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A comparison of retrospective self-report versus ecological momentary assessment measures of affective lability in the examination of its relationship with bulimic symptomatology

Michael D. Anestis¹, Edward A. Selby¹, Ross D. Crosby^{2,3}, Stephen A. Wonderlich^{2,3}, Scott G. Engel^{2,3}, and Thomas E. Joiner¹

¹ Florida State University

² University of North Dakota

³ Neuropsychiatric Research Institute

Abstract

Affective lability has been linked to several maladaptive behaviors (Anestis et al., 2009; Coccaro, 1991). Methodology for measuring affective lability varies and includes retrospective self-report and ecological momentary assessment (EMA). In this study, we sought to test these methodologies by examining which better predicted binge eating episodes and general eating disorder symptoms in a sample ($n = 131$) of women diagnosed with bulimia nervosa (BN). We hypothesized that, while the two forms of measurement would be correlated with one another and predict binge eating episodes, EMA affective lability would be the stronger predictor. Results supported several hypotheses. Specifically, both EMA affective lability and retrospective self-report affective lability significantly predicted global eating disorder symptoms, even when controlling for depression, age, body mass index, and level of education, EMA affective lability exhibited a significantly stronger correlation with binge eating episodes than did retrospective self-report affective lability, and EMA affective lability predicted number of binge eating episodes on any given day controlling for the same list of covariates. Limitations include the use of a clinical sample that may limit the generalizability of our findings. Findings highlight the importance of affect in such behavior.

Keywords

Bulimia; eating disorders; affective lability; emotion regulation

Affective lability, defined as the degree to which an individual experiences frequent shifts in emotional valence and intensity, has been the subject of substantial research attention. Prior studies have reported that affective lability is significantly related to aggressive behavior, substance abuse, excessive reassurance seeking, suicide in older adults, and borderline personality disorder (Anestis et al., 2009; Coccaro, 1991; Ebner-Priemer et al., 2007; Simons & Carey, 2006; Turvey et al., 2002). In each of these studies, the authors posited that individuals who experience consistently unstable and rapidly shifting emotions are compelled to regularly engage in emotion regulatory behaviors. Due to this chronic need to regulate negative emotions, actions capable of offering quick resolutions to undesired affective states become highly valued

and, as a result, such individuals engage in behaviors that, while maladaptive in the long term, offer an immediate reduction in negative affect.

In addition to the outcomes listed above, high levels of affective lability have been found to predict binge eating and purging (Benjamin & Wulfert, 2005). This finding is consistent with Heatherton and Baumeister's (2001) model of binge eating, which posits that the behavior serves as a distraction from aversive self-awareness and a strategy for immediate regulation of negative emotions. Although the Benjamin and Wulfert (2005) study represents the only publication we know of that directly measures affective lability in dysregulated eating behaviors, the finding is consistent with prior research indicating that difficulties in regulating affect play a pivotal role in initiating and sustaining such symptoms (Anestis, Selby, & Joiner, 2007; Anestis, Selby, Fink, & Joiner, 2007; Fischer, Anderson, & Smith, 2004; Fischer, Smith, & Anderson, 2003; Smyth et al., 2007) and, as such, further exploration into this relationship appears to be a potentially valuable endeavor. In order to effectively do so, however, a better understanding regarding how best to assess affective lability is required.

Affective lability is typically measured through retrospective self-report questionnaires. In such measures, participants are asked to report the degree to which they tend to experience rapid and extreme shifts in particular emotions (e.g., anger, sadness). These measures conceptualize affective lability as a stable, trait-like characteristic, thus indicating that individuals are consistent in the degree to which they experience frequent shifts in affective states. Multiple self-report measures of affective lability have been developed and utilized in empirical studies, with some garnering more attention and providing more valid and reliable information than others.

The Affective Lability Scale (ALS; Harvey, Greenberg, & Serper, 1989), one of the most commonly utilized measures, includes 54 items and has been shown to predict a variety of dysregulated behaviors, including methamphetamine and alcohol use (Simons, Oliver, Gaher, Ebel, & Brummels, 2005), and to distinguish between daily and occasional nicotine users (Dvorak & Simons, 2008). Oliver and Simons (2004) developed a short form of the ALS, consisting of eighteen items. In developing this shorter version, the authors reported that they did not replicate the factor structure of the original scale, but that the shorter form demonstrated adequate temporal stability.

