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Ecological Momentary Assessment of Affect, Stress, and Binge-Purge Behaviors: Day of Week and Time of Day Effects in the Natural Environment

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Abstract

Objective—The present study examined ecological momentary assessments of binge/vomit behavior, mood, and type and severity of stressors in a sample of 133 women with bulimia nervosa.

Method—Participants completed an ecological momentary assessment protocol for a period of 2 weeks.

Results—Mixed-effects and multilevel logistic models revealed significant variation across time of day and day of the week in the occurrence of bingeing, vomiting, positive and negative affect, and the severity and types of stressful events.

Discussion—These findings explicate how momentary and daily experiences vary in the natural environments of women with bulimia nervosa, and document critical time periods for intervention.

Keywords

EMA; bulimia nervosa; diurnal cycle; time of day; day of week

Introduction

Anecdotal, clinical, and research reports have converged on a picture of bulimia nervosa that highlights the association between stress, affect, and binge/purge behaviors.^{1–5} What is less clear in the literature is the actual frequency of these events in “real-time,” and how these events may vary across time of day and day of week in the natural lives of individuals with eating disorders. For example, the average per day binge-eating frequency reported within a sample of women with bulimia nervosa (BN) and binge eating disorder (BED) differed according to the data collection technique (i.e., structured interview: 0.91 episodes/day, self-monitoring records: 0.40 episodes/day).^{6,7} The discrepancy between estimates collected using different methods raises concerns about reliance on participants’ retrospective self-reports as such reports may not accurately reflect natural eating behavior.

Thus, although a valuable approach for some research questions (e.g., population screening),⁸ there are clear limitations to retrospective self-report methods for collecting information about disordered eating behaviors and the subjective experiences that may accompany them.⁹ In addition, global assessments of event frequency may obscure the more fluid fluctuation of events and behavior (both between and within days) that may occur in the natural environment. For example, evidence suggests that binge eating and purging episodes are unequally distributed throughout the day,^{10–13} demonstrating the specific time of day when episodes occur can be critical for understanding the nature of bulimic behavior. Very few studies provide detailed temporal analysis (i.e., specific times) of these events,^{11,12} whereas others suggest a general clustering of binge and purge behaviors in the afternoon and evening but fail to identify specific time intervals.¹³ In contrast to these findings, both early and recent findings have demonstrated that under certain conditions (e.g., in association with neutral mood states,¹³ as a result of cravings¹⁴), binge episodes may be more likely to occur in the morning. Early studies also relied on the use of self-monitoring diaries for data collection. Even when paired with the use of an electronic pager,¹¹ these methods do not allow researchers to assess temporal compliance with planned signaling schedules. These data, although informative, may thus be subject to retrospective recall biases that are inherent in noncompliance with self-monitoring procedures.

Previous literature has thus identified broad temporal periods of potential behavioral vulnerability for women with BN (i.e., increased likelihood of binge and purge events) using self-monitoring methods. This literature, however, currently lacks more fine-grained depictions of these periods throughout the day and across days of the week. Further, there is little information with regard to how stress and affect may similarly fluctuate across these time intervals (within and between days). Fortunately, ecological momentary assessment (EMA), and particularly the use of electronic palmtop devices, may be particularly helpful in identifying the “real-time” psychological and behavioral patterns of women with eating disorders,^{9,15} as well as for identifying personality subtypes in therapeutic interventions¹⁶ and assessing binge eating behavior assessment in individuals with and without BED.¹⁷ The subtle, transient shifts in affective, psychological, and social states that may influence eating behavior in the natural environment can be captured with this method, thereby providing detailed information that may be useful in the ongoing optimization of assessment, intervention, and treatment strategies.

