Psychiatry Research 240 (2016) 202–208

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

An examination of affect prior to and following episodes of getting drunk in women with bulimia nervosa

Emily M. Pisetsky [a,*], Ross D. Crosby [b,c], Li Cao [b], Ellen E. Fitzsimmons-Craft [d], James E. Mitchell [b,c], Scott G. Engel [b,c], Stephen A. Wonderlich [b,c], Carol B. Peterson [a]

[a] Department of Psychiatry, University of Minnesota, F282/2A West, 2450 Riverside Ave., Minneapolis, MN 55454, USA
[b] Department of Psychiatry and Behavioral Science, University of North Dakota School of Medicine and Health Sciences, Grand Forks, ND, USA
[c] Department of Clinical Research, Neuropsychiatric Research Institute, 120 8th Street S., Fargo, ND 58103, USA
[d] Department of Psychiatry, Washington University School of Medicine, St. Louis, MO, USA

ARTICLE INFO

Article history:
Received 8 May 2015
Received in revised form
28 March 2016
Accepted 15 April 2016
Available online 16 April 2016

Keywords:
Bulimia nervosa
Alcohol use
Ecological momentary assessment

ABSTRACT

The current study examined the association between affect and self-reported alcohol intoxication in women with bulimia nervosa (BN; $N=133$). Participants completed a two-week ecological momentary assessment protocol. Momentary global positive affect (PA) and negative affect (NA), as well as the facets of NA (fear, guilt, hostility and sadness), were measured. Forty-five participants endorsed that they "got drunk" during the study period. Daily mean and variability of global PA and NA were compared between days with self-reported alcohol intoxication and days without self-reported alcohol intoxication. Trajectories of affect were modeled prior to and following episodes of self-reported alcohol intoxication. There were no differences in the mean or variability of PA or NA on days characterized by self-reported alcohol intoxication compared to days with no self-reported alcohol intoxication ($ps > 0.05$). PA decreased significantly prior to self-reported alcohol intoxication and remained stable afterwards. There were no changes in global NA before or after self-reported alcohol intoxication, but an examination of the facets of NA showed that sadness increased following episodes of self-reported alcohol intoxication. These findings showed only partial support for a negative reinforcement model of alcohol use in women with BN.

1. Introduction

Bulimia nervosa (BN) involves recurrent binge eating episodes, compensatory behaviors such as vomiting and laxative use, and a self-concept dominated by shape and weight (American Psychiatric Association, 2013). The health consequences of BN can be severe and BN is marked by increased mortality (Arcelus et al., 2011). Individuals with BN frequently have comorbid alcohol use disorders (AUD) with comorbidity rates ranging from 30% to 50% (Bulik et al., 1997; Dansky et al., 2000; Holderness et al., 1994; Mitchell et al., 1985). The high comorbidity of BN and AUD is particularly concerning as it is associated with an increased prevalence of both major depressive disorder and suicide attempts (Duncan et al., 2006).

Several hypotheses have been posited to explain the high co-occurrence of eating disorders and substance use disorders, which focus on either shared or causal etiological conceptualizations (Wolfe and Maisto, 2000). In terms of a shared etiological conceptualization, a shared genetic liability to develop both disorders has been the primary hypothesis investigated. There is evidence of shared genetic factors between bulimic behaviors and alcohol misuse (Baker et al., 2010; Munn-Chernoff et al., 2013; Slane et al., 2012; Trace et al., 2013); however, one study has shown this shared genetic liability to be small (Kendler et al., 1995). More of the research to date has focused on exploring possible causal etiologies, typically based on the eating disorder preceding the substance use disorder (Wolfe and Maisto, 2000). Longitudinal data support this trajectory, as adolescents with BN or purging behavior are more than twice as likely to develop binge drinking behavior as non-eating disorder peers (Field et al., 2012). Self-medication and tension-reduction are the two causal conceptualizations that have received the most research attention (Wolfe and Maisto, 2000) and are based on the hypotheses that individuals with eating disorders use substances to alleviate depression (self-medication) or anxiety (tension-reduction), highlighting the role of affect in the development of substance use in individuals with eating disorders. There is also clinical utility in

* Corresponding author.
E-mail address: episetsk@umn.edu (E.M. Pisetsky).

http://dx.doi.org/10.1016/j.psychres.2016.04.044
0165-1781/

focusing on mechanisms that maintain AUD in individuals with BN, as these findings may be more useful in designing targeted treatment and prevention efforts.

