.

Method: Adults with eating disorder diagnoses (anorexia nervosa [AN] = 118, bulimia nervosa [BN] = 133, binge-eating disorder [BED] = 112) completed an EMA where they reported binge

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

CONFLICT OF INTERESTS

Ross D. Crosby is a paid statistical consultant for Health Outcomes Solutions, Winter Park, Florida, USA. The other authors declare that there are no conflict to interests.

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eating and negative affect throughout the day. Generalized estimating equation analyses were used to model the trajectories of NA before and after binge eating.

Results: For all individuals, the linear trajectory of NA significantly increased before (B = 0.044, $p < .001$) and decreased following the binge-eating episode (B = −0.054, $p < .001$). However, diagnosis moderated this trajectory. Specifically, individuals with BN had a greater change in linear trajectories of NA before (B = 2.305, $p < .001$) and after (B = −4.149, $p < .001$) binge eating compared to those with BED, but not those with AN. There were no differences in the trajectory of NA between individuals with BED or AN.

Discussion: These findings suggest that binge-eating episodes in BN may be more strongly associated with NA than in BED, but similar to binge-eating episodes in AN.

Keywords

binge eating; dating disorders; EMA; negative affect

1 | OBJECTIVE

Eating disorder diagnoses include anorexia nervosa (AN), bulimia nervosa (BN), binge-eating disorder (BED), and otherwise specified feeding and eating disorders (American Psychiatric Association, 2013).

Emotions are functionally associated with a variety of eating disorder behaviors across diagnostic categories (Lavender et al., 2015). Studies using experimental, prospective, and case-control designs indicate that the experience and regulation of negative affect is both a prospective vulnerability factor for the development of eating disorders (EDs) and an immediate antecedent to disordered eating behaviors (e.g., Crowther, Sanftner, Bonifazi, & Shepherd, 2001; Harrison, Sullivan, Tchanturia, & Treasure, 2010; Svaldi, Griepenstroh, Tuschen-Caffier, & Ehring, 2012; Wildes, Marcus, Bright, & Dapelo, 2012).

These findings have led several theorists to suggest that the maintenance of ED behaviors may be partially regulated by negative reinforcement (i.e., reductions in negative affect following binge eating). Both Haynos and Fruzzeti (2011) and Wildes, Ringham, and Marcus (2010) proposed models of emotion dysregulation in AN that emphasize direct connections between the experience of negative emotion, ED behaviors, and short-term reduction of negative emotion via these behaviors. Affect regulation models of binge eating, initially developed for individuals with BN, also suggest that binge eating may serve as a coping method for negative affect. Pearson, Wonderlich, and Smith (2015) have proposed that binge eating may result from both an inability to regulate emotions and learned expectancies that eating will alleviate negative emotions. Furthermore, they suggested that experiencing eating as an effective, albeit maladaptive, emotion regulation strategy may strengthen this expectancy. Thus, binge eating eventually may operate through negative reinforcement of binge-eating behavior through reduced negative affective experience (Pearson et al., 2015). Other models of the maintenance of binge eating in BN (e.g., Heatherton & Baumeister, 1991) have also been applied to BED. More recently, Leehr et al. (2015) proposed a similar model for BED, suggesting that for individuals

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with BED, binge eating serves to relieve negative affect, which ultimately reinforces the behavior. Thus, similar negative reinforcement models of disordered eating behavior have been conceptualized across all ED diagnostic groups. However, there has not yet been a direct comparison of the functional relationship of negative affect and ED symptoms across diagnostic groups.