The Dimensional Assessment of Personality Pathology – Basic Questionnaire (DAPP-BQ; Livesley et al., 1992) offers another self-report measure of affective lability with its Affective Lability subscale. This measure is utilized to examine the degree to which individuals exhibit a variety of personality characteristics. In one study utilizing the Affective Lability subscale, Anestis et al. (2009) found that, in a sample of 134 women meeting criteria for a current DSM-IV diagnosis of bulimia nervosa (BN), affective lability predicted the degree to which participants engaged in multiple dysregulated behaviors (e.g., self-injury, risky sexual behavior), even when controlling for general impulsivity and symptoms of depression. In other words, the tendency to experience rapidly fluctuating emotions appears to be related to the tendency to utilize a variety of maladaptive, dysregulated behaviors in a sample of women who regularly binge eat and purge. Because the authors controlled for general impulsivity, these findings cannot be better accounted for by a simple tendency to not think before acting. Instead, the importance of the variability of affect in the use of such behaviors was highlighted.

As the findings detailed above indicate, self-report measures of trait affective lability appear to display reliable predictive associations with respect to behavioral outcomes. Individuals who are characterized by a trait-like tendency to experience chronically and rapidly shifting affective states are more likely to engage in a variety of dysregulated behaviors than are individuals whose emotions are more stable. At the same time, self-report measures of trait

affective lability do not offer any insight into the degree to which individuals might experience changes in the extent to which their affective states are labile and, as such, whether or not periods of increased lability might lead to increases in the tendency to utilize dysregulated behaviors. Additionally, such measures rely upon individuals' abilities to accurately recall variability in emotions.

Larsen (1987) advocated using ecological momentary assessment (EMA) to measure affective lability, arguing that single measures of affective lability tend to measure the average extremity of mood change rather than the frequency of fluctuations between moods. As such, Larsen indicated that gathering repeated measures of current mood state could offer researchers and clinicians more flexibility in analytical approaches. By collecting measures of individuals' moods several times within and across days, researchers and clinicians are now able to objectively assess the degree to which participants actually experience frequent shifts in affective states, determine whether or not affective lability itself is a stable characteristic, and measure the degree to which fluctuations in affective states are temporally related to behavioral outcomes.

In one study utilizing EMA, Stein (1996) found that individuals with borderline personality disorder (BPD) exhibited greater affective lability than did control subjects. In this study, the authors collected 50 measures of current affective states over the course of ten days and found that participants diagnosed with BPD not only experienced higher average levels of negative affect, but also more frequent shifts between affective states. Within subject standard deviations across time points were used to measure affective lability, thus offering a measure of how much variability was present, on average, for each participant.

Using a different analytical approach that also relies upon EMA data collection, the Mean Square Successive Difference (MSSD), Woyshville, Lackamp, Eisengart, and Gilliland (1999) reported that patients in a mood disorder clinic experienced more affective lability than did non-psychiatric controls. The MSSD measures an individual's average difference from one time point to the next on a particular variable. In other words, rather than providing an aggregate measure of variability based on the mean score, the MSSD offers a measure of variability based on each time point and the point that immediately preceded it. These findings thus indicate that individuals suffering from mood disorders are more likely than healthy controls to experience frequent shifts in affect.

In a later study also using the MSSD to measure lability in affect, Bowen, Baetz, Hawkes, and Bowen (2006) reported that individuals with anxiety disorders experience significantly higher lability in negative affect and moderately more lability in positive affect than do non-psychiatric controls. Here, the authors distinguished between lability in positive and negative affect and found that frequent fluctuations in negative emotions were significantly more prominent in individuals with anxiety disorders than in healthy controls. As such, the findings indicate that lability in negative affect is particularly salient for individuals who suffer from clinically significant anxiety.

Ebner-Premier et al. (2007) used the MSSD to measure affective lability in a sample of individuals diagnosed with BPD as well as a sample of healthy controls. In this study, the authors found that individuals with BPD did, in fact, experience significantly more affective lability than did healthy controls.

