

# UCSF

## UC San Francisco Previously Published Works

### Title

Alcohol misuse among adolescents with BPD symptoms: exploring the moderating role of reasons for drinking and perceived coping skills in a clinical adolescent sample.

### Permalink

<https://escholarship.org/uc/item/26b0k6wg>

### Journal

Child Psychology and Psychiatry Review, 25(4)

### ISSN

1475-357X

### Authors

Folk, Johanna

Williams, Caitlin

Esposito-Smythers, Christianne

### Publication Date

2020-11-01

### DOI

10.1111/camh.12378

Peer reviewed



Published in final edited form as:

*Child Adolesc Ment Health*. 2020 November ; 25(4): 228–237. doi:10.1111/camh.12378.

## Alcohol Misuse among Adolescents with BPD Symptoms: Exploring the Moderating Role of Reasons for Drinking and Perceived Coping Skills in a Clinical Adolescent Sample

Johanna B. Folk,

Caitlin A. Williams,

Christianne Esposito-Smythers

George Mason University

### Abstract

**Background:** Adolescents who experience symptoms of borderline personality disorder (BPD) are at high risk for alcohol misuse, yet little is known about why these adolescents drink and what factors heighten or mitigate this risk. The current study explores factors that may impact risk for alcohol misuse among youth with BPD symptoms: using alcohol to self-medicate or to rebel and perceived coping skills.

**Method:** A sample of 181 psychiatrically hospitalized adolescents ( $M_{\text{age}} = 15.04$  years,  $SD=1.31$  years; 71.8% female, 83.4% White) was recruited as part of a larger study from the northeastern United States. Assessments and diagnostic interviews were administered to adolescents.

**Results:** Use of alcohol for self-medication and perceived coping skills, but not using alcohol for rebellion, moderated the relationship between BPD symptoms and alcohol misuse. A significant positive relationship between BPD symptoms and alcohol frequency and/or problems was only found among adolescents who reported lower use of alcohol for self-medication purposes as well as higher perceived coping skills.

**Conclusions:** Youth with more BPD symptoms are at high-risk for alcohol misuse. Moderation effects for self-medication motives and perceived coping skills were counter to hypotheses; lower levels of self-medication motives contributed to greater alcohol problems, as did higher levels of perceived coping skills. Results suggest the importance of assessing how much youth are drinking or experiencing consequences, as well as why they are using alcohol. It is possible adolescents with more BPD symptoms may be reporting more coping skills, but actually exhibiting the phenomenon of apparent competence (i.e., present as “in control,” but actually experiencing extreme distress and lacking sufficient coping skills); collateral reports of adolescents’ coping skills may provide a more objective measure of actual skill level.

### Keywords

alcohol abuse; adolescence; borderline personality disorder; coping

---

Correspondence concerning this article should be addressed to Christianne Esposito-Smythers, Department of Psychology (MSN 3F5), George Mason University, Fairfax, VA 22030. cesposi1@gmu.edu.

Ethical approval received from the Institutional Review Board at Brown University. Parental consent was obtained for all participants.

The association between borderline personality disorder (BPD) and substance use disorders (SUD) is well established among adults (Trull, Sher, Minks-Brown, et al., 2000), but subject to much less study among adolescents. Adults with BPD are 5 to 10 times more likely to meet criteria for a lifetime alcohol or drug dependence diagnosis (Grant et al., 2008; Trull, Jahng, Tomko, et al., 2010). Up to 49% of adults with BPD have a comorbid alcohol use disorder and 38% a comorbid drug use disorder (Trull et al., 2000). BPD symptoms also prospectively predict alcohol problems two years later within community samples of young adults (Stepp, Trull, & Sher, 2005; Tragesser, Sher, Trull, et al., 2007). Despite the strong and reliable association between BPD and SUDs among adults, there is a paucity of research in this area with adolescents, even though adolescence is a critical period for the development of both BPD symptoms and alcohol misuse (Kaess, Brunner, & Chanen, 2014). The current study addresses this gap by exploring the relation between BPD symptoms and alcohol misuse, as well as factors that may moderate this association, in a clinical sample of adolescents.

The lack of research on the association between BPD and substance abuse among adolescents may stem from that fact that BPD has only recently become an accepted diagnosis for adolescents. Recent research suggests BPD emerges during adolescence and this diagnosis is just as reliable and valid among adolescents as it is with adults (Miller, Muehlenkamp, & Jacobson, 2008; Kaess et al., 2014). In contrast, it is well established that adolescence is a high-risk period for the development of substance-related problems (Kaess et al., 2014). Adolescents experiment with alcohol and other drugs (e.g., Johnston, O'Malley, Bachman, et al., 2013), seek out new experiences, take risks, and are strongly influenced by their peers (Steinberg, 2008), all of which increase the likelihood of engagement in risky behaviors, such as alcohol and other drug use. Thus, there is a critical need to better understand the degree of comorbidity between these conditions, and factors that influence the nature of this association if we are to best intervene in the development of these problems.

To date, only a handful of studies have examined the link between personality disorder symptoms, or BPD symptoms more specifically, and adolescent alcohol misuse. In a sample of adolescents from a non-specialized mental health outpatient clinic, Korsgaard, Torgersen, Wentzel-Larsen, et al., (2016) found a significant positive association between number of personality disorder symptoms and the presence of a SUD. Relatedly, in a sample of adolescents who were psychiatrically hospitalized, Grilo, Becker, Walker, et al., (1995) found that 66.7% of adolescents with a SUD also met criteria for BPD whereas only 31.9% of adolescents without a SUD met criteria for BPD, a difference that was statistically significant ( $p < .001$ ).

Though commonly comorbid in clinical samples of adolescents, the nature of this association is unclear. In a longitudinal study of female twin pairs assessed at ages 14 and 18 years, Bornoalova, Hicks, Iacono, et al. (2013) found the association between BPD symptoms and alcohol/marijuana use was correlational rather than causal. There were small to moderate associations between BPD symptoms and substance use when examined cross-sectionally at youth ages 14 and 18. BPD symptoms at age 14 were correlated with

substance use at age 18, and substance use at age 14 was correlated with BPD symptoms at age 18. In longitudinal analyses, BPD symptoms at age 14 did not predict changes in substance use at age 18, controlling for substance use as well as the correlation between BPD symptoms and substance use at age 14. Similarly, substance use at age 14 did not predict changes in BPD symptoms at age 18, controlling for BPD symptoms as well as the correlation between BPD symptoms and substance use at age 14. In contrast, Cohen, Chen, Crawford, et al. (2007) found the presence of BPD symptoms early in adolescence (i.e., age 13) was predictive of a later SUD diagnosis (alcohol or marijuana). Relatedly, within-person analysis of fluctuations in alcohol use and BPD symptoms in a sample of urban females (ages 14 to 17) revealed that increases in alcohol use frequency increase risk for exacerbation of BPD symptoms (Lazarus, Beardslee, Pedersen, & Stepp, 2017). Given the inconsistent longitudinal association between BPD symptoms and substance use/disorders, it is entirely possible a third variable moderates this relationship, such as use of alcohol for BPD related symptom management/accentuation or poor coping skills.