The most compelling and methodologically rigorous approach to studying this phenomenon has been to use Ecological Momentary Assessment (EMA), an assessment methodology that allows researchers to examine the temporal relation between various cognitive, emotional, and behavioral experiences. EMA reduces retrospective recall biases compared to typical assessments of ED behaviors, which require individuals to recall information over an extended period of time. EMA has been applied in a variety of studies examining the association between negative affect and ED behaviors. These studies have revealed functional relationships between emotion and various eating disorder behaviors for individuals with AN (Engel et al., 2013), BN (Berg et al., 2013; Fischer, Wonderlich, Breithaupt, Byrne, & Engel, 2018; Smyth et al., 2007), and BED (Schaefer et al., 2020.). A meta-analysis of EMA studies examining binge eating and negative affect in BN summarized findings on emotional states before and after binge eating in individuals with BN (Haedt-Matt & Keel, 2011). When using traditional time-lagged analyses, which only use single-point ratings pre- and post-behavior, the results indicated elevated negative affect before binge eating but subsequent increases in negative affect after binge eating, which is inconsistent with negative reinforcement models. However, a number of EMA studies across ED diagnoses have used affect trajectory models, which examine more than one data point before or after the binge-eating episode. These studies have shown the trajectories of affect increase prior to binge eating and decrease after the behavior (e.g., Berg et al., 2013; Engel et al., 2007; Fischer et al., 2018; Smyth et al., 2007). Using these trajectory analyses, Engel et al. (2013) were able to demonstrate that for individuals with AN, the trajectory of negative affect increased before several eating disorder behaviors (i.e., restriction, binge eating, and attempts to curb appetite) and decreased after the behaviors. While these trajectory models have become more common in samples of individuals with AN and BN, there is limited information on trajectories of stress or negative affect prior to and following binge eating in BED. One recent study demonstrated that in a sample of individuals with BED, negative affect increased prior to and significantly decreased following binge-eating episodes, similar to studies of BN (Schaefer et al., 2020).

Despite these studies examining negative reinforcement of binge eating via reduction of negative affect in AN, BN, and BED, little is known about the empirical differences in the strength or nature of these affect-behavior relationships among different ED diagnostic categories. The ED field has also grappled with the question of whether or not transdiagnostic models of symptom development and maintenance apply across eating disorder diagnoses or whether specific development and maintenance factors are unique to distinct eating disorder diagnoses such as AN, BN, and BED (Fairburn, Cooper, & Shafran, 2003). Thus, it is important to empirically study the potential differences in the functional relationship of emotions and behavior among diagnostic categories, especially given that most major theories of ED behaviors suggest that reduction of negative affect may reinforce behaviors such as binge eating, regardless of eating disorder type.

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The present study attempted to fill this gap by clarifying diagnostic differences in terms of the functional relationship between emotion and binge-eating behavior across AN, BN, and BED. Thus, the aim of this article is to distinguish and compare the trajectories of negative affect before and after binge eating in AN, BN, and BED. In this study, we combined samples of individuals with AN, BN, and BED who had completed similar EMA protocols and conducted trajectory analyses on changes in negative affect prior to and following binge-eating episodes. We then compared the trajectory of negative affect prior to and following binge-eating episodes of individuals with AN, BN, and BED to determine differences between diagnostic groups.

The current study is an analysis of data from three previous studies utilizing EMA to examine the relationship of affect to ED symptoms in participants with AN (Engel et al., 2013), BN (Smyth et al., 2007), and BED (Schaefer et al., 2020). Although these datasets have been used for several other published manuscripts (e.g., Becker, Fischer, Crosby, Engel, & Wonderlich, 2018; Berg et al., 2013; Smyth et al., 2007), the present study concentrates on a unique theoretically based research question that was not addressed in any of the previous publications. Specifically, this study utilizes data from these studies to determine if diagnosis impacts the functional relationship of negative affect to binge-eating behavior, a question that has not been investigated in previous EMA studies.

2 | METHODS

2.1 | Participants

Participants were part of three distinct clinical samples. Doctoral-level researchers were trained to assess the presence of a current eating disorder diagnosis meeting the criteria from either the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV-TR (APA, 2000) for AN and BN using the Structured Clinical Interview for DSM–IV Axis I Disorders (SCID-I/P; First & Gibbon, 2004) or the DSM-5 (APA, 2013) for BED using the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993). Demographic data for each sample are presented in Table 1.

The first sample comprised of a final sample of 118 female participants who met the criteria for either full DSM-IV or subthreshold AN. Exclusionary criteria were: (a) male; (b) younger than 18 years; (c) having a current psychotic disorder; (d) or unable to read English. Subthreshold AN was defined as meeting all DSM-IV criteria for AN except: (a) body mass index (BMI) between 17.5 and 18.5 kg/m^2; or (b) absence of amenorrhea; or (c) an absence of the cognitive features of AN. Based on these assessments, 121 participants met eligibility criteria, agreed to participate, and were enrolled in the study. Three participants had EMA signal-completion rates of less than 50% and were excluded from analyses, resulting in the final total of 118 participants. Further details about this study can be found here (Engel et al., 2013).

The second sample consisted of 133 female participants who met DSM-IV criteria for BN. Exclusionary criteria included: (a) male; (b) younger than 18 years; (c) having a current psychotic disorder; (d) or unable to read English. From a pool of 143 participants who began the EMA protocol, seven participants dropped out of the EMA protocol before completion,

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and three participants provided incomplete data on the EMA, resulting in a final total of 133 participants. Further details about this study can be found here (Smyth et al., 2007).