One such maintenance process involves the idea that bulimic behaviors as well as alcohol use serve as strategies to regulate emotions (Dansky et al., 2000). Emotion regulation deficits have been demonstrated separately in both BN (Engel et al., 2007) and AUD samples (Berking et al., 2011). Further, both BN and AUD have each been associated with high and comparable levels of negative urgency, a personality trait defined as the tendency to act rashly in response to negative affect (Fischer et al., 2012). Therefore, one hypothesis for the high comorbidity of BN and AUD is that individuals with emotion regulation difficulties use both eating disorder behaviors and alcohol to regulate negative affect (NA). These behaviors may then be maintained through negative reinforcement. Additionally, alcohol use has been posited to increase positive affect (PA) and thus be maintained through positive reinforcement (Sher and Grekin, 2007). Given that many individuals with BN experience anhedonia (Tchanturia et al., 2012), momentary increases in positive affect may be particularly reinforcing in this population.

One critique of the literature exploring the comorbidity of eating disorders and substance use has been the reliance on prevalence data rather than behavioral data (Wolfe and Maisto, 2000). Ecological momentary assessment (EMA) measures behavioral and psychological variables in "real time" and thus is an ideal methodology to explore behaviors in relation to affect (Stone and Shiffman, 1994; Stone and Shiffman, 2002). Previous research using EMA in BN has shown that NA, particularly guilt, increases prior to behaviors such as binge eating and/or purging, and decreases significantly after, indicating that these behaviors may be maintained through negative reinforcement (Berg et al., 2013; Smyth et al., 2007). In non-eating disorder samples, EMA data reveal that the time period prior to substance use is marked by high NA, specifically nervousness and anger (Swendsen et al., 2000; Todd et al., 2009). Although most of the EMA research in alcohol use has not monitored affect directly after the drinking episode, the anxiolytic properties of alcohol have been shown to decrease feelings of NA (Baker et al., 2004). Thus, the maintenance mechanism of alcohol use may also be negative reinforcement (Baker et al., 2004). The hypothesis that individuals with BN also use alcohol to regulate negative emotions is supported by studies using self-report measures, as individuals with BN are more likely to endorse drinking to cope with negative emotions than individuals with no eating disorder (Luce et al., 2007). However, retrospective recall of motives to drink are limited by recall bias and do not allow for a momentary, functional assessment of the association between alcohol consumption and affect.

Although there is evidence that binge eating/purging and alcohol use function to mitigate negative affect in BN and AUD samples, respectively, little is known about the function of alcohol use in individuals with BN in the context of momentary emotion regulation. The primary aim of the present study was therefore to examine the association between affect and self-reported alcohol intoxication in a sample of women with BN using EMA. Three specific research questions were investigated: 1) Does mean positive affect (PA) and NA on days characterized by self-reported alcohol intoxication differ from days with no self-reported alcohol intoxication in a sample of women with BN? We hypothesized that mean PA would be lower and mean NA would be higher on days with self-reported alcohol intoxication than days with no self-reported alcohol intoxication; 2) Is there more variability in PA and NA on days characterized by self-reported alcohol intoxication than days with no self-reported alcohol intoxication? We hypothesized that days characterized by self-reported alcohol intoxication would have higher variability in both PA and NA than days with no self-reported alcohol intoxication; and 3) Is self-reported alcohol intoxication preceded by decreased PA and increased NA and reinforced by increases in PA and decreases in NA following these episodes? We hypothesized that PA would decrease and NA would increase prior to the episode of self-reported alcohol intoxication and that PA would increase and NA would decrease following these episodes. We also included an exploratory aim to examine the effect of self-reported alcohol intoxication on four facets of NA, specifically guilt, fear, hostility, and sadness.