Given that both self-report trait questionnaires and EMA approaches have been the subject of substantial research attention, the utility in comparing the two approaches on the same outcome measures within a single sample appears to hold significant value. The self-report trait questionnaires offer significant pragmatic utility in that they are inexpensive, relatively quick to complete, and easy to score. Additionally, they have already been linked to a variety of

dysregulated behavioral outcomes. EMA, on the other hand, while likely more expensive and certainly more difficult to utilize due to technical reasons, time requirements, compliance issues, and the statistical analyses required (Engel, Wonderlich, & Crosby, 2005), has been linked to a variety of psychological disorders and offers a unique ability to objectively and reliably measure the frequency of shifts in affective states. By comparing these two measurement approaches in a single sample, we hope to provide a basis upon which clinicians and researchers can decide which approach will best suit their needs and hypotheses for the particular outcome variables utilized in our study. Additionally, by comparing the utility of these two measurement techniques while examining the relationship between affective lability and dysregulated eating behaviors, we hope to expand upon the findings of Benjamin and Wulfert (2005).

To compare self-report trait questionnaires and EMA measurement approaches for affective lability, we employed data from 131 women diagnosed with Bulimia Nervosa (BN) who filled out a series of questionnaires, took part in a series of semi-structured diagnostic interviews, and carried a palm pilot for two weeks in order to provide EMA data. In designing the study in this manner, we intended to provide reliable diagnostic information while collecting both self-report trait measures and EMA measures of a variety of behaviors and individual differences. To measure self-reported trait affective lability, we administered the DAPP-BQ to each participant. To measure EMA affective lability, we calculated the MSSD on a measure of negative affect, thus allowing for a single number for each participant representing the degree to which she experienced frequent shifts in her level of current negative affect.

In this study, we hypothesized that self-report trait affective lability and EMA affective lability would predict both global eating disorder symptoms and the number of binge eating episodes during the course of the study, even when controlling for depression, age, body mass index (BMI), and level of education. We included these covariates to ensure that demographic variables, negative affect, and body size did not better account for any significant effects. Additionally, we hypothesized that the correlations between EMA affective lability and the two eating disorder outcome variables would be significantly higher than the correlation between self-report trait questionnaire affective lability and the two eating disorder outcome variables. Finally, we predicted that EMA affective lability would predict participants' daily number of binge eating episodes throughout the study, beyond measures of self-reported affective lability.

Method

Participants

A total of 131 females meeting DSM-IV criteria for a diagnosis of bulimia nervosa (BN) participated in the study. In this sample, 96.9% ($n = 127$) of the participants were Caucasian, 1.5% were Native American, 0.8% were Asian, and 0.8% were Other. Participants ranged in age from 18 to 55 (mean = 25.34, standard deviation = 7.71). Additionally, the majority of participants (51.1%) indicated that they were full-time students.

Procedure

Participants were recruited through advertisements placed in the community, clinics, and a university campus. Participants attended an informational meeting during which they signed an informed consent form and obtained additional information about the study. Subsequently, participants attended two assessment sessions during which Ph.D. level researchers administered the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I/P; First, Spitzer, Gibbon, & Williams, 1995), as well as several other diagnostic interviews and questionnaires. After the first assessment session, participants were trained in the use of palm

top computers and instructed not to respond to prompts at times when doing so could be dangerous. Participants were given \$200 for participating in two weeks of EMA assessments. Additionally, participants who completed 85% or more of the EMA assessments were given an additional \$50 in an effort to improve compliance rates.

Participants were trained to respond to six semi-random prompts each day. Once prompted, the participants answered the same series of questions regarding their mood, stress, and BN behaviors between that moment and the most recent prior prompt by the palm top computer. The scheduled prompts divided each day into six roughly equivalent periods of time. In addition to the scheduled prompts, participants were instructed to also enter data immediately after they engaged in a behavior from a set of behaviors listed in one of the questionnaires (see Eating Disorder and Self Destructive Behavior Checklist description below). Additionally, at the end of each day, participants provided data summarizing the course of the most recent day with respect to mood, stress, and behavior.

Measures

Eating Disorder Diagnoses—The Structured Clinical Interview for DSM-IV Axis I Diagnoses (SCID-I/P; First, Spitzer, Gibbon, & Williams, 1995) is a semi-structured diagnostic interview used to assess whether or not an individual meets DSM-IV criteria for a psychiatric diagnosis. The eating disorder module was administered by a doctoral level psychologist to determine the presence or absence of an eating disorder diagnosis. Based on a random selection of 25 interviews, Kappa ratings of inter-rater reliability for this sample were 1.00.

