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Initial Test of an Emotional Avoidance Model of Restriction in Anorexia Nervosa Using Ecological Momentary Assessment

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Contributors

Ann F. Haynos was involved in study design, data analysis, and manuscript preparation. Ross D. Crosby was involved in data collection, study design consultation, data analysis, and manuscript preparation. Scott G. Engel, Jason M. Lavender, Stephen A. Wonderlich, and James E. Mitchell were involved in data collection, consultation regarding study design, and manuscript preparation and review. Carol B. Peterson, Scott J. Crow, and Daniel Le Grange were involved in manuscript preparation and review.

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Abstract

It has been hypothesized that restrictive eating allows individuals with anorexia nervosa (AN) to avoid contact with negative emotions; however, this presumption has not been directly tested. In this study, we conducted an initial investigation examining whether restrictive eating serves an emotional avoidance function among individuals with AN. Females with AN (n = 118) reported on negative and positive affect, anxiety/tension, and eating behaviors at multiple time points daily over a 2-week period using ecological momentary assessment methodology. Affective patterns were compared using generalized estimating equation models between days in which participants reported either: (1) relatively high restriction (without binge eating); (2) relatively low restriction (without binge eating); (3) binge eating; or (4) no restriction or binge eating. We hypothesized that, if restriction were functioning to avoid negative affect, average negative affect and anxiety/tension, as well as average negative and positive affect lability, would be lower and average positive affect would be higher on days characterized by high levels of restriction compared to other eating patterns. Contrary to hypotheses: (1) average negative affect, anxiety/tension, and positive affect were not significantly different between days characterized by high restriction and those characterized by low or no restriction; (2) Negative affect and anxiety/tension lability were higher on days characterized by high restriction compared to no restriction or binge eating days; (3) Anxiety/tension lability was higher on days characterized by high versus low levels of restriction. This patterns of findings does not support an avoidance model of restrictive eating for individuals with AN.

Keywords

anorexia nervosa; restrictive eating; emotion regulation; avoidance

Anorexia nervosa (AN) is a serious disorder associated with significant physical and psychological morbidity and elevated mortality rates (Braun, Sunday, & Halmi, 1994; Crow et al., 2009; Mitchell & Crow, 2006). Despite recent empirical advancements, the psychological processes involved in the development and maintenance of AN are poorly understood and effective interventions for AN are lacking (Berkman et al., 2006). To improve treatment, a better understanding of the psychological processes linked to the disorder's etiology and maintenance is needed.

Emotion regulation etiological models have been receiving increasing attention in AN. Such models posit that individuals with AN experience deficits in the ability to effectively modulate emotional experiences and therefore rely on disordered eating behavior, such as dietary restriction, to alter emotional experiences (Haynos & Fruzzetti, 2011). While some models suggest that disordered eating behaviors, such as restrictive eating, serve primarily to escape existing aversive emotional experiences (Kaye et al., 2003), others emphasize avoidance, suggesting that behaviors such as restriction are performed to prevent the occurrence of uncomfortable emotional experiences (Wildes, Ringham, & Marcus, 2010). Both escape and avoidance emotion regulation models share the assumption that affective difficulties are functionally associated with disordered eating among individuals with AN. In

line with such models, studies have found that individuals with AN display elevated difficulties with emotion regulation (Haynos et al., 2011), which do not remit with weight restoration (Haynos, Roberto, Martinez, Attia, & Fruzzetti, 2014), and predict long-term persistence of eating disorder symptoms (Racine & Wildes, 2014).

Several studies have also found evidence suggesting a functional link between emotional states and restrictive eating specifically in AN. One study found pre-meal anxiety to significantly correlate with caloric intake during a laboratory test meal among weight-restored individuals with AN, such that higher pre-meal anxiety was associated with reduced intake (Steinglass et al., 2010). Studies using ecological momentary assessment (EMA), an assessment methodology that allows tracking of mood and eating behavior in real time and naturalistic settings, have found that: (a) higher negative and lower positive affect on one day predicts restriction on the subsequent day (Engel et al., 2013); and (b) changes in affect and anxiety throughout the day are significantly associated with greater likelihood of restrictive eating episodes (Engel et al., 2005; Lavender et al., 2013a; 2013b). Though information is limited regarding the affective consequences of restriction, these studies suggest that affect is in some way functionally associated with restrictive eating.