In the present study, we attempted to advance the literature by providing a focused examination of the distribution of stress, affect, and binge/purge behaviors within and between days of the week in a sample of women with bulimia. First, EMA assessments were used to establish the frequency and distribution of affect, stress, and binge/purge behaviors across time of day. Second, EMA reports were used to establish the frequency and distribution of affect, stress, and binge/purge behaviors as a function of days of the week (e.g., weekday versus weekend). Although previous studies have separately demonstrated the variability in these experiences for women with BN, the present study provides integrated temporal (i.e., time of day and day of week) consideration of stress, affect, and BN events. This more detailed analysis of the temporal nature of bulimic behavior, mood, and stress will continue to inform the types and optimal time of implementation of interventions and self-management strategies.

Method

Participants

Participants were 133 females who met DSM-IV criteria for BN. Participants received \$100/week for completion of the study. In addition, they were given a \$50 bonus for compliance rates of 85% or better on the EMA assessments. The majority of participants were single/

never married (85.0%), European-American (96.9%), students (69.0%; both undergraduate and graduate), and relatively young ($M = 25.30$, $SD = 7.60$). Please refer to Table 1 for information regarding the symptom severity and treatment history of the sample.

Measures

Two domains of assessment were conducted in the study. First, participants completed diagnostic interviews and self-report measures (only those used in this report are detailed herein). Second, participants completed questionnaire assessments on palmtop computers as part of the EMA.

Eating Disorder Symptoms—Diagnostic Interviews and Self-Report Measures

Structured Clinical Interview for DSM-IV Axis I Disorders, Patient Edition-Eating Disorder Module (SCID-I/P).¹⁷—The eating disorder module of the SCID-I/P was used as a primary measure of eating disorder psychopathology from which a DSM-IV diagnosis of BN was made. The SCID-I/P was administered in-person by a doctoral level psychologist who had received training specific to the SCID-IP. The SCID-I/P has been well documented as a reliable and valid instrument.¹⁸ Kappa coefficients based on 25 cases from our sample were 1.00 for BN diagnoses.

Eating Disorder Examination.¹⁹—The eating disorder examination (EDE) was used as a primary measure of eating disorder psychopathology. It is an investigator-administered interview used to assess current eating disorder symptoms. The EDE contains four subscales (restraint, eating concern, shape concern, and weight concern) associated with core psychopathology of eating disorders, as well as frequency measures of binge eating and compensatory behavior. The EDE was administered in-person by a doctoral level psychologist trained in the administration of this measure. The validity and reliability of the EDE have been well documented¹⁹ and the instrument has been used extensively in treatment outcome studies of bulimia nervosa. Intraclass correlation coefficients based on 25 cases from our sample ranged from 0.65 on the restraint subscale to greater than 0.98 on weight concern, shape concern, and eating concerns.

EMA Assessment

Profile of Mood States.²⁰—The anger-hostility subscale of the profile of mood states (POMS) was used to assess momentary affect. The POMS has been used for daily event recording by Bolger and Zuckerman²¹ and provides a good daily measure of mood states. Coefficient alpha for the POMS anger-hostility subscale in the current study was 0.89.

Positive and Negative Affect States.²²—Selected items from the positive and negative affect states (PANAS) were chosen to assess current positive (PA) and negative affective (NA) states; 13 PA items (happy, alert, proud, cheerful, enthusiastic, confident, concentrating, energetic, calm, strong, determined, attentive, relaxed) and 11 NA items (afraid, lonely, irritable, ashamed, disgusted, nervous, dissatisfied with self, jittery, sad, distressed, angry with self). Good internal reliability (0.85 for NA and 0.87 for PA) has been shown.²² Coefficient alphas in the current study were 0.91 for positive affect and 0.92 for negative affect.