Predictor Variables—The Dimensional Assessment of Personality Pathology – Basic Questionnaire (DAPP-BQ; Livesley et al., 2002) is a self-report questionnaire comprised of 290 items used to assess numerous components of personality. The measure features 18 subscales; however, only the Affective Lability subscale was utilized in these analyses. Items utilize a Likert Type scale ranging from 1 (“Very unlike me”) to 5 (“Very like me”). The Affective Lability subscale includes 16 items and measures the degree to which individuals tend to experience rapidly fluctuating affective states (e.g., “I often feel like I am on an emotional roller coaster.”). This subscale served as a predictor in several analyses and the alpha coefficient for this sample was .89.

The Positive Affect – Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1998) is a 20-item self-report questionnaire utilized to assess the degree to which an individual is currently experiencing positive and negative affect. Items utilize a Likert type scale ranging from 1 (“Very slightly or not at all”) to 5 (“Extremely”). In this study, the PANAS was filled out several times per day over a period of two weeks. Only the Negative Affect subscale was utilized in these analyses and, when used, served as a predictor variable (EMA affective lability). This decision was made because it is hypothesized that binge episodes are triggered primarily by a drive to reduce negative affect rather than to increase positive affect¹.

The mean square successive difference (MSSD), which measures the average an individual changes from one score to the next on a particular measure, was used to create a single affective lability coefficient. In the context of this study, this variable will represent the degree to which, on average, each participant’s level of negative affect differs from the level that preceded it. The formula for this procedure, which consists of n elements, the i th of which is denoted as x_i , is as follows:

¹Identical analyses were run using the MSSD for PANAS Positive Affect. Results indicated that EMA positive affect lability did not predict Global EDE scores or proportional binges.

$$MSSD = \frac{\sum_{i=1}^{n-1} (x_{i+1} - x_i)^2}{n - 1}$$

An examination of the distribution of this particular variable indicated significant skew (5.21). As such, a log transformation was performed. The resulting variable still exhibited significant skew (−2.93); however, correlations between this and other variables were strengthened as a result of the transformation. Specifically, this resulted in higher correlations between EMA affective lability and DAPP-BQ affective lability ($r = .27$ to $r = .38$), globe EDE score ($r = .28$ to $r = .29$), and proportional binge eating episodes ($r = .18$ to $r = .28$).

Outcome variables—The Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) is a semi-structured interview that assesses the degree to which participants are exhibiting eating disorder symptomatology. The interview yields four subscales (Restraint, Eating Concern, Shape Concern, and Weight Concern) as well as a global score consisting of all four subscales. In this sample, a random selection of 25 cases resulted in intraclass coefficients ranging from .65 (Restraint) to .98 (Eating concerns, Shape Concerns, Weight Concerns), indicating sufficient inter-rater reliability. For this study, the global score was utilized as an outcome variable, representing an overall estimate of eating disorder symptomatology.

Eating Disorder and Self-Destructive Behavior Checklist. A selection of items from various questionnaires used to assess dysregulated eating behaviors as well as other self-destructive behaviors (e.g., Rossotto, Yager, & Rorty, 1998; Vanderlindon & Vandereycken, 1997) was used to create a measure of momentary behavioral dysregulation. Using the palm top computers, EMA data were gathered that allowed for an analysis of the frequency and total quantity of various dysregulated behaviors utilized by participants during the course of the study. Because the total number of responses by each participant during the course of the study was significantly correlated with the total number of binge eating episodes reported during the course of the study ($r = .38$, $p < .001$), a proportionate binge variable was created by dividing the total number of binge eating episodes by the total number of responses for each participant.

An examination of the distribution of this particular variable indicated significant skew (4.23). As such, a log transformation was performed. The resulting variable still exhibited significant skew (−2.36).

Covariates

Beck Depression Inventory – II (BDI-II; Beck, Steer, & Garbin, 1998). The BDI-II is a self-report questionnaire that consists of 21 items that assesses the degree to which an individual has been experiencing various symptoms of depression during the course of the previous two weeks. Items utilize a likert scale ranging from 0 to 3, with higher scores indicating greater severity. Reliability and validity data for this measure are widely available (e.g., Beck et al., 1998). In the current sample, the alpha coefficient was .90.

Body Mass Index (BMI) was calculated for each participant during the initial assessment appointment. The formula for calculating BMI was (weight in pounds* 703)/(height in inches²).

