



# Disordered eating and alcohol use among college women: Associations with race and big five traits



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## ABSTRACT

Excessive alcohol use and disordered eating are considerable health-related problems among college women. The purpose of the present study was to examine how specific patterns of disordered eating (i.e., anorexia, bulimia, binge eating) are related to alcohol use and related problems and the influence of racial group membership and Big Five personality traits on the co-occurrence of these behaviors. Participants were 153 undergraduate women. Results indicated that White women reported more binge drinking, alcohol-related problems, disordered eating, anorexia nervosa symptoms, and bulimia nervosa symptoms than non-White women. Women with higher levels of openness and who engage in extreme exercise, dieting, fasting, or purging were more at risk for heavy and problematic alcohol use. Implications for the treatment of co-occurring disorders among college students and further research are discussed.

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## 1. Introduction

Disordered eating is a major concern for college women, negatively impacting overall happiness, physical health, relationships, and academics (Piran, Robinson, & Cormier, 2007). Disordered eating (EDs) and binge drinking tend to co-occur among college women and are associated with significantly more alcohol-related problems (Dams-O'Connor, Martens, & Anderson, 2006; Gadalla & Piran, 2007). Awareness of individual factors common to these health-compromising behaviors provides insight into their etiology and targeting prevention efforts.

Large national studies demonstrate differences in alcohol consumption among diverse racial groups. Non-Latino White and American Indian college students typically report the greatest quantity and frequency of alcohol use while African American/Black students report the lowest levels (CORE, 2005). Inconsistent patterns of racial differences in EDs have been found, with studies finding that relative to women of color, White women report more EDs (CCMH, 2013; Striegel-Moore et al., 2003), comparable rates (Reagan & Hersch, 2005), or fewer EDs (Marques et al., 2011).

The co-occurrence of alcohol use and EDs may be explained by shared, predisposing, personality characteristics (Dunn, Neighbors,

Fossos, & Larimer, 2008) such as the Big Five traits (McCrae & Costa, 1987) of high neuroticism, extraversion, and openness to experience, and low conscientiousness and agreeableness (Cassin & von Ranson, 2005; Ellickson-Larewa, Naragon-Gainey, & Watson, 2013; Kuntsche, Knibbe, Gmel, & Engels, 2006). While presented rather concisely here, results of studies assessing personality in relation to EDs and alcohol outcomes tend to yield complex and inconsistent results, making firm conclusions about the relationships difficult. Further, few studies have examined Big Five traits in relation to EDs and alcohol use and problems among college students.

The current study aimed to replicate and extend existing research by (a) assessing the co-occurrence of alcohol use, alcohol-related problems and EDs among college women; (b) investigating how the interrelationships differed depending on the particular symptoms endorsed (i.e., anorexia nervosa (AN), bulimia nervosa (BN), or binge eating disorder (BED)); (c) clarifying personality traits associated with the aforementioned behaviors; (d) determining whether the behaviors co-occurred after accounting for shared personality traits; and (e) investigating racial differences and the extent to which race moderated relationships among alcohol use and EDs. We hypothesized the following: (a) binge drinking and alcohol-related problems would be significantly associated with global eating pathology (i.e. EDDS total scores), as well as symptoms of AN, BN and BED; (b) high neuroticism and openness and low conscientiousness and agreeableness would be associated with binge drinking, alcohol-related problems, and all forms of disordered eating; (c) White women would report greater instances of binge drinking, alcohol-related problems, and EDs; and (d) race would

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moderate relationships between disordered eating and alcohol outcomes (i.e., the relationship would be stronger for White participants).

## 2. Methods

### 2.1. Participants

Participants were 153 undergraduate women at a large, Northeastern university. The average age was 19.72 years ( $SD = 1.34$ ). Participants were identified as White (81%), African American (8.5%), Hispanic (5.2%), Asian American (2.6%), and “other” (2.6%). Due to the proportionally small numbers of racial/ethnic minority participants, data were collapsed into two groups, “White” (81%) and “non-White” (19%) for racial group comparisons.

### 2.2. Measures

The Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985) was used to assess binge drinking by asking participants to estimate the number of times they had consumed four or more drinks in the past two weeks using the definition of a standard drink. Alcohol-related problems were assessed using the 24-item Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; Kahler, Strong, & Read, 2005), which asks participants to indicate whether they experienced various negative consequences during or after drinking alcohol in the previous year by endorsing 1 (No) or 2 (Yes). Total scores were calculated by summing the scores endorsed for all items.

The 22-item Eating Disorder Diagnostic Scale (EDDS; Stice, Telch, & Rizvi, 2000) was used to assess self-reported symptoms of AN, BN, and BED consistent with the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV; American Psychiatric Association, 1994). Total z-scores were used to indicate global disordered eating symptomology ( $\alpha = .86$ ). Estimates of AN, BN and BED were also calculated (for syntax see Stice, Fischer, & Martinez, 2004). Internal consistency estimates were AN ( $\alpha = .54$ ), BN ( $\alpha = .74$ ), and BED ( $\alpha = .72$ ).

The Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003) assessed Big Five traits (i.e., extraversion, neuroticism/emotional stability, openness, agreeableness, and conscientiousness). Participants indicated how much they see themselves as similar to two descriptors for each trait on a Likert scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). Cronbach's alphas in the current sample were  $\alpha = .69$  (extraversion),  $\alpha = .63$  (emotional stability),  $\alpha = .50$  (conscientiousness),  $\alpha = .37$  (agreeableness), and  $\alpha = .29$  (openness). Internal consistencies are typically low because the scale was developed to maximize brevity and content validity rather than internal consistency (Gosling et al., 2003).

Finally, participants completed a brief demographics questionnaire that requested information about gender, race/ethnicity, year in school, and age.

### 2.3. Procedure

Participants were recruited from multiple on-campus sites. Participants were assured of anonymity and confidentiality of their data in the informed consent. After providing consent via an online form, participants completed the aforementioned online questionnaires.

## 3. Results

Rates of binge drinking, alcohol-related problems, and EDs for the total sample, White women, and women of color are reported in Table 1. Racial differences were found for alcohol use and EDs. White women reported significantly more binge drinking episodes ( $t(151) = 2.86, p = .00$ ), alcohol-related problems ( $t(147) = 3.27, p = .00$ ), global eating pathology ( $t(142) = 1.41, p = .02$ ), AN ( $t(142) = 2.06, p = .04$ ), and BN ( $t(147) = 2.15, p = .03$ ).

As seen in Table 2, the co-occurrence of alcohol use and EDs existed primarily for anorexic and bulimic symptoms, and not BED symptoms. Openness was significantly related to binge drinking. Participants' race was significantly negatively associated with binge drinking, alcohol-related problems, global eating pathology (i.e., EDDS total scores), AN, and BN symptoms.

We examined the unique contributions of global eating pathology, AN, BN, and BED symptoms, racial group identification, and the interaction between these variables in predicting binge drinking and alcohol-related problems in six separate hierarchical regression analyses (Aiken & West, 1991). Given their significant correlation, openness was controlled for in regressions in which binge drinking was the criterion variable. Despite significant racial differences in alcohol outcomes and ED symptoms, there were no significant interaction effects. A description of significant main effects follows.

### 3.1. Predicting binge drinking

Race and global eating pathology accounted for a significant increase in explained variance for binge drinking beyond openness,  $\Delta F(2, 138) = 5.79, p = .00, \Delta R^2 = .08$ . Racial group ( $\beta = -.17$ ) and global eating pathology ( $\beta = .19$ ) were significant predictors and accounted for about 3% and 4% of the variance in binge drinking. The second model indicated that race and AN accounted for a significant increase in explained variance,  $\Delta F(2, 139) = 8.00, p = .00, \Delta R^2 = .10$ . Both racial group ( $\beta = -.16$ ) and AN symptoms ( $\beta = .25$ ) were uniquely associated with binge drinking, explaining about 3% and 6% of the variance, respectively. In the third regression model, race and BN accounted for a significant increase in explained variance,  $\Delta F(2, 144) = 7.60, p = .00, \Delta R^2 = .09$ . Racial group ( $\beta = -.17$ ) and BN symptoms ( $\beta = .23$ ) accounted for 3% and 5% of the variance in binge drinking. Together, openness, race, and EDs accounted for about 11%, 14%, and 13% of the total variance in binge drinking in the three models, respectively.

**Table 1**  
Descriptive statistics for binge drinking, alcohol-related problems, and disordered eating symptoms.

At risk behaviors	White women		Women of color		Total sample	
	N	M (SD)	N	M (SD)	N	M (SD)
Binge drinking episodes	124	1.85 (2.25) <sup>a</sup>	29	.67 (1.01)	153	1.61 (2.13)
Alcohol-related problems	122	7.85 (5.14) <sup>a</sup>	27	4.37 (4.32)	149	7.22 (5.17)
Overall disordered eating symptoms	115	4.75 (10.85) <sup>a</sup>	28	-.67 (9.64)	143	3.68 (10.81)
Anorexia nervosa symptoms	116	1.34 (2.66) <sup>a</sup>	28	.17 (2.85)	144	1.11 (2.73)
Bulimia nervosa symptoms	121	1.77 (5.83) <sup>a</sup>	28	-.72 (3.89)	149	1.30 (5.59)
Binge eating disorder symptoms	120	1.48 (6.80)	28	-.69 (6.50)	148	1.07 (6.78)

Note. All disordered eating symptoms were transformed into z-scores. Standard deviations are in parenthesis. Missing data were eliminated using pairwise deletion.

<sup>a</sup> Statistically significant differences between White women and women of color.

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