## Symptom Management or Accentuation

### Negative Affect.

Adolescents and adults with BPD alike are prone to experience affective instability and aversive emotional states (American Psychiatric Association, 2013). Adolescents with BPD tend to engage in a myriad of risky behaviors, such as alcohol use, when faced with aversive emotional states (Kaess et al., 2014). As such, alcohol may be used to regulate negative affect and emotions among adolescents with BPD (Kaess et al., 2014). This hypothesis is consistent with self-medication theory (Khantzian, 1997), whereby adolescents drink alcohol to regulate negative affective states (Khantzian, 1997). Drinking can be conceptualized as a maladaptive, emotion-focused coping strategy used to manage negative affect (Esposito-Smythers, Penn, Stein, et al., 2008), which adolescents with BPD may experience more intensely and more often than adolescents without BPD. As such, it could be that drinking to cope with negative emotions moderates the relation between BPD symptoms and alcohol misuse among adolescents.

### Rebelliousness.

In addition to exploration of methods of managing affect, adolescence is also a period characterized by individuation from one's caregivers and for some, boundary testing around societal norms. According to Problem Behavior Theory (PBT; Jessor, 1987), three inter-related systems (i.e., personality, perceived environment, and behavior) either instigate or control against involvement in problem behavior (e.g., behavior socially defined as a problem, like alcohol use during adolescence). Adolescents with BPD symptoms have high problem behavior proneness, particularly since impulsivity and risk behavior engagement are core traits of BPD and risk factors within the personality and behavior system of PBT (APA, 2013; Kaess et al., 2014). Not all adolescents with BPD symptoms, however, engage in alcohol misuse as a way to rebel. Indeed, experimentation with rebelliousness (e.g., overt repudiation of conventional norms, expression of independence from caregiver control) can be developmentally normative during adolescence, or, at its extreme, stem from psychological disorders such as Conduct or Oppositional Defiant Disorders. Regardless of

origin, it stands to reason that a tendency toward rebelliousness, or use of alcohol as a form of rebellion, may strengthen the association between BPD symptoms and alcohol misuse. To date, this moderational model has not been tested.

## Perceived Coping Skills

Equally important to understanding alcohol misuse among adolescents with BPD are factors that protect against alcohol misuse. The ability to cope with stress and emotions may be particularly critical for adolescents with BPD. Emotion regulation is one of the four core areas of skill deficits targeted in Dialectical Behavior Therapy (DBT; Linehan, 1993; Miller, Rathus, & Linehan, 2007), the preeminent treatment for BPD, which has been shown to reduce substance misuse (e.g., Linehan et al., 1999). Thus, it is possible that higher perceived coping skills buffer the association between BPD symptoms and alcohol misuse. To date, no known studies have examined this hypothesis.

## Current Study

The purpose of the current study is to address gaps in adolescent BPD and alcohol misuse literatures by examining the associations between BPD symptoms, symptom management (self-medication) and accentuation (rebelliousness) uses of alcohol, perceived coping skills, and alcohol misuse, in a clinical sample of adolescents. Specifically, the first aim is to examine the association between BPD symptoms and alcohol misuse in this sample. The second aim is to examine potential moderators of the hypothesized association between BPD symptoms and alcohol misuse, including use of alcohol for purposes of self-medication or rebellion and perceived coping skills. Lastly, given impulsivity is a core risk factor for engagement in risk behavior (e.g., alcohol use) and a key BPD trait (APA, 2013; Kaess et al., 2014), we examine whether the relation between BPD symptoms and alcohol misuse are driven by impulsivity or whether they hold when impulsivity is not included among the other BPD symptoms.

We hypothesize that BPD symptoms will be significantly associated with alcohol misuse, including greater frequency of alcohol use and alcohol use problems. Second, we expect that a greater tendency to drink to cope as well as rebel will strengthen the relation between BPD symptoms and alcohol misuse. Finally, we anticipate that higher perceived coping skills will attenuate the association between BPD symptoms and alcohol misuse.

## Method

### Participants

Participants included 181 adolescents ( $M_{\text{age}} = 15.04$  years,  $SD = 1.31$  years, range = 13–18 years) hospitalized on an acute adolescent psychiatric unit in the Northeastern United States and their parents or legal guardians. The hospital from which participants were recruited serves all patients regardless of insurance status (i.e., uninsured, private insurance, public insurance). According to state census tract data, socioeconomic status (SES) for the population served at this facility includes 16% high SES, 39% middle SES, 15% low SES, and 12% poverty conditions. The median annual family income in the present sample

was \$60,000 and the range was <\$10,000 to \$100,000 and above. Additional demographic information is presented in Table 1. Adolescents were primarily female (71.8%), White (83.4%), and non-Hispanic (90.6%). Inclusion criteria for the current sample included: (1) fluency in English; (2) parental consent and adolescent assent; and (3) a Verbal IQ estimate at or above 70 on the Kaufman Brief Intelligence Test (Kaufman & Kaufman, 1990). Exclusion criteria included youth who were: (1) in full legal custody of child protective services as documented in the hospital admission records or (2) actively psychotic.

## Measures

**Borderline personality disorder symptoms.**—The Childhood Interview for Borderline Personality Disorder (CI-BPD; Zanarini, 2003), a semi-structured interview, was used to assess DSM-IV criteria for borderline personality disorder in adolescents. The interviewer asks a series of corresponding questions and rates each of the nine DSM-based criteria with a score of 0 (absent), 1 (probably present), or 2 (definitely present). Criteria for BPD is met if five or more criteria are rated at the 2-level. The CI-BPD demonstrated adequate interrater reliability in the original validation study (Zanarini, 2003) and subsequent studies have demonstrated adequate validity (Sharp, Ha, Michonski, Venta, & Carbone, 2012). Internal consistency in the present sample was adequate ( $\alpha = .84$ ). A continuous measure of BPD symptoms (higher scores reflect more symptoms) was used in study analyses. This dimensional, rather than categorical (i.e., diagnosis), approach was employed as it better accounts for developmental fluctuations and heterogeneity (Sharp et al., 2012; Zanarini et al., 1996).

**Alcohol problems.**—The Substance Abuse Subtle Screening Inventory-Adolescent 2 (SASSI-A2; Miller & Lazowski, 2001), a 72-item self-report measure, was used to assess the degree to which adolescents experience problems related to alcohol and other drug use. The SASSI-A2 face valid alcohol subscale includes both face valid and subtle (i.e., items with no easily detected relationship to substance use) alcohol use items and assesses the presence and degree of alcohol use and related problems. Participants indicated how often they experienced alcohol-related situations during the 6 months prior to their hospitalization. Response options range from 0 (Never) to 3 (4 or more times) and sample questions include “...drank during the day?” and “gotten sick from drinking?” Accuracy of detection of substance use disorders ranges from 72–90% across multiple studies (Stein et al., 2005). Internal consistency coefficients range from .61 to .95 and test-retest reliability coefficients range from .71 to .92 (Miller et al., 2001). Internal consistency in the present study was high ( $\alpha = .96$ ).