²In an effort to minimize risk that our findings regarding EMA affective lability and proportional binges are due to common method variance, we re-ran our analyses controlling for the total number of times that participants' entered data in the palm pilot, as this was significantly correlated with the number of binges reported during the study. All results were essentially the same, with no changes in significance.

Age and level of education were reported on a demographic form administered during the initial assessment appointment.

Data Analytic Strategy—Hierarchical regression equations were utilized to test whether or not each measure of affective lability predicted each eating disorder measure, controlling for depression, age, BMI, and level of education. To test whether the correlation between EMA affective lability and the two eating disorder outcome variables was significantly higher than the correlation between self-report trait affective lability and the two eating disorder outcome variables, a test of dependent correlations was utilized. This analysis tests whether a correlation between one predictor and an outcome variable is significantly greater than the correlation between another predictor and that same outcome variable. Generalized estimating equations with Poisson regression in the GENLIN module of SPSS were used to determine if the predictor variables significantly predicted number of binges for any given day of monitoring. Generalized estimating equations account for the non-independence of observations in the data, as number of binge episodes per day are nested within each individual being monitored. Poisson regression was used to account for the fact that daily number of binges was a count variable and as such it is not normally distributed. Accordingly, as noted, a logarithmic link function was needed to transform the outcome distribution to the more appropriate Poisson distribution. This approach reduces estimate bias and estimates standard errors appropriately. Adjusted incidence rate ratios (IRRs), which provide information about the relative increase in risk of more binge-episodes for one unit of change in the predictor variable were calculated, along with the 95% confidence intervals for the IRRs. The robust covariance estimator was used to correct for underestimation of standard errors, thus reducing type 1 error.

Results

Means, standard deviations, and intercorrelations for the variables utilized in these analyses can be found in Table 1.

Statistical Procedures

Both EMA Affective Lability and DAPP-BQ Affective Lability will predict global EDE scores and number of binge eating episodes throughout the study, controlling for depressive symptoms, age, body mass index (BMI), and level of education—To test whether both forms of measurement of Affective Lability predicted global EDE scores and number of binge eating episodes throughout the course of the study, even when controlling for depression, age, BMI, and level of education, a series of hierarchical linear regressions was constructed. For each regression, depression, age, BMI, and level of education were entered in Step 1. In Step 2, the independent variable was entered. Global EDE score served as the dependent variable in two analyses and number of binge eating episodes throughout the course of the study served as the dependent variable in the other two analyses. Results from the first equation indicated that EMA Affective Lability significantly predicted global EDE scores, controlling for depression, age, BMI, and level of education ($t = 2.20$, $p < .03$, semi-partial correlation (sr) = .17, $f^2 = .04$). Results from the second equation indicated that DAPP-BQ Affective Lability significantly predicted global EDE scores, controlling for depression, age, BMI, and level of education ($t = 2.02$, $p < .05$, $sr = .16$, $f^2 = .03$). Results from the third equation indicated that EMA Affective Lability significantly predicted proportional binge eating episodes, controlling for depression, age, BMI, and level of education ($t = 2.40$, $p < .02$, $sr = .21$, $f^2 = .05$). Results from the fourth equation indicated that DAPP-BQ Affective Lability did not significantly predict proportional binge eating episodes, controlling for average level of negative affect ($t = -0.35$, $p = .73$, $sr = -0.03$, $f^2 = .00$)². These results can be seen in Tables 2 through 5.

EMA Affective Lability will exhibit statistically significantly higher correlations with both global EDE score and proportionate binge eating episodes than will DAPP-BQ Affective Lability—

Because DAPP-BQ Affective Lability demonstrated a higher correlation with global EDE score than did EMA Affective Lability, this portion of the hypothesis could not be tested. In order to test whether the reverse was true – DAPP-BQ reporting a significantly higher correlation with global EDE scores than EMA Affective Lability – a similar analysis was run. Results indicated that DAPP-BQ Affective Lability did not demonstrate a significantly greater correlation with global EDE score than did EMA Affective Lability ($t = 0.45$, $p = .66$). Results did, however, indicate that EMA Affective Lability demonstrated a significantly higher correlation with proportionate binge eating episodes than did DAPP-BQ Affective Lability ($t = 2.05$, $p = .04$).

