State Dissociation in Bulimic Eating Disorders:
An Experimental Study

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ABSTRACT
Background: Dissociation and binge eating appear to have equivalent functions, lowering awareness of generalized threat and negative self-esteem. Dissociation can be a general characteristic of the individual, present in all situations (i.e., a trait), or it can be a time-limited reaction to a specific situation (i.e., a state). Previous studies have shown that the subliminal presentation of threat cues leads to increased bulimic behaviors. This experimental study examines whether dissociation is activated under similar conditions, thus testing whether dissociation is a reactive state in bulimic women, as well as a trait.

Method: The participants were 24 bulimic and 26 nonclinical women, each of whom completed the Eating Disorders Inventory and the Dissociative Experiences Scale. Each woman was exposed to subliminal neutral and threat cues, before completing the subjective component of the Clinician-Administered Dissociation Scale and a measure of anxiety and mood (the Hospital Anxiety and Depression Scale).

Results: The subliminal threat cue significantly increased state dissociation (particularly derealization levels) in the bulimic women but had no effect on the nonclinical group. There was no impact on mood.

Discussion: State dissociation appears to play an integral role in the bulimic process, but further studies are needed to determine the causal structure in that relationship and whether it applies in other disorders. Future clinical practice should be directed towards the identification and treatment of state dissociation in therapy.

Keywords: dissociation; bulimia; pre-conscious processing

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Introduction
There is a clearly established link between dissociation and bulimic behavior (Vanderlinden & Vandereycken, 1997). For example, Beumont and Abraham (1983) found that 75% of bulimic patients had experienced depersonalization and derealization during binges, and Everill, Waller, and Macdonald (1995) have shown that bulimic women have higher dissociation levels than control women. Binge eating and dissociation appear to serve the common function of blocking negative affect. Although this “anaesthetic” effect is positively reinforcing in the short term, Root and Fallon (1989) suggest that it inhibits the development of more mature defenses and coping strategies in the long term.

Although there is both clinical and research evidence that dissociation plays a role in bulimic pathology, reports in the literature differ at a fundamental level. In the research literature, dissociation is usually described and measured as a trait—a characteristic that is present at all times (e.g., the individual who experiences depersonalization continuously, regardless of the circumstances). In contrast, the clinical literature more commonly examines immediate dissociative states—a characteristic that is reactive to the immediate environment and that is reduced when the trigger changes (e.g., the individual who experiences depersonalization only when under immediate stress). For example, Kennerley (1996) documents typical presentations of dissociative states in clinical sessions with bulimic patients, suggesting that patients “space out” in response to emotional material, become inaccessible, and forget the content of the session. Heatherton and Baumeister (1991) have proposed that threat cues trigger a process akin to a dissociative state, loosening inhibitions and facil-
itating binging behavior. Therefore, it can be argued that explaining the impact of threat and emotional triggers on bulimic behaviors (e.g., Meyer, Waller, & Waters, 1998) might depend on understanding how such triggers influence immediate dissociative states.

Dissociative states can be induced under laboratory conditions (e.g., Bremner et al., 1998; Leonard, Telch, & Harrington, 1999) but there is an issue of demand characteristics (individuals anticipating the expected answer). This experimental problem can be successfully avoided using a subliminal activation paradigm, where the material is not available to conscious awareness (e.g., Silverman, 1983). Subliminal presentation of negative affect cues also has the benefit of having more of an effect on eating behavior than supraliminal presentation (registered in consciousness) (e.g., Gerard, Kupper, & Nguyen, 1993; Patton, 1992). Meyer and Waller (1999) and Waller and Mijatovich (1998) have shown that subliminal abandonment cues (ego-threats) are the most likely to increase eating behavior. To determine whether this effect on eating behavior is potentially explained by higher levels of state dissociation, the current study aims to test whether subliminal abandonment threats result in enhanced state dissociation among women who use bulimic behaviors. The impact of such cues on mood was also assessed, to determine the specificity of any effect.

Method

Design

The design was experimental. Cues were presented using a subliminal visual procedure (e.g., Silverman, 1983). The two groups of women (bulimics and age-matched controls) each went through two conditions, with the order of presentation counterbalanced within groups. The study was approved by the relevant ethics committees.