The third sample comprised of 112 individuals who met criteria for DSM-5 BED. Participants were excluded for the following reasons: (a) unable to read English; (b) BMI less than 21; (c) lifetime history of psychotic symptoms or bipolar disorder; (d) substance use disorder within 6 months of enrollment; (e) medically or psychiatrically unstable (e.g., acute suicidality); (f) purging behavior (self-induced vomiting, misuse of laxatives, or diuretics) more than once per month for the previous 3 months; (g) current diagnosis of BN; (h) medical condition impacting eating or weight (e.g., a thyroid condition); (i) history of gastric bypass surgery; (j) currently pregnant or lactating; (k) currently receiving weight loss or eating disorder treatment; (l) taking any medication impacting eating or weight (e.g., stimulants); or (m) psychotropic medication changes in the 6 weeks prior to enrollment. The sample included 19 (17.0%) individuals who identified as male, 92 (82.1%) who identified as female, and one individual (0.9%) who identified as a transgender female. Initially, 132 were eligible for participation and began the EMA protocol. Data from 20 participants who did not complete the full EMA protocol were excluded from analyses, resulting in the final sample of 112. Further details about this study can be found here (Peterson et al., 2020).

2.2 | Measures

2.2.1 | Eating disorder symptoms (EMA measure)—

In all three studies, participants were asked to report the occurrence of binge-eating episodes. In the AN and BN studies, participants were first trained by study staff, who worked together with the participant to identify the characteristics of objective binge-eating episodes in the participant's own life. Participants were then asked to identify binge-eating episodes on their own and track any future binge-eating episodes that fulfilled the criteria (eating an unusually large amount of food in a manner that was out of control). In the study with the BED sample, participants provided additional dimensional ratings of both overeating and loss of control for each eating episode, which were used to further identify binge-eating episodes (i.e., those episodes characterized by a 3 or higher on a 1 to 5 Likert-type scale for both dimensions were defined as a binge-eating episode).

2.2.2 | Positive and negative affect schedule (Watson & Clark, 1994)—

In all three samples, seven items of the positive and negative affect schedule were shared and used to assess negative affect (i.e., afraid, angry at self, ashamed, disgusted, dissatisfied with self, nervous, sad). Participants rated their current mood for each item on a 5-point scale ranging from (1) not at all to (5) extremely. Alpha coefficients for negative affect ranged from .91 to .94 across the three samples in this investigation.

2.3 | Procedures

Participants in all three samples were recruited from a variety of clinical, community, and academic settings. Approval for each study was obtained from the relevant institutional review board at each site and was carried out in accordance with the provisions of the World Medical Association Declaration of Helsinki. Potential participants were initially screened via phone, following which eligible individuals attended an informational meeting

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where they received further information regarding the studies and provided written informed consent. Participants were then scheduled for assessment visits, during which structured interviews were conducted and self-report questionnaires were administered.

A similar EMA protocol was used across all three studies; however, individuals in the BED study only completed 7 days of EMA compared to the 2-week protocol for the AN and BN studies. For each study, participants were trained on the use of palmtop computers or cell phones and completed several practice days of recording prior to commencing the EMA protocol. The EMA assessment schedule for all three studies included signal-contingent ratings (i.e., ratings were provided in response to five to six semi-random signals throughout the waking hours of the day), event contingent recording (i.e., report episodes of eating disorder behavior), and interval-contingent ratings (i.e., participants were asked to complete EMA ratings at the end of each day). Participants were compensated for completing the EMA assessments and received a financial bonus for excellent signal-completion rates. Specifically, participants in the AN and BN groups received $100/week for completion of the study. In addition, they were given a $50 bonus for signal-completion rates of at least 85% or more on the EMA assessments for a maximum total of $250.00. Participants in the BED group, who completed a week of the EMA, were compensated with $150 after study completion.