**Frequency of alcohol use.**—A single item from the Personal Experiences Screening Questionnaire (PESQ; Winters, 1992), a 40-item assessment of adolescent substance use problem severity, history, and related psychosocial problems, was used to assess frequency of alcohol use. The PESQ is psychometrically sound and diagnostically sensitive (Winters, 1992). Part III of the PESQ, which assesses frequency of substance use, was administered. For the current study, participants indicated frequency of alcohol use over the prior 6 months using a 7-point Likert scale of 0 (never), 1 (one to two times), 2 (three to five times), 3 (six to nine times), 4 (ten to nineteen times), 5 (twenty to thirty-nine times), and 6 (40+ times).

**Use of alcohol for self-medication and rebelliousness.**—Two subscales (Self-Medication and Rebelliousness) from the Adolescent Drinking Index (ADI; Harrell & Wirtz, 1989), a 24 item self-report measure that assesses severity of drinking problems and reasons for use, were used to assess the degree to which adolescents endorse drinking to self-medicate (i.e., the degree to which drinking is used to alter mood) and drinking to rebel (i.e., the degree to which aggressive, rebellious behavior is related to drinking). Both 5-item subscales are rated on a 3-point Likert scale ranging from 0 (not at all like me) to 3 (like me a lot). Higher scores reflect higher levels of endorsement of the reason for drinking. There are 14 additional items that assess the frequency of problematic drinking behaviors over the past 12 months; these items were not used in the present study. The ADI was developed for use with adolescents with emotional and behavioral problems and has been normed with adolescents in school, adolescents under evaluation for psychological problems, and adolescents in substance abuse problems; adequate internal consistency and validity have been demonstrated for the ADI (Harrell & Wirtz, 1989). Internal consistency in the present sample was .88 for self-medication and .85 for rebelliousness.

**Perceived coping skills.**—A subscale of the Bar-On Emotional Quotient Inventory: Youth Version - Short (EQ-i:YV(S); Bar-On & Parker, 2000), a 30-item self-report measure of emotional intelligence, was used to assess perceived coping skills. Emotional intelligence is defined by Bar-On (1997) as “an array of non-cognitive capabilities, competencies, and skills that influence one’s ability to succeed in coping with environmental demands and pressures” (p. 14, as cited in Wood, Parker, & Keefer, 2009, p. 67). Items are rated on a 4-point Likert scale from 1 (“Not True of Me/Never/Seldom”) to 4 (“Very Much True of Me/Very Often”). The EQ-i:YV(S) yields a total score (Total Emotional Quotient) and five subscale scores (Intrapersonal Scale, Interpersonal Scale, Stress Management Scale, Positive Impression Scale, and Adaptability Scale). The Stress Management Scale was used in the present study to assess perceived coping skills (i.e., the ability to manage and control emotions and respond calmly to stressful events). Sample items include “When I get angry, I act without thinking” and “I get too upset about things”. Some items are reverse-coded for detection of inconsistent responding. This scale was chosen for the present study because it assesses “abilities and dispositions that are directly involved in  *coping*  with upsetting situations, problems, and change” (Wood et al., 2009, p. 68). Versions of the EQ-i have been shown to yield high reliability and validity (Bar-On & Parker, 2000), including for the EQ-i:YV (Parker et al., 2005) and for the EQ-i:YV(S) (Kun et al., 2012). Internal consistency in the present sample was adequate ( $\alpha = .88$ ).

## Procedure

Adolescents admitted to an adolescent psychiatric inpatient unit over a three-year span as part of a larger federally funded study examining cognitive influences on psychopathology and suicidality were eligible for participation in the current study. The large majority of adolescents were hospitalized due to suicidal thoughts or behavior. Consecutive admissions to the inpatient facility during the duration of the parent study (N=467; 63.8% female, 70.8% White) were all screened for study eligibility. Adolescents deemed eligible and their parents/legal guardians were approached for recruitment by a trained, bachelor’s-level research assistant following family meetings or during family visits on the adolescent



inpatient unit. If parental consent and adolescent assent were provided, the family was offered enrollment in the parent study (N=189). Demographic data on participants who did not enroll in the parent study were not recorded (see Weismore & Esposito-Smythers, 2010 for more information about parent study procedures).

Adolescents and their parent/guardian completed the study assessments while the adolescent was hospitalized on the inpatient unit (within seven days of initial admission). The research assistant administered the full assessment battery except for the diagnostic interview, which was administered by master's- and doctoral-level clinicians who completed training in diagnostic interviewing provided by the last author. These diagnostic interviews were also regularly reviewed as a treatment team in consensus meetings.

All adolescents received four movie tickets and their parent/guardian received a \$50 money order for their participation. A feedback form summarizing responses to clinical measures was placed in each adolescent's inpatient file upon completion of the full assessment battery to aid treatment and discharge planning. All study procedures were approved by Brown University and Lifespan Corporation Institutional Review Boards (Committee #1204-03) and complied with APA ethical standards. As the original Institutional Review Board protocols did not ask for participant permission for data sharing, data are currently not publicly available.

## Plan of Analysis

All analyses were conducted in SPSS version 19 (IBM Corp., 2010). Preliminary analyses used for study descriptive data included frequencies, correlations, and independent samples t-tests. Bivariate correlations were run to address the first aim, namely to examine the association between BPD symptoms and alcohol misuse (i.e., frequency of alcohol use and alcohol problems). Due to elevated skew and kurtosis, the rebelliousness (skew=2.1, kurtosis=3.5) and alcohol problems (skew=1.8, kurtosis=2.8) variables were log transformed prior to analysis. Linear regression analyses using PROCESS version 2.16.3 (Hayes, 2013) were used to address the second aim, that is, whether self-medication, rebelliousness, or perceived coping skills moderate the association between BPD symptoms and alcohol misuse. Simple slope analyses (Preacher, Curran, & Bauer, 2004) were used to probe significant interactions. Last, to examine whether impulsivity is the primary driver of the hypothesized relationships, this symptom was removed from the BPD symptoms score and the analyses specified above were repeated. Analyses were not pre-registered.

## Results

### Clinical History

As can be seen in Table 1, the adolescents in the present sample had high rates of DSM-IV diagnosis and more than half had at least one prior hospitalization. With regard to BPD symptoms and diagnoses, 36.5% of the current sample met criteria for BPD. An additional 9.4% met four criteria at the 2-level, indicating a BPD diagnosis is probable. Mean PESQ-item score for frequency of alcohol use during the prior 6 months was 1.62 (SD = 1.94), with a range of 0 (never) to 6 (40+ times); 42% ( $n = 76$ ) of adolescents reported no alcohol use



during the past six months. Rates of alcohol problems were low ( $M=3.38$ ,  $SD=5.90$ ), with a range of 0 to 29 (50.3% of the sample scored 0).