However, other studies have reported conflicting findings regarding the associations between affect and restriction. One EMA study found that levels of negative affect co-occurring with restrictive episodes were equivalent to or lesser than other eating episodes (Goldschmidt et al., 2014), which potentially conflicts with an emotion regulation model, suggesting that affect is unrelated to restriction. However, because temporal relationships were not examined in this analysis, this finding could also reflect attenuation of negative affect following restriction. In another analysis, the relationship between affect and restrictive eating behavior varied according to the methodology used to examine affect changes (Engel et al., 2013). When examining affective changes using pre- and post- ratings, negative affect significantly decreased from immediately before to immediately after participants reported drinking fluids to curb appetite. However, when examining affective changes based upon multiple mood ratings in the hours prior to and following drinking fluids to curb appetite, no significant changes in negative affect were detected before or after the behavior. Finally, in an experimental study, individuals with AN did not consume significantly less at a single-item meal following a negative mood induction compared to a neutral mood induction (Wildes, Marcus, Bright, Dapelo, & Psychol, 2012). These studies challenge the idea that increases in negative affect and/or decreases in positive affect serve as antecedents for restrictive eating and that decreases in negative affect and/or increases in positive affect serve as maintaining consequences of restriction.

It is possible that these mixed findings can be explained by restriction, unlike other disordered eating behaviors (e.g., binge eating), following an avoidance, rather than escape, affective pattern. An emotional escape pattern, in which increasing negative affect precedes a behavior and a reduction in negative affect follows the behavior, is the most frequently examined affect pattern when assessing an emotion regulation function of a behavior. However, when an individual engages in avoidance behavior, there should be little affective change directly before or after the behavior because the behavior prevents the occurrence of affect. This pattern has been observed in animal models; overt signs of anxiety dissipate

with repeated trials in which an organism is taught to initiate avoidance behavior quickly after exposure to a feared stimulus (Solomon & Wynne, 1954). Therefore, if restriction in AN serves the function of emotional avoidance, as opposed to escape, this may account for the mixed findings regarding affective experiences before and after restrictive eating.

An avoidance function has been noted for other chronic psychological concerns (Borkovec, Alcaine, & Behar, 2004; Solomon et al., 1954) and several researchers have theorized that restrictive eating serves an avoidance function for individuals with AN (Schmidt & Treasure, 2006; Wildes et al., 2010). There are empirical findings supporting this hypothesis. Individuals with AN are more likely than individuals without an eating disorder to report avoiding challenging emotional experiences (Oldershaw et al., 2012; Wildes et al., 2010). Further, restriction in AN tends to be more continuous than discrete, paralleling findings from animal models that avoidance responses need to be performed nearly continuously following an emotional cue in order to maintain emotional equilibrium (Solomon et al., 1954). Finally, the marked persistence of restrictive eating in AN (Walsh, 2013) corresponds with basic findings suggesting that avoidance behaviors are particularly resistant to extinction (Solomon et al., 1954).

In this study, we conducted an initial investigation examining whether restrictive eating serves an avoidance function among individuals with AN. We examined patterns of negative affect, positive affect, and affect lability on days characterized by relatively high levels of dietary restriction (without binge eating) compared to: (1) days in which restrictive eating occurred less frequently (without binge eating); (2) days characterized by binge eating; and (3) days in which both restriction and binge eating were not endorsed. Consistent with the hypothetical avoidance function of restrictive eating in AN, it was predicted that days characterized by relatively high levels of restriction, as compared to days characterized by other eating patterns, would demonstrate: (1) lower average levels of negative affect and anxiety/tension and higher levels of positive affect; and (2) less lability in negative affect, positive affect, and anxiety/tension. These results were hypothesized because it would be expected that frequent and/or pronounced restriction would allow participants to avoid experiencing difficult affective experiences, and thereby maintain stability of overall more positive affect levels.