Daily Stress—We used daily stress items from several sources. We first drew items from the Daily Stress Inventory (DSI).²³ The DSI is a 60-item questionnaire developed to assess stress from daily experiences and general daily stressors (e.g., exposed to upsetting TV show; waited longer than I wanted; experienced bad weather). For the EMA measurement, a subset of 26 DSI items (to reduce the time to complete EMA reports) were selected for

inclusion by consensus between the investigators and a group of ED assessors and treatment providers on the basis of clinical and/or empirical relevance to women with BN. We supplemented these items with additional items to more carefully assess interpersonal problems (4 items; e.g., argued with spouse or other) and work/environment-related hassles (4 items; e.g., had problems completing work or school tasks).²⁴

Participants were presented with all stress items at each signal contingent recording. Each item was presented in a “checklist” format, allowing participants to check any stressful event that had occurred as the last signal contingent recording. If an item was checked, they were routed to another question inquiring how stressful this event had been (from “1 Not at all” to “5 Very much”). Individual items were summed to create three composite indices: (1) general daily hassles (i.e., waiting, bad weather), (2) interpersonal problems, and (3) work/environment-related hassles. We further constructed variables (at the “beep” or momentary level) indicating the number of stressors (the sum of the number of endorsed items) and the severity of stress reported (the sum of stress ratings provided for all reported stressors). This was done for each category (e.g., to get work stress frequency and severity) as well as overall (i.e., the sums across all three categories).

Eating Disorder and Self-Destructive Behavior Check-list—Items from several scales of eating disorders and self-destructive behaviors (Rossotto et al. Unpublished manuscript)²⁵ were used to create a 19-item checklist of current momentary behaviors. The checklist included eating-related items (e.g., “I binge ate,” “I vomited”) as well as other impulsive behaviors (e.g., “I hit myself,” “I drove dangerously or recklessly”). Only the eating behaviors (i.e., “I binge ate,” “I vomited”) were used in this study.

Procedure

The study was reviewed and approved by all relevant IRBs. Participants were recruited through clinical, community, and campus advertisements. Interested participants contacted research staff and were screened for inclusion (i.e., met DSM-IV criteria for BN) and exclusion criteria (e.g., males or under 18 years of age) by phone. Participants ($n = 154$) who met DSM-IV criteria for BN were scheduled for an informational meeting at which they completed the consent process and provided a blood sample to assess their medical stability (i.e., electrolyte screen). Interested participants were then scheduled for two assessment visits with one of two doctoral level research assistants. These assistants completed 3–4 h of assessment with each participant. Eleven participants did not meet inclusion criteria based on these assessments; as a result, 143 participants began the EMA training and data collection protocol.

After the first assessment, participants were informed of the goals for the study, expectations for data collection, and trained to complete the EMA assessments on the palmtop computers. Training for the momentary reporting focused training participants to report when loss of control was accompanied by eating an objectively large amount of food. In training, examples of *what* objectively large amounts of food consisted of were provided, and these examples were personally tailored to the participants eating habits (as reported during the assessment interview process). Practice data were reviewed at the time of the second assessment to check compliance rates. Participants were then scheduled for 3–4 meetings over the course of the next 2 weeks during which the actual data collection occurred. Several visits were scheduled to collect palmtop data to reduce potential losses of data. Feedback on compliance rates for the EMA data collection was provided at each visit. During EMA data collection, seven participants withdrew from the study and three provided insufficient data for analysis, resulting in 133 participants who completed the protocol. On completion of the

study, participants were compensated for their participation and given treatment referral information.

The current EMA assessment implemented all three types of daily self-report methods²⁶: (1) signal contingent recording, (2) interval contingent recording, and (3) event contingent recording. Signal contingent recording involves respondents recording experiences whenever signaled by the researcher. In the current study, participants were signaled at six semirandom times throughout the day. Interval contingent recording refers to data collection at regular predetermined intervals. In the current protocol, recordings of affect, stress appraisal, and behavior ratings were completed at the end of each day. Event contingent recording requires respondents to make a report every time a predetermined event has occurred. In the current study, participants were asked to complete ratings following the completion of any of the behaviors on a laminated card that was carried with the palmtop computer. This report focuses on the account of a binge eating or vomiting event. Signal contingent prompts ended in the late evening, so overnight ratings are based solely on self-initiated (i.e., event contingent) prompts as random prompts via alarm would disrupt sleep. As such, over night hours have a much lower frequency of responding than the signal contingent measures during waking hours and results from overnight ratings should be interpreted cautiously.