### Bivariate Analyses

As can be seen in Table 2, BPD symptoms were significantly positively correlated with alcohol problems, frequency of alcohol use, drinking to self-medicate, and drinking to rebel as well as significantly negatively correlated with perceived coping skills. Drinking to self-medicate and drinking to rebel were significantly and positively correlated as were alcohol problems and frequency of alcohol use. As gender was only significantly correlated with BPD symptoms it was not controlled for in multivariate analyses.

Although a continuous variable for BPD symptoms were used in multivariate analyses, differences based on BPD diagnostic status on key study moderators and outcomes were also examined in preliminary analyses as these comparisons may have clinical utility. Youth who met criteria for a diagnosis of BPD were significantly more likely to report use of alcohol to self-medicate ( $t = -3.58$ ,  $p = .001$ ) and rebel ( $t = -2.98$ ,  $p = .003$ ), lower perceived coping skills ( $t = 4.53$ ,  $p < .001$ ), more frequent alcohol use ( $t = -2.53$ ,  $p = .012$ ), and more alcohol problems ( $t = -2.80$ ,  $p = .006$ ), compared to youth who did not meet criteria for a diagnosis of BPD.

### Moderational Analyses

We next examined whether drinking to self-medicate or to rebel moderated the relation between BPD symptoms and alcohol misuse. As shown in Tables 3 and 4, Models 1 and 2, respectively, there was no main effect of BPD symptoms on alcohol use when included in multivariate models. In contrast, self-medication and rebelliousness were significantly positively related to alcohol problems and frequency of alcohol use. Furthermore, self-medication moderated the relation between BPD symptoms and alcohol problems (Figure 1), but not between BPD symptoms and frequency of alcohol use. Simple slopes for the association between BPD symptoms and alcohol problems were tested for low (1  $SD$  below the mean), moderate (mean), and high (1  $SD$  above the mean) levels of self-medication. At lower levels of self-medication, BPD was positively related to alcohol problems ( $B = .30$ ,  $p = .01$ ); there was no significant relationship at moderate ( $B = .17$ ,  $p = .12$ ) or high levels ( $B = -.06$ ,  $p = .72$ ) of self-medication. Rebelliousness (see Tables 3 and 4, Model 2) did not moderate the relation between BPD symptoms and alcohol problems or frequency of drinking. Analyses were repeated with the BPD impulsivity item removed to account for the possibility that impulsivity was driving the effects; however, the direction and magnitude of the effects did not change.

We next examined whether perceived coping skills moderate the relation between BPD symptoms and alcohol misuse (i.e., frequency of alcohol use and alcohol problems). As shown in Tables 3 and 4, Model 3, BPD symptoms were positively related to frequency of alcohol use and alcohol problems. Perceived coping skills were unrelated to frequency of alcohol use or alcohol problems. A significant interaction between BPD symptoms and perceived coping skills was found in relation to both alcohol misuse outcomes. Simple slope analyses for the association between BPD symptoms and alcohol problems as well as

frequency of alcohol use were tested for low (1 *SD* below the mean), moderate (mean), and high (1 *SD* above the mean) levels of perceived coping skills.

Regarding alcohol problems, BPD was unrelated to alcohol problems at lower levels of perceived coping skills ( $B = .20, p = .28$ ), but significantly and positively related at moderate ( $B = .49, p = .001$ ) and high ( $B = .77, p = .0001$ ) levels of perceived coping skills.

A similar pattern was observed for frequency of alcohol use at low ( $B = .10, p = .29$ ), moderate ( $B = .74, p = .01$ ), and high ( $B = 1.39, p = .001$ ) levels of perceived coping skills. In other words, perceived coping skills did not buffer the association between adolescent BPD symptoms and alcohol misuse. Figures 2 and 3 plot the simple slopes for these two interactions. Analyses were repeated with the BPD impulsivity item removed to account for the possibility that impulsivity was driving the effects; however, the direction and magnitude of effects did not change.

All regression analyses were repeated with the subset of adolescents who endorsed using alcohol at least once during the prior six months. Effects were replicated, with the exception of the interaction between BPD symptoms and self-medication when predicting alcohol problems which was marginally significant, likely due to being underpowered.

## Discussion

Adolescence is a period of high-risk for the development of BPD symptoms and alcohol-related problems, yet little research has examined the degree of comorbidity between these conditions and factors that influence the nature of their association. The current study examined whether use of alcohol for the purposes of self-medication and rebellion, as well as perceived coping skills, moderated the association between BPD symptoms and alcohol misuse in a clinical sample of adolescents. Both use of alcohol for self-medication purposes as well as perceived coping skills were found to moderate this relation, albeit in an unexpected manner.

Consistent with our first hypothesis, adolescents with higher levels of BPD symptoms tended to use alcohol more frequently and to have more problems associated with alcohol use in bivariate analyses. This finding is consistent with prior research documenting an association between BPD and substance misuse (Cohen et al., 2007; Grilo et al., 1995) among adolescents and young adults (Stepp et al., 2005; Tragesser et al., 2007). Notably, in the multivariate models that included drinking for self-medication and rebelliousness purposes, respectively, this relation was attenuated to non-significance. These latter variables were positively associated with both BPD symptoms as well as frequency of alcohol use and severity of alcohol problems, suggesting that shared variance may have played a role.

Findings related to use of alcohol for self-medication purposes were somewhat contrary to what was expected. Significant main effects demonstrated that adolescents who reported higher self-medication motives tended to drink more and have more alcohol problems. Further, the use of alcohol for self-medication purposes only moderated the association between BPD symptoms and alcohol problems, not frequency of alcohol use. This significant interaction revealed that when adolescents reported *lower* levels of self-

medication, there was a positive relationship between BPD symptoms and alcohol problems. As BPD is characterized by intense emotional pain, even lower self-medication motives may lead to greater alcohol problems, whereas moderate and higher levels of self-medication motives may not significantly impact risk for alcohol problems for this already high-risk sample.

When examining drinking for rebelliousness purposes, significant main effects suggested that adolescents who reported higher rebelliousness motives reported greater frequency of alcohol use and alcohol problems. However, unlike self-medication motives, drinking to rebel did not moderate the association between BPD symptoms and alcohol misuse (frequency of use or severity of problems). Thus, rebelliousness motives did not play a role in the association between BPD symptoms and alcohol misuse in the present clinical sample.

Counter to our expectations, results also suggested that having a *relatively stronger* perceived ability to cope with negative emotions (as compared to average and lower levels of coping abilities) strengthened the relation between BPD symptoms and alcohol misuse. Thus, adolescents with higher levels of BPD symptoms *and* relatively higher levels of perceived coping skills reported more frequent alcohol use and severe alcohol problems. One possible reason for this counterintuitive finding is the role of apparent competence. Apparent competence is characterized by an incongruence between verbal and nonverbal expression and emotional experience. Individuals with BPD present as “in control,” but are experiencing extreme distress, which frequently leads to engagement in high-risk behaviors (e.g., Linehan, 1993; McMain, Korman, & Dimeff, 2001). Despite presenting as “in control” and confident, adolescents with higher levels of BPD symptoms may not actually possess the coping skills needed to buffer against alcohol misuse, regardless of what they are reporting.