Methods

Participants

Participants were 118 females meeting criteria for threshold or sub-threshold AN (restricting or binge-purge type). Eligibility criteria mandated that participants be ≥ 18 years old and meet Diagnostic and Statistical Manual of Mental Disorders 4th Edition (DSM-IV; American Psychiatric(Association, 2013) criteria for AN or criteria for sub-threshold AN by meeting all DSM-IV criteria for AN with the following exceptions: (1) body mass index (BMI) of 17.6 to 18.5 kg/m^2, or (2) not meeting either the amenorrhea or body image disturbance and intense fear of weight gain criteria. In prior examinations of these data, it was found that full- and sub-threshold AN participants did not differ significantly on most baseline measures of eating disorder pathology and comorbid psychological concerns (Le Grange et al., 2013).

Assessments

Baseline assessment—The Structured Clinical Interview for DSM-IV Axis-I Disorders, Patient Edition (SCID-I/P; (First, Spitzer, Gibbon, & Williams, 1995) is a semi-structured interview to assess Axis-I psychiatric disorders. The SCID-I/P was used to determine DSM-IV diagnostic criteria for full- and sub-threshold AN. Interviews were recorded and a second independent assessor rated eating disorder diagnoses in a random sample of 25% of these interviews. Interrater reliability for current AN diagnosis based upon a kappa coefficient was .929.

Ecological Momentary Assessment

Affect ratings: Momentary ratings of negative affect, positive affect, and tension/anxiety were made at each assessment point. Items from the Positive and Negative Affect Schedule (PANAS; (Watson, Clark, & Tellegen, 1988) were used to assess momentary positive and negative affect. Items were chosen on the basis of high factor loadings and clinical/theoretical relevance to AN. The negative affect scale included 8 items (nervous, angry at self, afraid, sad, disgusted, distressed, ashamed, and dissatisfied with self) and the positive affect scale included 8 items (strong, enthusiastic, happy, energetic, proud, attentive, confident, and cheerful). Participants rated current mood for each of these items on a 5-point scale ranging from 1 = not at all to 5 = extremely. Alpha coefficients were .943 for negative affect and .920 for positive affect in this sample. The Profile of Mood States (POMS; (Lorr & McNair, 1971) was used to measure momentary tension and anxiety. Eight items from the tension/anxiety scale of the POMS (on edge, restless, tense, anxious, relaxed [reverse coded], uneasy, shaky, and panicky) were selected for momentary ratings. As with the PANAS, participants rated current mood on a 5-point scale ranging from 1 = not at all to 5 = extremely. The alpha coefficient for the POMS in this sample was .919.

Eating episodes: Participants were asked to report any episodes of eating and to indicate whether the episode was a snack, meal, or unusually large amount of food. For each episode, participants were asked whether they felt out of control or driven to eat. Participants were trained in standard definitions of eating events by research staff. For an unusually large amount of food, the definition provided was “an amount of food that other people would consider excessive.” Loss of control was defined as “the inability to stop eating” and feeling driven to eat was defined as “the inability to prevent the eating episode”. Binge episodes were defined as any instance of eating in which the participant endorsed eating an unusually large amount of food and having a sense of loss of control over eating or feeling driven to eat.

Following each eating episode, participants were also asked to report on items related to restricting food intake, including “I limited calories” and “I ate as little as possible”. Instances of eating in which either of these items were endorsed were classified as restrictive eating episodes. Restriction was also assessed through end of day ratings, in which participants reported if they did either of the following: (1) went ≥ eight hours without eating; or (2) limited food intake to < 1200 calories. Endorsement of either item was operationalized as pronounced restrictive eating.