Results

Mixed-effects multilevel models were used to test for significant variation across time of day and day of week in momentary affect, stress, and bulimic behavior. A three-level model was fit to these data, with level-1 reflecting variability across time of day nested in day of week, level-2 reflecting variability across day of week nested in person, and level-3 reflecting variability between persons. Because the vast majority of the EMA data (>97%) were collected between 8 AM and 12 AM, we restricted our analyses to cover this time period. Preliminary modeling indicated evidence of significant autocorrelation among the within-day residuals (level-1) which we modeled using first-order autoregressive covariance structure. There was no evidence of serial correlation among measurements taken across days. SAS PROC Mixed was used to fit the mixed models to the affect and stress severity data.²⁷ The SAS procedure GLIMMIX was used to fit generalized mixed models to the bulimic event (binomial) and stressor frequency (Poisson) data.

Affect

Time of Day Effects—A significant quadratic effect was found for time of day on PA [$F(1, 10946) = 355.42, p < .001$]. The linear effect for time of day was not significant [$F(1, 10946) < 1, ns$]. Specifically, ratings of PA showed an increase from 8 AM until PA peaked at 4 PM. After 4 PM, the ratings of PA decreased. There was a significant linear time of day effect on the NA scale [$F(1, 10946) = 104.47, p < .001$] indicating that ratings of NA showed a steady increase throughout the day. There was no evidence of a quadratic effect for time of day on NA ratings [$F(1, 10946) < 1, ns$] Figure 1.

Analyses also showed a very slight but statistically significant linear increase in anger and hostility ratings on the POMS [$F(1, 10946) = 12.86, p < .001$] across time of day. There was no evidence of a quadratic trend across time of day in the POMS data [$F(1, 10946) < 1, ns$].

Day of Week Effects—There was a weak trend for an effect for day of week on PA [$F(6, 787) = 1.89, p = .08$]. Post-hoc examination of the mean ratings revealed evidence of higher PA on weekdays ($M = 35.0$) compared with weekends [$M = 34.4, t(1, 787) = 2.21, p = .027$]. Highest ratings of PA were on Friday ($M = 35.43$) and the lowest ratings of PA were on Sunday ($M = 34.23$). An overall significant effect was found for day of week on NA

$[F(6, 787) = 2.75, p = .012]$. Examination of the daily mean ratings of NA suggested lower ratings on Friday and Saturday compared with other days. A post-hoc contrast confirmed this observation $[t(1, 787) = 3.70, p < .001]$. Highest ratings of NA were on Tuesday ($M = 24.63$) and the lowest ratings of NA were on Saturday ($M = 23.37$). No significant effect was found for day of week in the anger and hostility ratings on the POMS $[F(6, 787) = 1.15, p = .334]$. Average anger and hostility ratings did not significantly differ between weekdays ($M = 7.38$) and weekends ($M = 7.36$). The interaction between time of day and day of week did not approach statistical significance for any of the affect variables (F 's < 1 for all).

Stress

Time of Day Effects—There was a significant quadratic effect $[F(1, 9683) = 2.71, p = .013]$ for time of day on the overall number of stressors reported, with the highest average number of overall stressors occurring at 4 PM ($M = 1.26$) and the lowest occurring at 8 AM ($M = 1.10$). Significant linear $[F(1, 9683) = 3.84, p = .05]$ and quadratic effects $[F(1, 9683) = 9.50, p = .002]$ were found for time of day on overall stressor severity $[F(1, 5612) = 13.46, p < .001]$ with the highest level of overall stressor severity was reported at 8 PM ($M = 4.5$) and the lowest level at 8 AM ($M = 5.72$). There was a significant linear trend of time of day on the number of general hassles reported $[F(1, 9681) = 17.14, p < .001]$ with *decreasing* stressor frequency throughout the day. There was also significant linear effect for time of day on the reported severity of stress from general hassles $[F(1, 9681) = 7.49, p = .006]$ indicating the highest subjective stress ratings in the morning and a decline in these ratings throughout the day.