The failure of perceived coping skills to buffer against alcohol problems at higher levels of BPD symptoms may also be due to the severity of the population being studied. Adolescents in the current sample were psychiatrically hospitalized for high-risk behavior, and thus may have more acute psychopathology than general community populations. The behavior exhibited by these adolescents likely reflects the more extreme end of the risky behavior continuum, and, as such, possession of coping skills, no matter how effective, may not be sufficient to prevent alcohol misuse in these already at-risk adolescents.

## Limitations

Although the current study offers new and important information for understanding the relation between BPD symptoms and alcohol misuse during adolescence, several limitations should be considered. First, this study used a cross-sectional design and simple correlation and regression analyses, so causality of effects cannot be determined. Future research should examine similar research questions using a longitudinal design and more sophisticated model testing to better understand the directionality and the magnitude of these relationships. Second, we only considered alcohol misuse in the present study. Future research should expand these findings to include other substance use outcomes. Third, the sample was predominately White and non-Hispanic, so the results may not generalize to more racially and ethnically diverse samples, and we do not have data on

participants' gender identity further limiting generalizability. Finally, the sample comprised of psychiatrically hospitalized adolescents in the custody of a parent or legal guardian, so results may not readily generalize to hospitalized youth in state custody, non-hospitalized clinical samples, or community-based samples. Furthermore, although assessments were completed early on in an adolescent's hospitalization (i.e., within seven days of admission), it is possible adolescents learned additional coping skills while in the hospital which they did not have access to while they were in the community and using alcohol. This is a limitation of retrospective research that should be rectified in future longitudinal studies. Though unique, this severe psychiatric sample is at high risk for BPD symptomology and alcohol misuse, as well as other risky behaviors, so it is paramount to conduct research to better understand these phenomena in this population.

### Clinical Implications

Current interventions for adolescents with BPD are largely adapted from adult treatment models and have varying levels of empirical support (for an overview see Weiner, Ensink, & Normandin, 2018). The two interventions which are most commonly used and have the most empirical support Dialectical Behavior Therapy for Adolescents (DBT-A; Miller, Rathus, & Linehan, 2007; Mehlem et al., 2014; 2016; McCauley et al., 2018) and Mentalization-Based Therapy (Fonagy et al., 2014). The primary target of these treatments is on reducing suicidal and self-harm behavior, though interventions to reduce substance use are often incorporated (e.g., during the middle phase of mentalization-based therapy; Fonagy et al., 2014). Of note, all of these treatment models incorporate caregivers to varying degrees (e.g., caregiver-adolescent skills training groups, intermittent joint sessions with caregiver and adolescent), which is distinct from how these treatment models are practiced within adult populations.

Results of the present study hold several implications for clinical practice. First, drinking to self-medicate and to rebel are associated with alcohol misuse, regardless of BPD symptoms. This finding indicates the importance of assessing "why" and not just "how much" adolescents drink. It may also be important to periodically assess reasons for drinking, as these may change throughout the course of treatment. As emphasized in DBT-A, it is critical for adolescents to learn alternative ways to manage both negative emotional states and rebellious tendencies (e.g., distress tolerance, emotion regulation); this could benefit even youth without BPD.

Considering that the adolescents in this sample were all hospitalized for psychiatric concerns, even those with relatively fewer BPD symptoms are at high risk for alcohol misuse and other negative outcomes. The current findings speak to the need to address coping skills early on in treatment, which in turn, may prevent the development of further alcohol use. It is critical that clinicians are aware of apparent competence in BPD and obtain collateral reports of adolescents' coping abilities (i.e., from caregivers, from teachers, etc.). Adolescents may state they are able to utilize skills and appear "in control," but in reality, they may struggle with implementation of skills during times of high emotionality. Utilizing role plays and in-the-moment coaching, which are included in DBT, may prove to be useful additions to other forms of treatment that are already being utilized. Furthermore, these adolescents may require more support from their caregivers, including increased parental

monitoring and structure, as well as ongoing engagement in therapeutic services (both individual and family therapy), to best prevent or treat alcohol misuse.

## Acknowledgments

This research was supported by the National Institute of Mental Health grants R01MH065885 and T32MH018261. All authors contributed significantly to the final version of the work, including the present study design, data analysis, conceptualization, interpretation of results, and writing of the current manuscript. Esposito-Smythers is also responsible for the data collection and management. All authors had full access to the study data. The authors have declared that they have no competing or potential conflicts of interest.

## References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders, version 5*. Arlington, VA: American Psychiatric Publishing.
- Bar-On R, & Parker JDA (2000). *Bar-On emotional quotient inventory: Youth version*. Toronto, ON: Multi-Health System, Incorporated.
- Bornoalova MA, Hicks BM, Iacono WG, & McGue M (2013). Longitudinal twin study of borderline personality disorder traits and substance use in adolescence: Developmental change, reciprocal effects, and genetic and environmental influences. *Personality Disorders: Theory, Research, and Treatment*, 4, 23–32.
- Cohen P, Chen H, Crawford TN, Brook JS, & Gordon K (2007). Personality disorders in early adolescence and the development of later substance use disorders in the general population. *Drug and Alcohol Dependence*, 88, S71–S84. [PubMed: 17227697]
- Esposito-Smythers C, Penn JV, Stein LA, Lacher-Katz M, & Spirito A (2008). A test of problem behavior and self-medication theories in incarcerated adolescent males. *Journal of Child and Adolescent Substance Abuse*, 17, 41–51. [PubMed: 20148192]
- Fonagy P, Rossouw T, Sharp C, Bateman A, Allison L, & Farrar C (2014). Mentalization-based treatment for adolescents with borderline traits. In *Handbook of borderline personality disorder in children and adolescents* (pp. 313–332). Springer, New York, NY.
- Grant BF, Chou SP, Goldstein RB, Huang B, Stinson FS, Saha TD, ... & Ruan WJ (2008). Prevalence, correlates, disability, and comorbidity of DSM-IV borderline personality disorder: results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *The Journal of Clinical Psychiatry*, 69, 533–545. [PubMed: 18426259]
- Grilo CM, Becker DF, Walker ML, Levy KN, Edell WS, & McGlashan TH (1995). Psychiatric comorbidity in adolescent inpatients with substance use disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 34, 1085–1091. [PubMed: 7665447]
- Harrell AV, & Wirtz PW (1989). Screening for adolescent problem drinking: Validation of a multidimensional instrument for case identification. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 1, 61–63.
- Hayes AF (2013). Appendix A: Using PROCESS. In *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (pp. 419–456). New York, NY: Guilford Press.
- IBM Corp. (2010). *IBM SPSS Statistics for Windows, Version 19.0*. [Computer software]. Armonk, NY: IBM Corp.
- Jessor R (1987). Problem-behavior theory, psychosocial development, and adolescent problem drinking. *Addiction*, 82, 331–342.
- Johnston LD, O'Malley PM, Bachman JG, & Schulenberg JE (2013). *Monitoring the Future national results on drug use: 2012 Overview, key findings on adolescent drug use*. Ann Arbor: Institute for Social Research, The University of Michigan.
- Kaess M, Brunner R, & Chanan A (2014). Borderline personality disorder in adolescence. *Pediatrics*, 134, 782–793. [PubMed: 25246626]
- Kaufman AS, & Kaufman NL (1990). *K-BIT: Kaufman brief intelligence test*. American Guidance Service.