Based on EMA of eating behavior, each recording day was organized into one of the following categories representing the daily eating pattern: (1) high restriction day; (2) low restriction day; (3) binge eating day; and (4) no restriction or binge eating day. A "high restriction day" was defined as any day in which a participant: (a) endorsed restricting (i.e., limiting calories or eating as little as possible) during > 50% of all eating episodes and/or endorsed one of the end of day indictors of pronounced restriction (i.e., going ≥ eight hours without eating or limiting food intake to < 1,200 calories); and (b) denied any instance of binge eating. A "low restriction day" was defined as any day in which a participant: (a) endorsed restricting during at least one, but ≤ 50% of all eating episodes and denied both end of day indictors of pronounced restriction; and (b) denied any instance of binge eating. A "binge eating day" was defined as any day in which a participant endorsed any instance of binge eating. A "no restriction or binge eating day" was defined as any day in which a participant: (a) denied restricting during all eating episodes and denied both end of day indictors of pronounced restriction; and (b) denied any instance of binge eating.

We chose to examine restrictive patterns by the day because: (1) Restrictive eating tends to be more continuous than discrete, making it difficult to pinpoint specific "restrictive episodes", which could last for many hours; (2) Restrictive eating was measured in this sample using both momentary and end of day EMA ratings; therefore, examining patterns on the day level allowed the richest sources of data related to restriction. We included comparison to days characterized by binge eating in order to differentiate the patterns associated with nearly continuous restriction from a behavior, like binge eating, that has been frequently demonstrated to follow an emotional escape pattern (Engel et al., 2013; Lavender et al., 2013b). We examined only patterns of eating and not compensatory behaviors in order to isolate the function of restrictive eating apart from compensatory behaviors, which may serve a different affect regulation function.

Procedures

Participants were recruited at three sites (Fargo, Minneapolis, Chicago). Study approval was obtained from the institutional review board at each site. Potential participants were initially screened via phone and eligible individuals attended a meeting where they received information regarding the study and provided informed consent. After this informational meeting, interested participants were then scheduled for two assessment visits during which a screening physical examination and laboratory tests were conducted to ensure medical stability and the SCID-1/P (First et al., 1995) was conducted to determine eligibility.

Participants were trained on the use of the palmtop computers at the end of first assessment. Participants were instructed not to complete entries at any times when they felt unable to reply (e.g., during class) or if safety was a concern (e.g., while driving), but instead delay responding until a more convenient time. Participants participated in two practice days in order to ensure familiarity and comfort with EMA methods and to minimize reactivity to recording procedures (these data were not used in analyses). Participants were then given the palmtop computer to complete EMA recordings over the next two weeks. Attempts were made to schedule two to three visits for each participant during this two-week interval to obtain recorded data and to minimize data lost in the event of technical problems.

Participants were given feedback about their compliance rates at each visit. Participants were compensated $100/week for completing EMA recordings and were given a $50 bonus for a compliance rate of ≥ 80% to random signals.

The EMA implemented three types of daily self-report methods (Wheeler & Reis, 1991). In the *interval-contingent approach*, participants were asked to complete EMA ratings at the end of each day. In the *event-contingent approach*, participants were asked to record the occurrence of any eating episodes or disordered eating behaviors immediately following the occurrence of the behavior. In the *signal-contingent approach*, participants were signaled at six semi-random times throughout the day to complete recordings of mood and eating behaviors. Signal times were determined by selecting "anchor points" that subdivided the day into six roughly equivalent time blocks and then randomly distributing signal times in a normal distribution around each anchor point using a standard deviation of 30 minutes to provide assessments evenly across waking hours of the day. When signaled, participants were asked to rate their mood and report any recent behaviors not yet recorded or that they had forgotten to report during an event-contingent recording. If they forgot to report a behavior, they were given the opportunity to record it and the time at which the behavior occurred.