We next examined whether the observed patterns were present for both environmental/work-related stressors and for interpersonal stressors. There was a significant linear effect $[F(1, 9649) = 4.31, p = .038]$ and a significant quadratic effect $[F(1, 9649) = 32.99, p < .001]$ on work-related stressors, with the highest number of stressors occurring at 4 PM ($M = 0.35$). There was a significant quadratic effect of time of day on the severity of work-related stressors $[F(1, 9649) = 27.40, p < .001]$ with the linear effect a statistical trend $[F(1, 9649) = 3.55, p = .06]$. The highest levels of work-related stress severity occurring at 4 PM ($M = 1.33$) and the lowest level occurring at 8 AM ($M = 0.95$). There was evidence of a significant linear effect $[F(1, 9656) = 57.65, p < .001]$ on the frequency of interpersonal stressors, with increasing frequency reported as they day progressed. There was also a significant linear increase in the severity of interpersonal stressors as the day progressed $[F(1, 9656) = 40.60, p < .001]$.

Day of Week Effects—A significant effect was found for day of week on the overall number of stressors reported $[F(6, 787) = 2.71, p = .013]$. A significantly higher number of overall stressors were reported on weekdays ($M = 1.24$) compared with weekends ($M = 1.13$, $F(1, 787) = 15.57, p < .001$). There was no effect of day of week on the severity of overall stressors $[F(1, 787) = 1.77, p = .103]$, but stress severity was higher on the weekday, compared with the weekend $[F(1, 787) = 9.25, p = .002]$. No overall significant effect was found for day of week on the total number of general hassles reported $[F(6, 787) < 1, ns]$ or on the severity ratings of general hassles $[F(6, 787) < 1, ns]$.

We again examined work/environment-related and interpersonal stressors. A significant effect was found for day of week on the frequency of work-related stressors $[F(6, 787) = 11.40, p = .001]$. Significantly more work-related stressors were reported on weekdays ($M = 0.34$) compared with weekends ($M = 0.24$, $F(1, 787) = 53.83, p < .001$). There was significant effect for day of week on the severity ratings of work-related stressors $[F(6, 787) = 8.20, p < .001]$. Severity ratings on weekdays ($M = 1.29$) were significantly higher than severity ratings on weekends ($M = 0.94$, $F(1, 787) = 34.04, p < .001$). No overall significant

effect was found for day of week on the frequency of interpersonal stressors reported [$F(6, 787) < 1$, ns] or on the severity ratings of interpersonal stressors [$F(6, 787) < 1$, ns].

Binge/Purge Behavior

Time of Day Effects—Binge and vomit events were coded as 0/1 (not present/present). We therefore employed multilevel logistic models for binary responses to test whether the probability of an event varied across time of day, restricting analyses to day on which at least one binge or vomit event occurred. Preliminary examination of the both events indicated that the frequency of these behaviors varied considerably across the day. Given the nonlinearity of the across day trends in these events, time of day was treated as a categorical variable with events grouped into 1-hour bins (yielding 24 time categories).