- Khantzian EJ (1997). The self-medication hypothesis of substance use disorders: A reconsideration and recent applications. *Harvard Review of Psychiatry*, 4, 231–244. [PubMed: 9385000]
- Korsgaard HO, Torgersen S, Wentzel-Larsen T, & Ulberg R (2016). Substance abuse and personality disorder comorbidity in adolescent outpatients: are girls more severely ill than boys? *Child and Adolescent Psychiatry and Mental Health*, 10, 175–185.
- Kun B, Urbán R, Paksi B, Csóbor LV, Oláh A, & Demetrovics Z (2012). Psychometric characteristics of the Emotional Quotient Inventory, Youth Version, Short Form, in Hungarian high school students. *Psychological Assessment*, 24, 518–523. [PubMed: 22004539]
- Lazarus SA, Beardslee J, Pedersen SL, & Stepp SD (2017). A within-person analysis of the association between borderline personality disorder and alcohol use in adolescents. *Journal of Abnormal Child Psychology*, 45(6), 1157–1167. [PubMed: 27812907]
- Linehan M (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, NY: Guilford Press.
- McMain S, Korman LM, & Dimeff L (2001). Dialectical behavior therapy and the treatment of emotion dysregulation. *Journal of Clinical Psychology*, 57, 183–196. [PubMed: 11180146]
- Mehlum L, Ramberg M, Tormoen AJ, Haga E, Diep LM, Stanley BH, ... Groholt B (2016). Dialectical behavior therapy compared with enhanced usual care for adolescents with repeated suicidal and self-harming behavior: Outcomes over a one-year follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, 55(4), 295–300. [PubMed: 27015720]
- McCauley E, Berk S, Asarnow JR, Adrian M, Cohen J, Korslund K, Avina C, Hughes J, Harned M, Gallop R, Linehan M (2018). Efficacy of dialectical behavior therapy for adolescents at high risk for suicide: A randomized clinical trial. *JAMA Psychiatry*. 75(8), 777–785. [PubMed: 29926087]
- Miller AL, Muehlenkamp JJ, & Jacobson CM (2008). Fact or fiction: Diagnosing borderline personality disorder in adolescents. *Clinical Psychology Review*, 28, 969–981. [PubMed: 18358579]
- Miller AL, Rathus JH, & Linehan MM (2007). *Dialectical behavior therapy with suicidal adolescents*. New York, NY: Guilford Press.
- Miller FG, Renn WR, & Lazowski LE (2001). *The adolescent substance abuse subtle screening inventory—second edition (SASSI-A2): A quick reference for administration and scoring*. Springville, IN: SASSI Institute.
- Parker JDA, Saklofske DH, Shaughnessy PA, Huang SHS, Wood LM, & Eastabrook JM (2005). Generalizability of the emotional intelligence construct: A cross-cultural study of North American Aboriginal youth. *Personality and Individual Differences*, 39, 215–227.
- Preacher KJ, Curran PJ, & Bauer DJ (2004). Simple intercepts, simple slopes, and regions of significance in mlr-2 way interactions. Retrieved September 13, 2019 from [http://www.quantpsy.org/interact/mlr2\\_instructions.pdf](http://www.quantpsy.org/interact/mlr2_instructions.pdf)
- Sharp C, Ha C, Michonski J, Venta A, & Carbone C (2012). Borderline personality disorder in adolescents: evidence in support of the Childhood Interview for DSM-IV Borderline Personality Disorder in a sample of adolescent inpatients. *Comprehensive Psychiatry*, 53(6), 765–774. [PubMed: 22300904]
- Stein LAR, Lebeau-Craven R, Martin R, Colby SM, Barnett NP, Golembeske C, & Penn JV (2005). Use of the Adolescent SASSI in a juvenile correctional setting. *Assessment*, 12, 384–394. [PubMed: 16244119]
- Steinberg L (2008). A social neuroscience perspective on adolescent risk taking. *Developmental Review*, 28, 78–106. [PubMed: 18509515]
- Stepp SD, Trull TJ, & Sher KJ (2005). Borderline personality features predict alcohol use problems. *Journal of Personality Disorders*, 19, 711–722. [PubMed: 16553564]
- Tragesser SL, Sher KJ, Trull TJ, & Park A (2007). Personality disorder symptoms, drinking motives, and alcohol use and consequences: cross-sectional and prospective mediation. *Experimental and Clinical Psychopharmacology*, 15, 282–292. [PubMed: 17563215]
- Trull TJ, Jahng S, Tomko RL, Wood PK, & Sher KJ (2010). Revised NESARC personality disorder diagnoses: gender, prevalence, and comorbidity with substance dependence disorders. *Journal of Personality Disorders*, 24, 412–426. [PubMed: 20695803]



- Trull TJ, Sher KJ, Minks-Brown C, Durbin J, & Burr R (2000). Borderline personality disorder and substance use disorders: A review and integration. *Clinical Psychology Review*, 20, 235–253. [PubMed: 10721499]
- Weiner AS, Ensink K, & Normandin L (2018). Psychotherapy for borderline personality disorder in adolescents. *Psychiatric Clinics*, 41(4), 729–746. [PubMed: 30447735]
- Weismore J & Esposito-Smythers C (2010). The role of cognitive distortion in the relationship between abuse, assault, and non-suicidal self-injury. *Journal of Youth and Adolescence*, 39, 281–290. [PubMed: 19784765]
- Winters KC (1992). Development of an adolescent alcohol and other drug abuse screening scale: Personal Experience Screening Questionnaire. *Addictive Behaviors*, 17, 479–490. [PubMed: 1332434]
- Wood LM, Parker JD, & Keefer KV (2009). Assessing emotional intelligence using the Emotional Quotient Inventory (EQ-i) and related instruments. In: Parker J, Saklofske D, & Stough C (Eds.), *Assessing emotional intelligence. The Springer Series on human exceptionality* (pp. 67–84). Boston, MA: Springer.
- Zanarini MC (2003). *Childhood Interview for DSM-IV borderline personality disorder (CI-BPD)*. Belmont, MA: McLean Hospital.
- Zanarini MC, Frankenburg FR, Sickel AE, & Yong L (1996). *The Diagnostic Interview for DSM-IV Personality Disorders*. Belmont, MA: McLean Hospital.