EMA affective lability would predict daily number of binge episodes beyond BDI, age, BMI, and level of education—

EMA negative affect, BDI score, BMI, age and education status were entered simultaneously as predictors in the Poisson generalized estimating equation. BMI ($B = -.043$, $SE = .02$, Wald χ^2 (1 df) = 4.66, $p < .05$, IRR = .96, 95% CI = .92–.99) was a significant predictor of daily number of eating binges, with higher BMI scores predicting lower risk of daily binges. The other covariates were not significant. EMA negative affect, as predicted, was a significant predictor of number of binges on any given day ($B = .596$, $SE = .27$, Wald χ^2 (1 df) = 4.90, $p < .05$, IRR = 1.82, 95% CI = 1.07–3.08). These results indicate that higher levels of EMA negative affect have incremental predictive value beyond the effects of, depression, BMI, education level, and age in predicting increased risk of more binge episodes on any given day.

Discussion

The central purpose of this study was to examine the relationship between two measurements of affective lability and two measures of dysregulated eating behavior. Specifically, we sought to test whether EMA affective lability would exhibit a stronger statistical relationship to a measure of binge eating episodes over a discrete period of time as well as global EDE scores than would retrospective self-reported affective lability. While the results supported some of our hypotheses, other hypotheses were not backed up by the data.

The fact that both forms of measurement of affective lability significantly predicted global scores on the EDE, even when controlling for age, BMI, and levels of depression and education, indicates that affective lability, whether measured by a retrospective self-report questionnaire or through EMA data collection, is highly predictive of generally pathological eating patterns. This represents an extension of prior findings by Benjamin and Wulfert (2005). The EDE does not include subscales specific to a particular eating disorder, but rather measures general maladaptive tendencies and beliefs relative to dysregulated eating behavior. As such, consistent with prior research, it appears that various forms of measurement of affective lability are significantly predictive of variables relevant to eating pathology in general; however, such information does not provide substantial insight into relationships that various forms of affective lability might have with specific components of dysregulated eating.

To clarify this point of ambiguity, we also tested whether each form of affective lability could be used to predict participants' number of binge eating episodes during the course of the study when controlling for depression, age, BMI, and level of education. The results only partially supported our hypotheses, as EMA affective lability but not DAPP-BQ affective lability significantly predicted the outcome variable.

Our hypothesis that EMA affective lability would exhibit a significantly higher correlation with both outcome variables than would DAPP-BQ Affective Lability was only partially

supported by the data. EMA affective lability exhibited a significantly higher correlation with proportional binges than did DAPP-BQ Affective Lability. This indicates that retrospectively self-reported levels of affective lability are not robust predictors of how often an individual will binge eat during a discrete period of time. EMA measures of affective lability, on the other hand, provide significant utility in predicting how often an individual will binge in a particular time period. As such, if a clinician or researcher is interested in determining how often an individual is likely to binge in the near term, their best method for doing so may be to measure mood changes across time with several state measures rather than seeking a retrospective account of general tendencies toward unstable emotions. Furthermore, this finding provides support for a theoretical framework within which binge eating is viewed as a behavioral means by which some individuals attempt to regulate current negative emotional states.

Because DAPP-BQ Affective Lability exhibited a higher correlation with global EDE scores than did EMA affective lability, the hypothesized relationship in this case – that EMA affective lability would exhibit a significantly greater correlation with global EDE scores than would DAPP-BQ Affective Lability – was, by definition, not supported. The opposite – that DAPP-BQ Affective Lability would exhibit a stronger correlation with global EDE scores than would EMA affective lability – was not supported either, thereby indicating that the two measures are equally capable of predicting a global pattern of disordered eating.

Our final hypothesis – that EMA affective lability would predict participants' number of binges on any given day – took full advantage of our longitudinal data and offered further evidence in the utility of considering affective lability when attempting to understand clients' immediate vulnerability to binge eating behavior. The results indicated that individuals with a higher level of EMA affective lability exhibited a higher average number of binge eating episodes on any given day. As such, clinicians may benefit from implementing procedures with clients that would allow for the collection of more ecologically valid data on the client's shifting moods. The use of portable computers is expensive and unlikely to occur in real world practice; however, simply having the client monitor his or her mood through the days between sessions could potentially afford the clinician with an opportunity to collect similarly useful data.