2.4 | EMA analyses

The temporal relationship between self-reported NA and binge eating was examined using generalized estimating equation with an unstructured covariance matrix to model the pre- and post-event trajectories of NA using piecewise linear, quadratic, and cubic functions centered on the time at which the binge occurred. Given that there was a positive skew of the data, all models were based upon a gamma distribution with a log link function and a second-order dependent covariance structure to account for correlation across repeated observations. Multilevel models included linear functions (i.e., hours prior to event, hours following event), which reflect the rate of change in NA prior to and following binge-eating episodes; quadratic functions (i.e., $[\text{hours prior to event}]^2$, $[\text{hours following event}]^2$), which reflect the acceleration in the rate of NA change prior to and following binge-eating episodes; and cubic functions (i.e., $[\text{hours prior to event}]^3$, $[\text{hours following event}]^3$), which reflect either further acceleration or dampening of the acceleration in the rate of NA change. A common intercept was estimated for pre-binge and post-binge curves to provide a continuous curve.

Diagnostic categories (e.g., AN, BN, or BED) for each entry were effect-coded to allow for the comparison of group differences. Simple effect coding was used because it allows for groups to be compared to a reference group (Koslowsky, 1988; Ravenscroft & Buckless, 2017). By running the analyses with each diagnostic group as the reference group, all groups were compared to one another. The effect-coded diagnostic category was then added to the model both as a main effect and as an interaction term with all other effects in the model. Thus, a significant main effect of diagnostic category on negative affect indicates a significant difference in mean negative affect across diagnostic groups at the point of the binge-eating behavior (i.e., different intercepts). A significant interaction between diagnostic

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group and the linear, quadratic, or cubic components indicates a significant difference in the trajectory of negative affect by diagnostic group leading up to and following the binge. This analysis provided the ability to distinguish pre- and post-trajectories of NA to binge eating for each diagnostic group. When more than one binge-eating episode was reported in a single day, only the first behavior was used to avoid confounding the relationship between antecedent and consequent NA ratings in relation to the multiple binges that occurred throughout any one day. Additionally, if subsequent binge-eating episodes occurred within the 4-hr time frame following the first behavior, only NA ratings made after the first behavior and prior to the subsequent behavior were included in the post-event analyses.

3 | RESULTS

3.1 | EMA signal-completion rates and binge frequency

The data were collected as part of three separate EMA studies. The combined sample (N = 363) included 133 women with BN, 118 women with AN, and 112 individuals with BED (84% women). In total, 31,131 separate EMA recordings were provided by 363 participants. Signal-completion rates averaged 81.3% across participants. Binge-eating episodes were reported on 1,268 (30.4%) of these days. Binge-eating episodes were reported by 301 (83%) of the 363 participants, with a range of 1–36 episodes for those who binged, and a weekly average of 3.9 episodes per participant.

3.2 | Main effects

There was a main effect of diagnostic category on level of negative affect. At the time of the binge-eating episode, individuals with AN and BN experienced significantly higher negative affect than those with BED (p s < .001). However, there were no significant differences in mean NA at the time of the binge-eating episode between individuals with AN and BN (p = .305; see Table 2).

There was also a significant main effect of time. On average, negative affect increased prior to and decreased following the binge-eating episode (p < .01). However, given that there was also a significant interaction effect, we must interpret the main effect of time on affect within the context of the significant interaction of time and diagnoses.

3.3 | Moderating influence of diagnosis on affect-behavior trajectory

Individuals with BN reported significantly greater linear increases of negative affect prior to a binge-eating episode than individuals with BED (p = .034). However, there were no differences in the rate of change of NA before binge eating between BN and AN or between AN and BED. Individuals with BN also showed greater linear and cubic decreases in negative affect following binge eating than the individuals with BED (p values range from .000 to .01), but there were no differences in the rate of change in the decrease of NA following binge eating between BN and AN, or between AN and BED (see Figure 1 and Table 2). Thus, the only differences in the trajectory of NA before or after binge eating were found between individuals with BN and individuals with BED. There were no differences between those with AN and BED, or those with AN and BN, in terms of the trajectories of negative affect, either before or after binge-eating episodes.

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4 | DISCUSSION

A large number of studies have suggested that changes in negative affect significantly predict, or precede, binge-eating behaviors across the spectrum of ED pathology. Additionally, many of these studies have demonstrated that when an individual engages in binge eating, negative affect typically decreases. However, no study has empirically compared changes in negative affect prior to and following binge eating across eating disorder diagnostic groups.