Statistical Analysis

Generalized estimating equations (GEE) models based on a gamma distribution with log link to account for skew were used to compare average daily negative affect (PANAS), positive affect (PANAS), and anxiety/tension (POMS) scores across high restriction, low restriction, binge eating, and no restriction or binge eating days. Models included fixed effects for study day and type of day, and a first-order autoregressive covariance structure. Pairwise post-hoc contrasts were used to compare types of days. Comparable mixed-effects models were used to compare day types on daily lability of negative affect, positive affect, and anxiety/tension. Lability scores were calculated using the mean-squared successive differences, which is the squared difference across successive time points in relation to the distance between the measured time points (Woyshville, Lackamp, Eisengart, & Gilliland, 1999). These scores represent the extent to which, on average, each participant's level of affect differed from the preceding level. This method of measuring affect lability has been successfully implemented in prior EMA analyses (Lavender et al., 2013a). All models were repeated with AN subtype and subtype by day type interactions included as fixed effects. However, no significant subtype by day type interactions were noted and inclusion of these variables did not significantly alter the pattern of results from the GEE models. Therefore, only the original analyses (without inclusion of subtype or subtype by day type interactions) are reported.

Results

Demographic Characteristics

Half of participants (n = 59) met DSM–IV criteria for full AN and half (n = 59) met criteria for sub-threshold AN. Participants' age ranged from 18 to 58 years with a mean of 25.3 (SD = 8.4). Mean BMI was 17.2 kg/m^2 (SD = 1.0; range = 13.4 –18.5). Participants were

predominantly Caucasian (96.6%), single (75.4%), and most (90.7%) had at least some college education.

Seventy-three (61.9%) of the participants were diagnosed with AN (full- or sub-threshold) restricting subtype and 45 (38.1%) with binge-eating/purging subtype. Across recording days, individuals with AN binge-eating/purging subtype reported greater average negative affect (M = 21.38, SE = 2.20) than those with restricting subtype (M = 16.81, SE = 1.66), $\chi^2(1) = 11.12$, $p = .001$, and also greater average anxiety/tension (M = 22.44, SE = 1.92) compared to individuals with restricting subtype (M = 18.88, SE = 1.47), $\chi^2(1) = 9.05$, $p = .003$. No other significant differences in mean affect or affect lability were noted between AN subtypes.

EMA Findings

Participants provided 14,945 EMA recordings (9,085 responses to signals, 3,383 eating episode recordings, 999 ED behavior recordings, and 1,478 end-of-day recordings) on 1,768 separate participant days. The number of days that participants provided EMA recordings ranged from 6 to 17, with a mean of 12.93 (SD = 2.09) days. In term of the day categorizations, 48.3% (n = 854) of all days were classified as high restriction days, 15.5% (n = 274) as low restriction days, 13.0% (n = 229) as binge eating days, and 19.6% (n = 346) as no restriction or binge eating days. Among the sample, 40.7% (n = 48) of participants reported experiencing three of the four types of days, 32.2% (n = 38) experienced two of the day types, 15.3% (n = 18) experienced one type of day, and 11.8% (n = 14) experienced all four types of eating days.

Generalized Estimating Equations Models

Estimated marginal means from GEE analyses are presented in Table 1. Contrary to expectation, no significant differences in average daily affect levels were found among high restriction days, low restriction days, and no restriction or binge eating days. Average daily levels of negative affect and anxiety/tension were highest and average daily levels of positive affect were lowest on days in which there was binge eating compared to all other day types.

Also contrary to expectation, lability of negative affect was significantly higher for high restriction and low restriction days in comparison to days on which there was no restriction or binge eating. Additionally, lability of anxiety/tension was significantly higher for high restriction days in comparison to low restriction days and no restriction or binge eating days. Results also revealed that lability of negative affect was significantly higher for binge eating days in comparison to high restriction days, low restriction days, and no restriction or binge eating days. Lability of positive affect was significantly higher for binge eating days in comparison to no restriction or binge eating days, but did not differ significantly from high restriction and low restriction days.

Discussion

In this study, we tested a model providing initial investigation regarding whether restrictive eating serves an emotional avoidance function for individuals with AN. We hypothesized

that, if restriction was aiding individuals with AN in avoiding negative emotional experiences, average negative affect, anxiety/tension, and affect lability (both negative and positive) would be lower, and average positive affect higher, on days characterized by relatively high levels of restriction. However, the results of this study did not support this model. Average negative affect, anxiety/tension, and positive affect were not significantly different between days characterized by high levels of restrictive eating and those characterized by low or no restriction. Further, negative affect and anxiety lability were *higher* on days characterized by frequent and/or pronounced restriction compared to days in which participants denied restriction and binge eating. Anxiety lability was also higher on days characterized by high versus low levels of restriction.