There are several important implications with respect to these findings. First, it appears that, in addition to offering advantages with respect to cost, speed, and ease of administration, self-report retrospective questionnaires may exhibit equivalent predictive power to EMA measures of affective lability in the prediction of global eating pathology in a sample of women diagnosed with BN. For clinicians seeking to assess risk of binge eating in a particular period of time, EMA measures appear to be of greater use. Given the difficulty of administering longitudinal studies and the cost of acquiring and maintaining EMA hardware, this is important information, as it provides a concrete basis for cost-benefit analyses on the part of researchers considering study designs.

These findings also have important clinical implications. Given that affective lability was significantly predictive of global EDE scores regardless of measurement approach, even when controlling for depression, age, BMI, and level of education, it appears that rapidly shifting emotions are an important consideration above and beyond demographic variables, body mass, and the simple experience of chronic high levels of negative emotions. As such, emotion dysregulation appears pivotal in this context. Research has indicated that dialectical behavior therapy (DBT; Linehan, 1992) is an efficacious treatment for both binge eating disorder (BED) and BN (National Collaborating Centre for Mental Health, 2004; Wilson, Grilo, & Vitousek, 2007) and these findings provide further support for the use of emotion-based therapeutic interventions for these disorders. Future research that examines whether DBT treatment reduces self-report and EMA affective lability in eating disordered patients would serve to further clarify this point.

There are several limitations to this study that are worth noting. First, the use of a clinical sample limits the generalizability of the findings. It remains possible that different forms of measurement of affective lability exhibit different levels of utility in non-clinical populations. Additionally, the use of an entirely female sample precluded any understanding of how our predictors and outcome variables relate in males. There may, in fact, be no difference across biological sex; however, our data do not allow for such analyses. Also, the effect sizes for the relationships between the various measurements of affective lability and dysregulated eating were generally small. As such, it appears that, although a significant relationship exists, affective lability in and of itself may not be the most important variable in the onset and maintenance of dysregulated eating behaviors. In other words, although affective lability offers significant predictive utility in this context, the strength of its relationship to disordered eating outcomes is limited in scope, thereby indicating that other variables not tested in these analyses account for a greater proportion of the variability in dysregulated eating behavior. This, of course, is not entirely surprising, as research has pointed towards a number of other variables predictive of disordered eating; however, it does highlight the importance of considering findings such as this within the greater nomological network of variables known to relate to similar outcome variables. In doing so, clinicians and researchers can ensure that they adequately attend to a greater number of relevant variables when considering risk in particular individuals. Finally, the use of variables related to dysregulated eating as our outcome measure in a sample of women already diagnosed with BN may not provide a full understanding of the importance of affective lability with respect to behavioral outcomes. In other words, because all individuals in our sample exhibited clinically significant elevations in these outcomes, our data did not allow us to test the degree to which various measures of affective lability differentiate between individuals who engage in dysregulated behaviors and those who do not.

These limitations aside, we believe these results offer at least two important contributions. First, they highlight the importance of affective lability as a factor in dysregulated eating behaviors. Additionally, these results provide a basis through which researchers can determine which measurement method for affective lability best suits their needs for a particular study. As such, our findings exhibit both clinical and scientific utility. Clinically, these results indicate that individuals suffering from dysregulated eating patterns may also experience chronic and frequent shifts in affective states and that treatments that help mitigate this symptom might offer relief with respect to their eating behaviors. In particular, Dialectical Behavior Therapy, Integrative Cognitive Affective Therapy (ICAT; Wonderlich et al., in press), and Enhanced Cognitive Behavior Therapy (CBT-E; Fairburn, Cooper, & Safran, 2003) may serve as useful treatments for individuals with BN who exhibit significant affective lability. Scientifically, these results point towards significant utility for both forms of measurement of affective lability, with potential differences with respect to whether the researcher is interested in overall tendencies or in the occurrence of particular behaviors over a discrete period of time.

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Table 1

Means, standard deviations, and intercorrelations for the variables utilized in these analyses.