In the present study, two main findings may help to elucidate the question of whether negative affect has a similar relationship to binge eating in AN, BN, and BED. First, the results show that the ED diagnostic groups differed in levels of reported negative affect at the time point of a binge-eating episode. Specifically, individuals with AN and BN had significantly higher negative affect compared to individuals with BED. The second main finding is that the trajectories of negative affect are not the same for all ED diagnostic groups, which means negative affect increases and decreases at different rates for these groups. Specifically, individuals with BN experienced greater increases of negative affect before a binge-eating episode and greater decreases of negative affect after a binge-eating episode compared to those with BED. Furthermore, there were no significant differences in any of the trajectories of negative affect between individuals with AN and individuals with BN or in individuals with AN and those with BED. It should be noted that while the trajectories of NA for AN appear different than other groups, the standard error is much larger, suggesting that there is greater variation in the trajectories of NA among individuals with AN than any of the other disorders.

There are several limitations of this study. First, there are slight variations in the EMA protocol across the group. Individuals with BED only completed 1 week of EMA prompts compared to the 2 weeks completed by those with AN and BED. However, there were a similar number of weekly binge-eating episodes per group and similar adherence rates across groups. Another limitation is that not every participant completed every prompt. However, the completion-to-signal rates across all three samples were relatively high for an EMA study (77% for AN, 86% for BN, 72.3% for BED). Additionally, a priori power analyses were conducted separately for each original study; however, no post hoc power analysis was performed for these follow-up analyses, given the data had already been collected. Another limitation is that while our BED group primarily consisted of women, we did choose to include eight men in our analyses. While there is little information on whether negative affect impacts binge eating differently due to gender, we believed that the inclusion of these men was important given we already had a smaller BED group compared to the other groups. Lastly, racial identity, income, education, socioeconomic status, and cultural/geographical information were not included in the model, which may limit the generalizability of our findings.

4.1. | Clinical implications

As this was an observational study and further investigation is needed, we must be cautious with our interpretation of these results. However, if similar findings are replicated, these results may have important clinical implications given that several emotion-focused

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treatment strategies targeting binge eating have been developed within the context of treating BN and then extrapolated to treat individuals with AN binge/purge subtype and BED. The present study suggests that affect may be a meaningful treatment target across eating disorder diagnoses, but the specific affect-behavior relationship may differ across diagnoses, which may inform diagnosis-specific treatment techniques. The present findings suggest that individuals with AN may experience higher absolute levels of negative affect in close proximity to binge eating than BN or BED individuals, but the functional relationship between negative affect and binge-eating behavior is less well defined in both AN and BED, compared to BN. In BN, the data reveal a prototypic affect-behavior relationship consistent with negative reinforcement, with marked increases in negative affect before the binge-eating behavior and significant decreases in negative affect following the behavior. While there is evidence of a similar pattern in AN and BED, it is less well defined. Additionally, this pattern of results does not appear to be driven by accompanying compensatory behaviors characteristic of BN, which may or may not be present among individuals with AN who binge eat and are typically absent among individuals with BED (see Figure S1 and Table S1). The present data also suggest that affect-behavior relationships in BED differ from AN and BN, both in terms of absolute levels of negative affect as well as the magnitude of the functional relationship between affect and binge-eating behavior. It is possible that BED, particularly among obese individuals, represents a disorder that differs from other EDs in terms of affect-binge eating relationships.

It is also interesting to speculate on our findings that NA appears less central to binge eating in BED than it is in AN or BN. Some authors have pointed out that there is a compelling body of literature that craving, food cue reactivity, and disruptions in satiety increase vulnerability to binge eating in individuals with BED (Boutelle, Knatz, Carlson, Bergmann, & Peterson, 2017). Food cue reactivity and craving are associated with binge eating, perhaps in particular with individuals who are obese and binge eat (Boutelle & Bouton, 2015; Sobik, Hutchison, & Craighead, 2005). Additionally, individuals who engage in binge eating without compensatory behaviors tend to have increased attentional bias to food cues, while individuals with BN tend to have an attentional bias to weight/shape stimuli or threat (Stojek et al., 2018). Thus, it is possible that individuals with BED may eat more throughout the day (due to food cue reactivity or attentional bias), and eating larger amounts of food may become habitual. It is also possible that other contextual factors (i.e., hunger, craving, etc.) might impact whether an individual with BED engages in binge eating, thus reducing the impact of NA as a trigger for binge eating in comparison to those with BN.