There are several potential interpretations of these results. One interpretation is that restriction does not serve an affect regulation function, but rather increases variability in daily negative affect. According to this interpretation, restrictive eating may make an individual more vulnerable to the effects of daily stressors or may directly impact negative affect. There is evidence that extended efforts at self-control can result in a depletion of resources, ultimately reducing resiliency to stressors (Baumeister, 2003). While individuals with AN report high expectancies regarding the ability of restriction to impact affect (Bardone-Cone et al., 2010), it is well documented that depression and anxiety are elevated when individuals with AN are underweight (Meehan, Loeb, Roberto, & Attia, 2006) and that restriction in non-eating disordered samples can heighten mood concerns (Laessle, Platte, Schweiger, & Pirke, 1996). It may be that, counter to the expectations of individuals with AN, restriction does not actually regulate affect, and may result in *more* affect lability. Similar discrepancies between high affect regulation expectations and minimal affect regulation consequences have been found in analyses of affect patterns associated with binge eating (Haedt-Matt & Keel, 2011).

Another explanation is that restrictive eating does serve an affect regulation function, but that this function follows more of a suppression pattern (i.e., reducing the impact of aversive stimuli on mood once negative affect is already activated), rather than an avoidance pattern. According to this interpretation, greater negative affect lability with more stable average levels of negative affect on days associated with more frequent and/or pronounced restriction could reflect a pattern in which restriction is initiated when negative affect begins to rise in order to protect against it escalating beyond a particular level. Previous research among individuals with AN indicates that average negative affect is higher and positive affect lower on days preceding restrictive days (versus non-eating disordered days), but negative and positive affect are not different on days following restrictive episodes (Engel et al., 2013). Considered in concert with current results, this suggests that days characterized by relatively high levels of restriction may serve as an emotional “reset” for individuals with AN, allowing for suppression of residual emotion from the day prior. A final alternative explanation for these results is that restrictive eating follows both escape and avoidance functions under different circumstances. More data are needed that examine affect across different time trajectories in relation to restrictive eating to better understand these findings. However, one important conclusion that can be drawn from these data is that, contrary to theories suggesting that restrictive eating allows individuals with AN to avoid negative

emotions (Schmidt et al., 2006; Wildes et al., 2010), this study provides initial evidence that individuals with AN do not actually (or successfully) avoid negative emotional responses through pronounced restriction and that negative affect is actually more unstable during marked periods of restriction.

Unsurprisingly, days in which binge eating episodes occurred were characterized by the highest negative affect and anxiety, lowest positive affect, and greatest positive and negative affect lability compared to all other eating patterns. These findings are consistent with those of prior studies, which have found binge eating to be associated with higher levels of negative affect than other types of eating episodes (Goldschmidt et al., 2014) and to follow a typical emotional escape pattern (Engel et al., 2013; Lavender et al., 2013b). An implication of these findings is that restriction and binge eating seem to follow different affect regulatory patterns for individuals with AN. One hypothesis could be that restriction serves to prevent escalating negative emotion from becoming overwhelming, while binge eating is a strategy for escaping negative emotion that has crossed a particular aversive threshold. Further information is needed to better understand functional links between mood and various disordered eating behaviors.

There are several strengths of this study. The EMA approach has good ecological validity, reduces biases associated with retrospective self-report, and collects a large number of measurements over relatively brief timeframes, allowing more accurate measurements of constructs such as affect lability, which are difficult to capture with a single rating. Further, this study included a large sample of individuals with AN, increasing power and lending greater credence to results.