Participants

The bulimic group consisted of a case series of 24 women who met the following criteria as detailed in the 4th ed. of the Diagnostic and statistical manual of mental disorders (DSM-IV; American Psychiatric Association, 1994): any eating disorder involving binge eating or bulimia nervosa (n = 16); anorexia nervosa of the binge-purge subtype (n = 4); binge eating disorder (n = 2); and eating disorder not otherwise specified of a bulimic type (n = 2). They were diagnosed at assessment for treatment in a specialist eating disorder service, using a structured interview. The mean age of the patients was 31.2 years (SD = 9.30, range = 19.6–54.8) and their mean body mass index (BMI; kg/m²) was 25.6 (SD = 11.1, range = 14.0–60.8).

The control group consisted of 26 women, who were recruited from a nonstudent population through opportunity sampling. To reduce the risk of overlap in levels of eating pathology with the clinical group, these participants were excluded if they reported a past or current diagnosis of an eating disorder or a total Eating Disorder Inventory (EDI; Garner, 1991) eating score greater than 5. The mean age of the nonclinical participants was 30.7 years (SD = 8.0, range = 20.9–52.4) and their mean BMI was 22.0 (SD = 2.20, range = 18.5–26.0).

Measures

All participants completed four self-report measures, each of which has good psychometric properties.

The EDI. The EDI is a self-report measure of eating attitudes and behaviors. For the purposes of this study, it was used primarily to indicate levels of eating pathology, so only the overall score on the three eating-related subscales (Drive for Thinness, Bulimia, Body Dissatisfaction) was used.

Dissociative Experiences Scale-Revised (DES-II). The DES-II (Carlson & Putnam, 1993) is a 28-item, self-report measure of trait dissociation, which covers experiences such as amnesia, depersonalization, derealization, and absorption. Factor analyses indicate that trait dissociation is best understood as a unitary construct, rather than consisting of distinct factors (e.g., Waller, Putnam, & Carlson, 1996; Waller & Ross, 1997). The DES-II has good psychometric properties (e.g., Bernstein & Putnam, 1986; Carlson & Putnam, 1993), including a split-half reliability of 0.83 and a test-retest reliability of 0.79–0.96. It also has good construct validity (as demonstrated by the high scores of patients with dissociative disorders) and good convergent validity with other measures of trait dissociation. Finally, the DES-II has strong discriminant and criterion validity, demonstrated by associations with nondissociation measures and DSM-IV diagnoses, respectively. For example, it successfully discriminates between bulimic and nonclinical women (Waller, Ohanian, Meyer, Everill, & Rouse, 2001).

Clinician Administered Dissociative States Scale (CADSS). The CADSS (Bremner et al., 1998) is a measure of state dissociation. It consists of 19 subject-rated items. A further eight optional items were not used in this study, because they are scored by an observer and are therefore less able to reflect the subjective experience that is central to dissociation. The subjective items of the CADSS are divided into three scales, reflecting amnesia, depersonalization, and derealization.
Finally, there was a test for experimental validity. This examined whether any cue words used in the task were recognized at above chance levels when presented supraliminally. The women were given a choice of 12 words, including the 3 cues. There were four neutral words (gallery, garage, painting, mamma'), four threat words (lonely, goodbye, accident, teardrop), and four positive cues (friendship, happy, holiday, smiling). Each woman chose the three that she believed that she had been exposed to, so that a chance level of accuracy would be 25%.

Data Analysis

Not all of the variables were normally distributed. However, preliminary analyses showed identical findings with parametric and nonparametric analyses. Considering that investigating interactions was the focus of the research, the parametric analyses are reported. Initially, a three-way analysis of variance (ANOVA) was carried out on the data, with both group and order of cue presentation (threat-neutral, neutral-threat) being between-subject factors. However, no significant main effects or interactions were found involving order (F < 1.0, p > .46 in all cases). Therefore, order was not considered further. The data were analyzed using two-way, repeated-measures ANOVAs, with one-between-subjects factor (group) and one within-subject factor (cue type).

Results

Group Characteristics

Mean EDI scores for the control and bulimic groups were 4.96 (SD = 5.91) and 43.8 (SD = 11.43), respectively. The mean DES-II scores for the two groups were 5.87 (SD = 5.06) and 23.1 (SD = 17.4), respectively. Word recognition levels were marginally below chance levels (25%) for both groups (17% for the control group and 24% for the bulimic group).