### Key Practitioner Messages

**What is Known:**

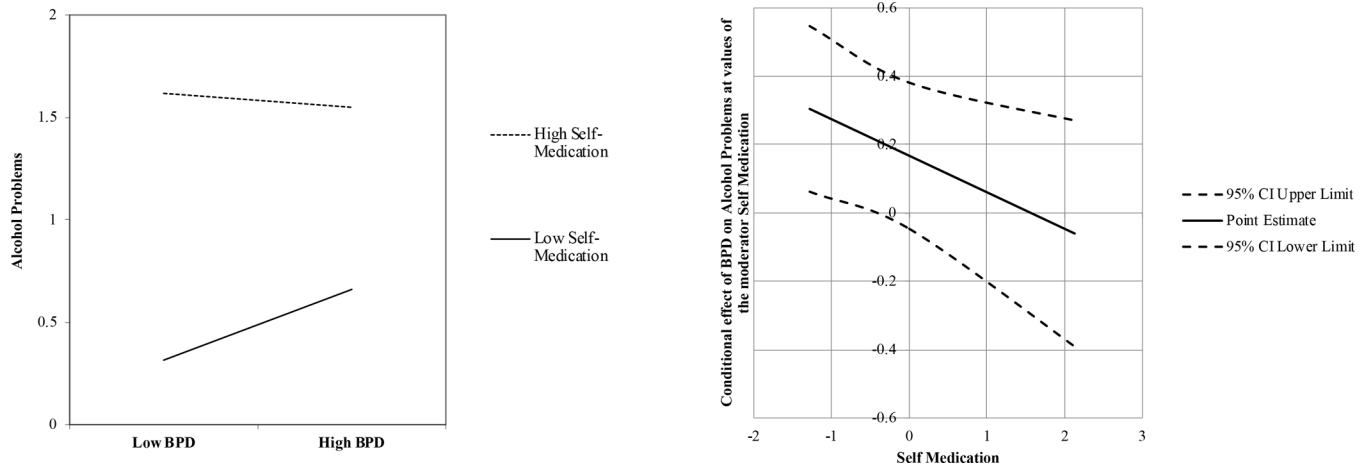
- Adolescents who experience symptoms of borderline personality disorder (BPD) are at high risk for alcohol misuse, yet little is known about why these adolescents drink and what factors heighten or mitigate this risk.

**What is New:**

- Adolescents who use alcohol to self-medicate or rebel are at high risk for alcohol problems, regardless of presence of BPD symptoms.
- Contrary to expectations, higher perceived coping skills strengthened the relation between BPD and alcohol misuse. Apparent competence (i.e., present as “in control” but lack sufficient skills) may be at play.

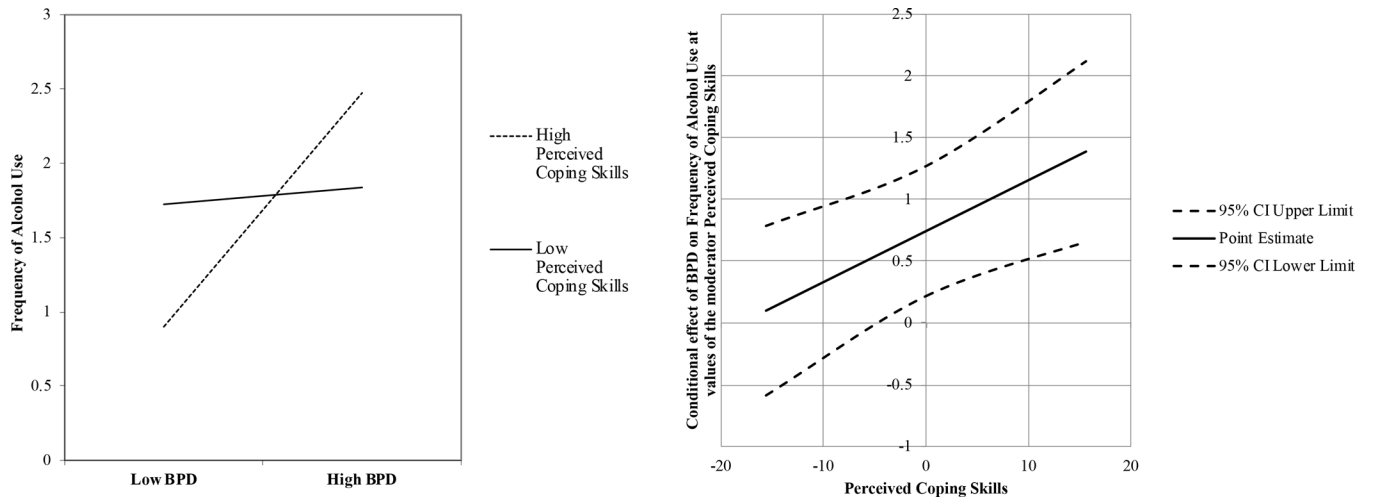
**What is Significant for Clinical Practice:**

- Clinicians are encouraged to assess why adolescents are using alcohol and teach alternative coping strategies when self-medication and/or rebellion is an identified use.
- Clinicians are encouraged to collect collateral reports of adolescent’ coping abilities rather than relying solely on self-report.

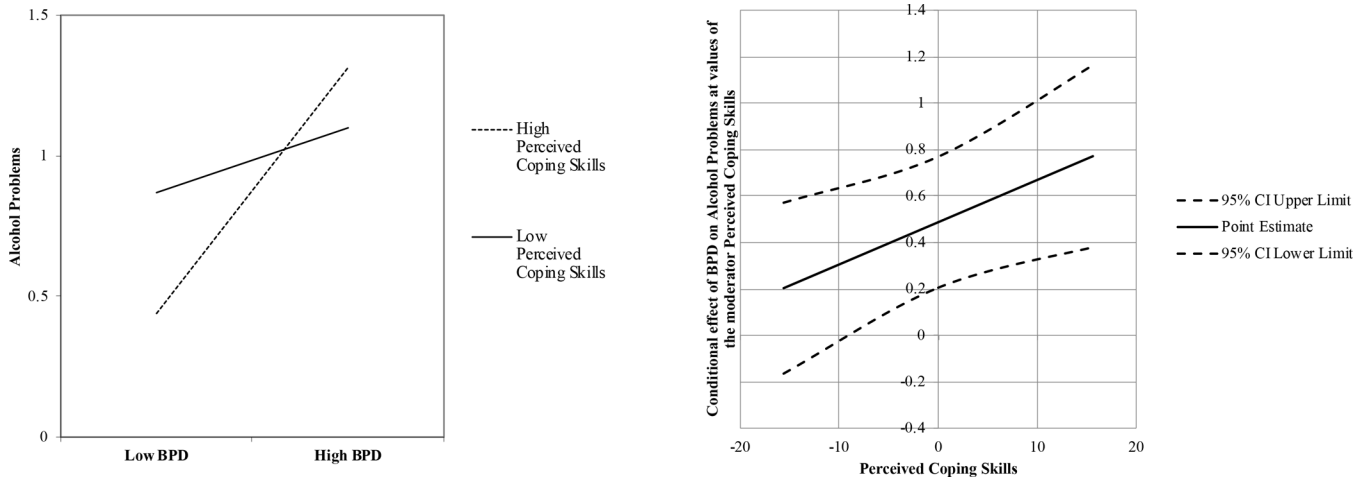


**Figure 1.** Self-medication motivations moderate the relation between BPD symptoms and alcohol problems.

*Note.* Alcohol problems (face valid alcohol scale) is a log transformed variable.  $N=181$ .