In summary, individuals with a diagnosis of AN, BN, or BED experienced an increase in NA before a binge-eating episode and a decrease in NA following the episode. Importantly, however, the degree of change in NA was moderated by diagnostic category. The findings highlight the need for expanding theoretical models of maintenance factors for binge eating. It is hard to know if these findings from one study are meaningful enough to emphasize differences in treatment strategies based on diagnoses. If a similar pattern of results is shown by future research, it may suggest that therapeutic skills like emotion regulation or distress tolerance may not be as beneficial for an individual with BED compared to individuals with BN. Future treatment trials may benefit from designs that compare emotion-focused interventions to other interventions in a transdiagnostic sample to test whether these findings

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are clinically meaningful. Such a design may clarify if eating disorders differ in terms of emotion functioning and its relevance to treatment outcome.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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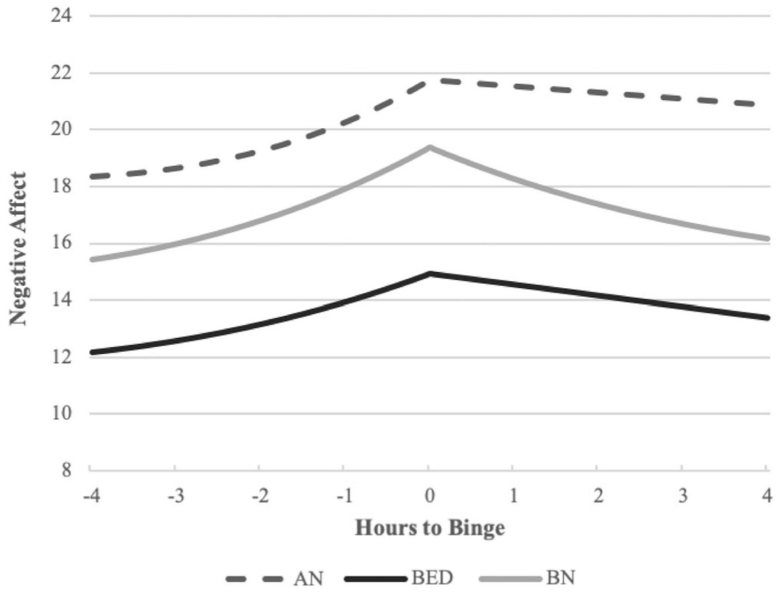

FIGURE 1.

Trajectories of negative affect before and after binge eating by eating disorder diagnostic group. “0” represents the point at which a binge eating event was initiated. Negative affect reflects total negative affect score of the items used from the PANAS

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TABLE 1

Participants' characteristics and EMA recording descriptive data

	AN sample (*n* = 118)	**BN sample (*n* = 133)**	**BED sample (*n* = 112)**
Age (years)	25.3 ± 8.4	25.3 ± 7.6	39.97 ± 13.4
BMI (kg/m^2)	17.2 ± 1.0	23.9 ± 5.2	35.13 ± 8.6
Sex (% female)	100%	100%	82%
EMA random signal compliance	77%	86%	77%
Weekly binge-eating events per participant	Average of 2.5 binges (*SD* = 4.9)	Average of 4.33 binges (*SD* = 3.44)	Average of 4.54 binges (*SD* = 3.84)

Abbreviations: AN, anorexia nervosa; BED, binge-eating disorder; BN, bulimia nervosa; EMA, ecological momentary assessment.

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TABLE 2

General estimating equation analysis for the moderating effects of diagnostic category on the relationship between negative affect and binge-eating episodes

Effect	Estimate	*SE*	*p*
Intercept			
BN vs. AN	−2.372	2.315	.305
BN vs. BED	4.471	0.882	<.001
AN vs. BED	6.843	2.316	<.001
Antecedent			
Linear			
BN vs. AN	−0.118	2.019	.892
BN vs. BED	0.534	0.258	.034
AN vs. BED	0.651	0.859	.448
Quadratic			
BN vs. AN	−0.103	0.152	.496
BN vs. BED	0.065	0.041	.114
AN vs. BED	0.169	0.551	.260
Cubic			
BN vs. AN	—0.009	0.008	.263
BN vs. BED	0.002	0.002	.316
AN vs. BED	0.011	0.008	.171
Consequent			
Linear			
BN vs. AN	−1.097	0.980	.140
BN vs. BED	−1.397	0.393	<.001
AN vs. BED	−0.300	0.980	.263
Quadratic			
BN vs. AN	0.226	0.153	.140
BN vs. BED	−0.065	0.054	.235
AN vs. BED	−0.161	0.154	.287
Cubic			
BN vs. AN	0.005	0.009	.522
BN vs. BED	−0.007	0.003	.012
AN vs. BED	−0.012	0.008	.141

Abbreviations: AN, anorexia nervosa; BED, binge-eating disorder; BN, bulimia nervosa.