Analysis of binge events indicated significant variability in the probability of event occurrence [$p(\text{binge})$] across time of day [$F(23, 18682) = 16.6, p < .001$]. Figure 2 shows that the frequency of binge events was lowest in the early morning hours and exhibited two peak times of occurrence, the first being at about 1 PM [$p(\text{binge}) = .115$] and the second occurring between 7 [$p(\text{binge}) = .127$] and 9 PM [$p(\text{binge}) = .129$]. A similar pattern was observed for vomit events [$p(\text{vomit})$], with evidence of statistically significant variability in the probability of vomit events across the day, [$F(23, 21831) = 23.77, p < .001$]. The probability of a vomit event increased from the early morning to the midday [$p(\text{vomit}) = .129$ at 1 PM] and peaking again between 7 [$p(\text{vomit}) = .140$] and 9 PM [$p(\text{vomit}) = .156$]. Inspection of Figure 3 indicates that the probability of either event is quite low for the early morning hours and then sharply increased until midday, then decreased slightly and peaking again in the hours between 7 PM and 9 PM. The probability for both behaviors decreased after 9 PM until 11 PM.

Day of Week Effects—Multilevel logistic models for binary responses were employed to estimate how the daily probability of an event varied across day of week. These analyses showed a significant day of week effect on vomiting [$F(6, 787) = 2.50, p = .021$] and a marginally significant effect on binging [$F(6, 787) = 2.06, p = .055$]. Inspection of the probabilities across weekdays indicated that both events occurred with the greatest frequency on Sunday. Follow-up pair-wise comparisons using Sidak's procedure to control Type 1 errors indicated significant differences between the probability of a vomiting episode on Sunday, compared with Monday ($p = .036$), Thursday ($p = .009$), and Friday ($p = .008$). Binge eating episodes occurred with a significantly higher probability on Sunday compared with Friday ($p = .016$) and Saturday ($p = .021$).

Discussion

The present study enhances the literature concerning women with bulimia by identifying significant and specific variation over the course of a single day and across days of the week in levels of affect, stress, and frequencies of binge/purge behavior. Each of these findings is discussed below.

Affect

Time of Day Effects—Momentary affect showed reliable patterns over the course of the day. Both positive and negative affect increased throughout the day, with positive affect peaking around 4 PM and negative affect continuing to increase. This study replicates and extends findings that have previously established affect variability over the course of the day,^{11–13} further demonstrating diurnal patterns in affect in women with BN.

Day of Week Effects—Affect was found to fluctuate over the week, with positive affect to be higher during the week and lower during the weekends. Lowest positive affect occurred on Sunday. Negative affect was equally high during the week and weekend, and highest in the middle of the week. This is generally consistent with previous literature that used handheld computers for signal contingent diary reports among binge eating patients, which found that affect and self-concept ratings deteriorate over time.²⁸

Stress

Time of Day Effects—Stress fluctuated throughout the day, with a general accumulation over time. The frequency of overall stressors, and of work/environment-related stressors specifically, was highest at 4 PM, whereas the frequency of interpersonal stressors was highest at 8 PM. The perceived severity of these stressors was highest between 6 PM and 8 PM, and lowest at 8 AM. An exception to the observed time of day effects on stress was found with general hassles; the frequency and severity of hassles were reported to be highest early in the day.

Day of Week Effects—Weekdays consisted of higher numbers of overall and work-related stressors and higher perceived severity of these stressors compared with the weekend. In contrast, interpersonal stressors and daily hassles were similar in frequency and perceived severity across weekdays and weekends.

Binge/Purge Behavior

Time of Day Effects—The probability of binge/purge behavior fluctuated over the course of the day. Both binge eating and vomiting events increased throughout the day and peaked in the early afternoon (around 1 PM) and late evening (between 7 and 9 PM). These peaks appear to shortly follow typical mealtimes (lunch and dinner; not breakfast), confirming previous findings and the suggestion that women with BN may be at increased risk for bingeing and/or vomiting at or following some meal times (either through participation or restriction). Additionally, these time-related probabilities are generally consistent with our other findings in which positive affect decreased, and negative affect and interpersonal stress increased over the course of day. The combination of daily stressors and worsened affect may contribute to an individual engaging in bingeing or vomiting for emotion regulation purposes (e.g., coping, self-punishment, escape, control).