**Figure 2.** Perceived coping skills moderate the relation between BPD symptoms and frequency of alcohol use.  
*Note.*  $N=181$ .



**Figure 3.** Perceived coping skills moderate the relation between BPD symptoms and alcohol problems.  
*Note.* Alcohol problems (face valid alcohol scale) is a log transformed variable.  $N=181$ .

**Table 1**

Participant demographic characteristics and clinical history

Characteristic	Adolescents ( <i>N</i> = 181)
Female, <i>N</i> (%)	130 (71.8)
Race/ethnicity, <i>N</i> (%)	
White	151 (83.4)
Black	5 (2.8)
Asian	4 (2.2)
Native American	7 (3.9)
Other	14 (7.7)
Hispanic	17 (9.4)
Grade, <i>N</i> (%)	
6	2 (1.1)
7	9 (5.1)
8	31 (17.6)
9	41 (23.3)
10	41 (23.3)
11	37 (21.0)
12	15 (8.5)
Parental Marital Status, <i>N</i> (%)	
Married, living with spouse	86 (51.5)
Separated or divorced	49 (29.3)
Widowed	9 (5.4)
Single, never married	23 (13.8)
Family Income, <i>Median</i>	\$60,000
History of prior hospitalization, <i>N</i> (%)	55 (30.7)
Psychiatric diagnosis, <i>N</i> (%)	
Major depressive disorder	116 (64.4)
Bipolar I disorder	11 (6.1)
Generalized anxiety disorder	43 (23.9)
Social phobia	65 (36.1)
Post-traumatic stress disorder	47 (26.1)
Attention-deficit hyperactivity disorder	62 (34.4)
Conduct disorder	48 (26.7)
Oppositional defiant disorder	34 (18.9)

**Table 2**

Bivariate correlations and descriptive statistics for all model variables

Variable	1	2	3	4	5	6	7
1. Gender	--	.21**	-.03	-.03	-.05	.04	-.04
2. BPD symptoms <sup>+</sup>		--	.29***	.25**	-.42***	.28***	.22**
3. Use for Self-Medication			--	.65***	-.02	.63***	.65***
4. Use for Rebellion <sup>^</sup>				--	-.19*	.80***	.71***
5. Coping Skills					--	-.17*	-.12
6. Alcohol Problem <sup>^</sup>						--	.82***
7. Frequency of Alcohol Use							--
<i>M</i>	++	0.89	1.28	0.57	92.79	3.38	1.62
<i>SD</i>	--	0.57	2.12	0.88	15.57	5.90	1.94

Note.

\*  
 $p < .05$ \*\*  
 $p < .01$ \*\*\*  
 $p < .001$ ;  $N=181$ <sup>+</sup>BPD symptoms is the mean score of symptom ratings, 36.5% met BPD criteria; 9.4% partially met BPD criteria (diagnosis probable)<sup>^</sup>variable is log transformed for analyses<sup>++</sup>50 males, 131 females.

**Table 3**

Results of Regression Analyses for Frequency of Use

Frequency of Use									
	<i>B</i> ( <i>SE</i> )	$\beta$	[95% CI]	<i>t</i>	<i>R</i> <sup>2</sup>	MSE	F	Interaction	<i>R</i> <sup>2</sup>
<u>Model 1</u>									
Constant	1.61 (0.11)	-0.00	[1.39, 1.83]	14.40**	0.44	2.05	46.56**	0.00	
BPD Symptoms	0.08 (0.20)	0.02	[-0.31, 0.47]	0.42					
Self-Medication	0.61 (0.06)	0.66	[0.49, 0.72]	10.38**					
BPD × Use for Self-Medication	-0.09 (0.10)	-0.06	[-0.29, 0.11]	-0.90					
<u>Model 2</u>									
Constant	1.58 (0.11)	-0.02	[1.37, 1.79]	14.98**	0.48	1.89	55.50**	0.00	
BPD Symptoms	0.16 (0.19)	0.05	[-0.21, 0.53]	0.84					
Rebelliousness	1.51 (0.13)	0.69	[1.26, 1.76]	12.03**					
BPD × Use for Rebellion	-0.02 (0.22)	-0.01	[-0.45, 0.41]	-0.09					
<u>Model 3</u>									
Constant	1.73 (0.15)	0.06	[1.44, 2.03]	11.72	0.08	3.36	5.44*	0.04	
BPD Symptoms	0.74 (0.27)	0.22	[0.22, 1.27]	2.79**					
Coping Skills	-0.00 (0.01)	-0.02	[-0.02, 0.02]	-0.31					
BPD × Coping Skills	0.04 (0.02)	0.19	[0.01, 0.07]	2.67**					

Note.

*t*, *p* .10

\* *p* .05

\*\* *p* .01; *N*=181.



Table 4

## Results of Regression Analyses for Alcohol Problems

Alcohol Problems									
	<i>B</i> ( <i>SE</i> )	$\beta$	[95% CI]	<i>t</i>	<i>R</i> <sup>2</sup>	MSE	F	Interaction	<i>R</i> <sup>2</sup>
<u>Model 1</u>					0.43	0.62	44.11**	0.01 <sup><i>t</i></sup>	
Constant	0.90 (0.06)	0.02	[0.78, 1.02]	14.67**					
BPD Symptoms	0.17 (0.11)	0.09	[-0.05, 0.38]	1.55					
Self-Medication	0.32 (0.03)	0.66	[0.26, 0.38]	10.03**					
BPD × Use for Self-Medication	-0.11 (0.05)	-0.12	[-0.22, 0.00]	-1.95*					
<u>Model 2</u>					0.63	0.39	102.53**	0.00	
Constant	0.86 (0.05)	-0.02	[0.76, 0.95]	17.80**					
BPD Symptoms	0.16 (0.09)	0.09	[-0.01, 0.32]	1.84 <sup><i>t</i></sup>					
Rebelliousness	0.92 (0.06)	0.78	[0.80, 1.03]	16.01**					
BPD × Use for Rebellion	0.04 (0.10)	0.02	[-0.15, 0.24]	0.44					
<u>Model 3</u>					0.10	0.97	6.82**	0.02*	
Constant	0.93 (0.08)	0.05	[0.77, 1.09]	11.74					
BPD Symptoms	0.49 (0.14)	0.27	[0.21, 0.77]	3.41**					
Coping Skills	-0.00 (0.01)	-0.05	[-0.01, 0.01]	-0.67					
BPD × Coping Skills	0.02 (0.01)	0.15	[0.00, 0.03]	2.20*					

Note.

*t**p* .10\* *p* .05\*\* *p* .01; *N*=181.