However, there are also limitations associated with this study. While the use of EMA and careful instructions on how to categorize eating episodes likely reduced self-report bias, this study still relied on self-report of eating behavior, which may be inaccurate in AN samples due to the tendency to severely overestimate caloric consumption (Sysko, Walsh, Schebendach, & Wilson, 2005). Therefore, it is unclear whether the no restriction or binge eating days accurately captured an absence of restrictive eating, or rather represented days characterized by less extreme restriction. Similarly, it is unclear the degree to which the high restriction and low restriction days varied meaningfully due to use of self-report and somewhat arbitrary cut-offs between these categories. Self-report of emotion is also flawed, as individuals with AN have difficulty reporting on emotional experiences (Haynos et al., 2011). Further, while this study utilized novel methodology to examine a complex theoretical question, examination of restrictive episodes at the day level is limited as it disallows examination of the temporal relationships between affect and dietary restriction. Additionally, while examining restrictive behaviors in isolation from compensatory behaviors was an important first step in this line of inquiry, this method loses some of the complexity in the relationship between affect and various eating disorder behaviors. Finally, it should be noted that recent research suggests that individuals with AN endorse attempting to avoid positive affect, as well as negative affect (Oldershaw et al., 2012; Wildes et al., 2010). Thus, our hypothesis that average positive affect would be elevated on high restriction days may not as precisely reflect the role of positive affect avoidance in an emotional avoidance model. However, there was minimal evidence for positive affect

avoidance through restriction in this model. Future research ought to determine whether the pattern of results in this study would be maintained when using more objective and refined measures of dietary intake (e.g., laboratory test meal) and emotional constructs (e.g., physiological measures), examining temporal relationships between affect and restriction using within-day analyses, incorporating other disordered eating behaviors (e.g., purging) into functional models of restriction, and more precisely examining the role of positive affect avoidance.

This study suggests that restrictive eating does not allow individuals with AN to avoid experiencing aversive emotions and is, on the contrary, associated with greater lability of negative affect and anxiety. These findings provide further insight into the internal emotional experience of individuals with AN. Future research regarding the functions served by restrictive eating is needed in order to guide treatment development for this severe and recalcitrant disorder.

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Highlights

- Examined avoidance function of restrictive eating in anorexia nervosa
- Mean negative and positive affect did not vary based on daily level of restriction
- Negative affect lability was higher on high restriction versus no restriction days
- Anxiety lability was higher on high restriction versus low or no restriction days
- Results do not support emotional avoidance model of restriction in anorexia nervosa

Table 1

Estimated Marginal Means by Type of Day

Outcome	Type of Day				Significance
	High restriction	Low restriction	Binge eating	No restriction or binge eating	
Average Negative Affect (mean, SE)	18.2 (1.64)[a]	18.5 (1.68)[a]	19.8 (1.77)[b]	18.4 (1.68)[a]	$\chi^2_{(3)} = 21.78$, $p < .001$
Average Positive Affect (mean, SE)	18.1 (1.20)[a]	18.4 (1.17)[a]	16.7 (1.11)[b]	18.5 (1.21)[a]	$\chi^2_{(3)} = 26.06$, $p < .001$
Average Tension/Anxiety (mean, SE)	20.0 (1.47)[a]	20.3 (1.55)[a]	21.0 (1.58)[b]	20.1 (1.54)[a]	$\chi^2_{(3)} = 12.65$, $p = .005$
MSSD Negative Affect (mean, SE)	23.5 (7.91)[a]	19.5 (6.38)[ab]	35.3 (12.58)[c]	16.1 (6.66)[b]	$\chi^2_{(3)} = 25.46$, $p < .001$
MSSD Positive Affect (mean, SE)	20.6 (5.78)[ab]	19.4 (5.49)[ab]	23.7 (7.15)[a]	17.4 (4.95)[b]	$\chi^2_{(3)} = 10.39$, $p = .015$
MSSD Tension/Anxiety (mean, SE)	24.9 (5.34)[a]	18.5 (3.99)[b]	29.6 (7.06)[a]	17.8 (3.98)[b]	$\chi^2_{(3)} = 24.18$, $p < .001$

MSSD = mean-squared successive differences; Cells without common superscripts significantly different $p < .05$