2. Material and methods

2.1. Participants

Participants were 133 adult women who met Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; American Psychiatric Association, 2000) criteria for BN. Participants ranged in age from 18 to 55 years, with a mean age of 25.3 (SD =7.6 years). Most participants were Caucasian (95.5%), currently employed (73.3%), and had never been married (63.9%). Lifetime rates of Axis I disorders were 87.0% for mood disorders and 59.5% for anxiety disorders. All participants were at least 85% of ideal body weight (mean body mass index [BMI] 23.9, SD =5.2). Detailed descriptions of participants' demographic data, symptom severity, and rates of co-occurring psychopathology have been previously reported (Crosby et al., 2009; Smyth et al., 2007).

2.2. Procedure

This study was approved by the Institutional Review Boards of the University of North Dakota and MeritCare Hospital (Fargo, ND) and was carried out in accordance with the latest version of the Declaration of Helsinki. Participants were recruited through clinical, community, and campus advertisements. Interested participants were initially screened over the phone for inclusion and exclusion criteria. Eligible participants were scheduled for an informational meeting during which they received information about the study, had the opportunity to ask questions about their participation, and then provided written informed consent. Participants completed two assessment visits during which they completed a battery of assessments including semi-structured interviews, self-report questionnaires, and an electrolyte screening to ensure medical stability.

After baseline assessments, eligible participants were given palm-top computers to complete EMA assessments over the course of the next two weeks. The EMA assessment protocol implemented three types of daily self-report methods: 1) signal-contingent recording; 2) interval-contingent recording; and 3) event-contingent recording. With regard to the signal- contingent recording, participants were signaled by the palm-top computer to complete EMA assessment ratings at six semi-random times throughout the day that were all within 20 min of each of six "anchor" times distributed evenly throughout the day: 8:30 a.m., 11:10 a.m., 1:50 p.m., 4:30 p.m., 7:10 p.m., and 9:50 p.m. With regard to interval-contingent recording, participants were instructed to complete EMA assessment ratings at the end of each day. Participants were instructed to complete an event contingent recording immediately following binge eating or purging. During each recording, participants completed two questionnaires, described below. Participants received $200 for completing the two-week assessment period and were given a $50 bonus for completing at least 85% of assessments within 45 min of the palm-top signal. For additional detail regarding the procedure, please refer to Smyth et al., (2007).

2.3. Baseline measures

2.3.1 Structured Clinical Interview for DSM–IV Axis I Disorders, Patient Edition (SCID–I/P). The SCID–I/P (First et al., 2002) is a semi-structured interview that measures Axis I psychopathology. The SCID–I/P was administered by a trained doctoral-level psychologist and was used to establish lifetime history of Axis I disorders. The SCID–I/P was used to determine whether participants met current DSM–IV criteria for BN, lifetime criteria for an alcohol use disorder, and lifetime criteria for any other substance use disorder (except nicotine abuse or dependence). All interviews were audiotaped, and inter-rater reliability was calculated on 25 cases from the sample. The kappa coefficient for current DSM–IV BN diagnosis was 1.0.

2.3.2 Eating Disorder Examination (EDE; Fairburn and Cooper, 1993; Fairburn et al., 2008). The EDE is a widely-used clinician-administered interview comprised of four subscales (Restraint, Eating Concern, Shape Concern, & Weight Concern) reflecting the severity of specific dimensions of eating disorder psychopathology, as well as a Global score. This measure exhibits adequate reliability and demonstrates validity for the assessment of eating disorder symptoms (Berg et al., 2012; Fairburn et al., 2008). The Global score was used in the current study.