	1	2	3	4	5	6	7	8
1. EMA – Affective Lability	1							
2. DAPP – Affective Lability	.38**	1						
3. Proportional Binge Total	.28*	.09	1					
4. Global EDE Score	.29**	.34**	.04	1				
5. Depression	.44**	.42**	.21*	.50**	1			
6. Age	-.22*	-.04	.01	.16	.18*	1		
7. BMI	.04	.14	-.20*	.22*	.15	.06	1	
8. Education	.03	-.06	-.15	-.07	.09	.26**	.06	1
Minimum	0.43	33.00	-2.00	0.00	0.00	18.00	15.95	2
Maximum	2.19	75.00	-0.53	5.00	49.00	55.00	47.23	8
Mean	1.58	55.43	-1.18	3.33	19.18	24.89	23.16	4.91
Standard Deviation	0.35	9.10	3.33	1.11	9.97	7.29	4.95	1.01

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Note: EMA = Ecological momentary assessment; DAPP = Dimensional Assessment of Personality Pathology; EDE = Eating Disorder Examination.

Table 2

EMA Affective Lability predicting global EDE scores, controlling for depression, age, BMI, and level of education

	T-Value	P-Value	Zero-Order	Correlations Partial	Semi-Partial
1					
(Constant)	2.832	.005			
Depression	5.796	.000	.495	.482	.460
Age	1.136	.258	.160	.107	.090
BMI	2.227	.028	.218	.207	.177
Education	-1.916	.058	-.079	-.179	-.152
2					
(Constant)	.969	.335			
Depression	4.191	.000	.495	.371	.327
Age	1.810	.073	.160	.170	.141
BMI	2.380	.019	.218	.221	.186
Education	-2.151	.034	-.079	-.201	-.168
EMA Affective Lability	2.204	.030	.312	.206	.172

Dependent Variable: Global EDE Score

Note: EMA = Ecological Momentary Assessment; EDE = Eating Disorder Examination.

Table 3

DAPP-BQ Affective Lability predicting global EDE Scores, controlling for depression, age, BMI, and level of education.

	T-Value	P-Value	Zero-Order	Correlations Partial	Partial
1					
(Constant)	2.832	.000			
Depression	5.796	.000	.495	.482	
Age	1.136	.258	.160	.107	
BMI	2.227	.028	.218	.207	
Education	-1.916	.058	-.079	-.179	.326
2					
(Constant)	.847	.399			
Depression	4.540	.000	.495	.397	.356
Age	1.402	.164	.160	.133	.110
BMI	2.093	.039	.218	.196	.164
Education	-1.795	.075	-.079	-.169	-.141
DAPP - Affective Lability	2.005	.047	.349	.188	.157

Dependent Variable: Global EDE Score

Note: DAPP= Dimensional Assessment of Personality Pathology.

EMA Affective Lability predicting proportional binge eating episodes, controlling for depression, age, BMI, and level of education.

Table 4

	T-Value	P-Value	Zero-Order	Correlations Partial	Semi-Partial
1					
(Constant)	-2.644	.000			
Depression	2.411	.018	.203	.230	.219
Age	-.035	.972	-.023	-.003	-.003
BMI	-2.856	.005	-.271	-.270	-.260
Education	-1.504	.136	-.160	-.146	-.137
2					
(Constant)	-3.610	.000			
Depression	1.188	.238	.203	.116	.106
Age	.607	.545	-.023	.060	.054
BMI	-2.861	.005	-.271	-.271	-.254
Education	-1.552	.124	-.160	-.151	-.138
EMA Affective Lability	2.399	.018	.290	.230	.213

Dependent Variable: Proportional Binge Eating Episodes
Note: EMA = Ecological Momentary Assessment.

Table 5

DAPP-BQ Affective Lability predicting proportional binge eating episodes, controlling for depression, age, BMI, and level of education.

	T-Value	P-Value	Zero-Order	Correlations Partial	Semi-Partial
1					
(Constant)	-2.644	.009			
Depression	2.411	.018	.203	.230	.219
Age	-.035	.972	-.023	-.003	-.003
BMI	-2.856	.005	-.271	-.270	-.260
Education	-1.504	.136	-.160	.146	-.137
2					
(Constant)	-1.737	.085			
Depression	2.353	.021	.203	.226	.215
Age	-.063	.950	-.023	-.006	-.006
BMI	-2.805	.006	-.271	-.266	-.256
Education	-1.531	.129	-.160	-.149	-.140
DAPP - Affective Lability	-.349	.728	.051	-.034	-.032

Dependent Variable: Proportional binge eating episodes

Note: DAPP= Dimensional Assessment of Personality Pathology.