Day of Week Effects—Binge/purge behavior patterns also revealed a higher probability of vomiting and, to a lesser degree, bingeing on the weekends. This may reflect greater efforts to “prepare” for the upcoming week through the use of purging and bingeing behaviors. Individuals with BN may also be particularly vulnerable to BN behaviors during weekends due to a lack of structured activity or social contact. Previous research has shown that binge and purge events are most likely to occur at home²⁹ and when alone,^{14,29} experiences that may be associated with negative mood states for women with BN.¹¹

Future Research

EMA may have the potential as a methodological tool to reveal more information on issues related to eating disorders across a wider array of domains. Mond et al.³⁰ concluded that quality of life assessment in eating disorder patients would improve with an integrated approach of subjective and objective measures, involving patient and clinician judgments. Others have advocated supplemental methods of measurement, such as actigraphs to measure physical activity, to complement and strengthen EMA findings.¹⁵

Clinical Implications

The documentation of specific time of day and day of week effects should be relevant for clinical practice, case management, and self-management strategies. The patterns revealed in this study extend on the previously identified, specific, critical moments in the natural lives of women with bulimia during which interventions may be most effective. For example, perhaps, the most critical time period (across days) identified in the current study is between 6 PM and 9 PM, when women are most likely to engage in episodes of binge eating and purging, perceive their stressors as most severe, and experience increased negative affect and decreased positive affect. Additionally, it appears that weekends (and Sundays in particular) increase the likelihood of engaging in vomit and (to a degree) binge behaviors. Identifying and implementing supportive interventions (e.g., phone calls) and self-management strategies (e.g., being with supportive people, positive mood maintenance strategies, etc.) during these time periods and days may be most beneficial. Information about eating behavior in “real-time” may also provide clinicians with specific instances of disordered eating behavior and co-occurring experiences (e.g., stress and affect) that can be discussed in therapy.

EMA may also have clinical applications as a supplementary therapeutic tool to inform patients about their disease. Particularly, it can present clear data on patient-specific threat cues that lead to binge eating and/or vomiting. Norton et al.³¹ have outlined a clinical application of palmtop devices as therapy extension tools. They suggest using palmtop computers in conjunction with integrative cognitive therapy (ICT) to address factors of bulimia nervosa such as cultural variables, cognitions reflecting self-discrepancy, interpersonal schemas, interpersonal relationship patterns, and affect regulation. There appears to be strong potential for palmtop computers to act as psychoeducational tools or therapy extension devices,³¹ to benefit eating disorder patients at critical times during the day and week when the rapist-client meetings are difficult to ensure.

In addition, there is some consensus that there is great need to familiarize clinicians with the sociological and cultural determinants of eating disorders; the present study provides further support for EMA as an ideal tool for the documentation of these factors.³² Individuals with eating disorders may experience more intense moods or psychological and emotional states, which are important to screen for because they may act as links to the greater reports of self-harming behavior and suicidal ideation among these subjects.³³ EMA could be used to obtain a deeper understanding of the cognitive and affective variables that influence behavioral choices, and more importantly, become a useful tool for clinicians to observe cues that may predict these types of negative behaviors and coping strategies.

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FIGURE 1.
Affect across time of day.

FIGURE 2.
Probability of binge eating or vomiting event across time of day.

FIGURE 3.
Probability of binge eating or vomiting event across days of the week.

TABLE 1

Participant characteristics

Treatment History	N	Percentage of Sample
Previous inpatient treatment (lifetime)	40	30.1
Previous outpatient treatment (lifetime)	79	60.8
Current treatment (last six weeks)	54	40.6
BN Symptom Severity		
	M	SD
Binge eating episodes (past month)	20.07	18.79
Vomiting frequency (past month)	30.05	32.54
EDE scores (baseline)		
Restraint	3.11	1.57
Eating concern	2.25	1.38
Shape concern	3.79	1.33
Weight concern	4.02	1.37
EDE total score	3.29	1.13