State Dissociation in Response to Threat

Table 1 shows the mean CADSS and HADS scores for the two groups after each cue type. There were significant main effects of group for all CADSS scales and the CADSS Total and Derealization scores showed significant main effects of cue type, showing that the relevant scores were in the hypothesized direction. However, these effects for the Total and Derealisation scales were subsumed in significant Group × Cue interactions. The clinical group experienced significantly greater state dissociation after being exposed to subliminal threat cues than after exposure to neutral cues.
but there was no such effect in the nonclinical group. Therefore, the threat cue enhanced dissociation in the bulimic group only.

**Mood State Measures in Response to Threat**

Table 1 shows that there was a significant difference in anxiety and depression between the clinical and nonclinical groups (in the direction that would be expected). However, there were no significant main or interaction effects involving cue type. Therefore, the threat cue did not have a differential effect on mood across the two groups.

### Discussion

This study has tested whether threat cues can influence state dissociation among bulimic women. The results show that subliminal abandonment threats result in enhanced state dissociation (particularly derealization) among this clinical group, but that there was no corresponding increase in reported anxiety or depression. This increase in state dissociation corresponds to the enhanced levels of threat-driven eating shown in similar studies (Gerard et al., 1993; Patton, 1992; Waller & Mijatovich, 1998). The specific role of abandonment cues is also supported by previous studies (e.g., Meyer & Waller, 1999). The findings are also compatible with response to negative mood induction among binge eating disorder patients (e.g., Agras & Telch, 1998). The potential role of dissociation in disorders involving impulsivity indicates that these findings might be replicated in other groups where impulsive behaviors are used to moderate emotional states. However, at present, these conclusions can be applied only to bulimic patients, until the same paradigm is applied to other clinical groups.

These findings are consistent with the model of Heatherton and Baumeister (1991), which suggests that state dissociation is the immediate response to ego threats and that the dissociation will precede bulimic eating behaviors. In contrast, the findings do not support the suggestion (Chandarana & Malla, 1989) that dissociation is a consequence of bulimic behaviors. Heatherton and Baumeister hypothesize that this behavioral response is due to the loosening of inhibitions, and that eating behavior is one of a number of equivalent coping strategies. Therefore, it can be suggested that the enhancement of state dissociation might be central to a number of psychopathologies, particularly in the cognitive profiles of individuals who use a range of blocking behaviors. This would mean that there would be a link to a range of disorders, including (but not exclusive to) bulimic behaviors. However, the current findings do not support a central role for state dissociation in anxiety or depression.

Heatherton and Baumeister’s model (1991) predicts that greater levels of dissociation will be associated with greater levels of overeating. Future studies using this experimental paradigm could test this hypothesis by measuring both state dissociation and eating. Such research should also examine the question of whether there are predictors of who will have a greater reactivity to threat cues (e.g., high levels of trait dissociation, trauma history, age, diagnosis, presence of comorbid behaviors, stage of treatment).

The current results suggest that state dissociation might be an integral part of the bulimic process. In some cases, Coker, Vize, Wade, and Cooper (1993) suggest that dissociation and trauma schemata need to be targeted in treatment. Otherwise, bulimic behaviors are likely to be replaced by other tension-reducing (or impulsive) behaviors and by increased dissociative tendencies. Therefore, future
clinical work might need to deal with dissociation directly, identifying its origin and developing more adaptive ways of coping with affect. In some cases, it will be important to address the concept of dissociation near the start of treatment and to rehearse strategies such as grounding (Kennerley, 1996). Techniques that are useful in such interventions include continuum work and flashcards (Padesky, 1993; Young, 1999), image rescripting (Arntz & Weertman, 1999; Smucker & Niederee, 1995), and modules of dialectical behavior therapy, including distress tolerance, emotional regulation, and mindfulness (Linehan, 1998; Safer, Lively, Telch, & Agras, 2002; Safer, Telch, & Agras, 2001; Wiser & Telch, 1999). However, the current findings suggest that an important focus should be to help bulimic patients to address the occurrence of individual dissociative episodes (e.g., Kennerley, 1996), as well as to reduce trait dissociation.

References