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A Daily-Life Study of Interpersonal Stressors and Alcohol Use in Individuals with Borderline Personality Disorder and Community Controls

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Abstract

Background: Interpersonal stressors (ISs) are major factors in relapse in alcohol use disorder (AUD) and are theorized to play a role in drinking behaviors. Past work has examined this association using ecological momentary assessment (EMA), but the unique effects of rejections and disagreements on alcohol use are unknown. Research suggests the two ISs functionally differ and may display distinct associations with drinking. Further, these associations may differ in people with borderline personality disorder (BPD), a population reporting frequent IS and co-occurring AUD.

Methods: 113 drinkers (community: *n*=59; BPD: *n*=54) reported alcohol use and ISs using EMA for 21 days. Using generalized estimating equations, we expected that rejection and disagreement would predict increased likelihood of drinking each day. We examined both cumulative (throughout each day) and immediate momentary effects of ISs predicting subsequent drinking on that same day. Further, we predicted that these associations would be stronger in individuals with BPD.

Results: Greater rejections throughout the day were associated with a reduced likelihood of drinking that day (*OR*=0.56, *95% CI*:[0.32, 0.97], *p*<.040). In contrast, disagreements immediately prior to drinking were associated with an increased likelihood of drinking that day (*OR*=0.60, 95% *CI:* [1.02, 2.50], *p*=.039). However, the effect of disagreement on drinking was moderated by BPD diagnosis (*OR*=2.56, 95% *CI*:[1.13, 5.80], *p*=.025), such that the effect was only present for individuals with BPD.

Conclusions: Assessing ISs as an aggregate predictor may mask potentially opposite effects on alcohol use. Additionally, disagreements may be a risk factor for subsequent alcohol use in BPD.

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Keywords

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1. Introduction

Theories of stressors predicting alcohol use date back to Conger's tension reduction hypothesis, which posits that individuals may drink to alleviate stress or negative affect (Conger, 1956). Marlatt's (1996) model of relapse from alcohol use disorder (AUD) identifies one type of stressor, interpersonal stress (IS), including disagreements, social discord, and evaluation stress among other examples, as a high-risk situation that may lead to relapse. There is also evidence supporting a social attributional hypothesis for alcohol use in which alcohol decreases the cognitive focus on ISs (see Fairbairn & Sayette, 2014, for a review). When individuals experience ISs, they may drink to provide relief from thinking about those events.

Though theories posit that ISs and alcohol use may be connected, laboratory studies examining ISs and alcohol use report mixed results in terms of *how* they are related. Further, they tend to focus on rejection or social exclusion though other types of IS, such as disagreement, may also influence drinking behavior. Of the three laboratory studies examining the association between IS and drinking, two found positive associations between drinking and ISs when participants were rejected by study confederates (Bacon & Engerman, 2018; Rabinovitz, 2014) while the third found a negative association between drinking and exclusion in a virtual ball tossing game (Bacon et al., 2015). This discrepancy may be due to situational factors, such as the artificial nature of drinking behaviors and social interactions that occur in a laboratory setting or the type of ISs experienced. In addition, individual-level factors, such as the presence of an emotional distress disorder or a disorder characterized by unstable interpersonal relationships (e.g., borderline personality disorder [BPD]), may influence associations between ISs and alcohol use, though previous research has not examined this association in clinical populations.

Daily-life studies (e.g., daily diary and ecological momentary assessment [EMA]) have found that IS predicts subsequent alcohol use on the same day. However, these associations appear to depend on several factors. For example, Mohr et al. (2001) found that greater IS is correlated with higher instances of drinking alone in individuals high, but not low, in neuroticism and negatively associated with drinking away from home. One study found the positive association between IS and alcohol use was stronger when participants reported greater closeness with their interaction partner (Laws et al., 2017). Positive associations between alcohol and IS were also found when moderated by coping motives (Todd et al., 2005), careless unconcern expectancies (e.g., expectation that drinking will reduce awareness or focus on the day's earlier events), and low impairment expectancies (Armeli et al., 2007).

In sum, past research demonstrates predominately positive associations between IS and drinking when moderated by other situational and person-level factors. Differences in

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the types of ISs experienced in daily life may also be an important contextual factor. For example, some studies aggregate different types of ISs (i.e., “disagreement,” “demand/criticism,” “rejected/ignored,” “goal blocked,” and “other conflicts;” Armeli et al., 2007; Todd et al., 2005) into a single variable. However, previous work shows that ISs entail a complex emotional and motivational pattern, even when one type of IS is considered individually. For instance, rejection can confer sadness and an approach motivation in efforts to re-establish social bonds, as well as anxiety of further rejection and withdrawal, or even anger and aggressive approach (e.g., Çelik et a., 2013; Gerber & Wheeler, 2009; Hess et al., 2018; Romero-Canyas et al., 2010). Disagreement can both be helpful and harmful to relationships and elicit anger or resolution (e.g., Laursen & Hafen, 2010). Daily-life research with clinical samples further underlines that rejection and disagreements vary in their associations with affect. For example, disagreements were associated with increased hostility, whereas rejection was associated with increased sadness *and* hostility in previous EMA studies (Berenson et al., 2010; Hepp et al., 2017). The aggregation of different stressors in previous work seeking to characterize the link between ISs and alcohol use may have masked the complex emotional-motivational pattern surrounding ISs and thereby obscured distinct associations with alcohol use. Therefore, considering specific ISs and their association with alcohol use could clarify the picture. Finally, past research has examined the accumulation (Armeli et al., 2007) and acute (Todd et al., 2005) effects of general IS on alcohol use, but no study has examined whether rejections and disagreements, as unique predictors, accumulate throughout the day or display acute effects on alcohol use.

In addition to situation-level factors, studies using daily-life methods suggest that aspects of the individual (e.g., neuroticism, drinking to cope motives, careless unconcern expectancies) play important roles in the association between interpersonal stress and alcohol use. However, the influence of psychopathology on the nature of this relationship has not been examined (Armeli et al., 2007; Mohr et al., 2001; Todd et al., 2005). One clinical population for whom associations between interpersonal stress and alcohol use may be particularly important is individuals with BPD. Unstable relationships and interpersonal problems (i.e., frequent arguments and efforts to avoid abandonment) are key symptoms of BPD (American Psychiatric Association [APA], 2013; Gunderson, 2007) and occur frequently in the daily lives of people with BPD (e.g., Stepp et al., 2009). Additionally, past research has demonstrated high co-occurrence between BPD and AUD (Trull et al., 2018), highlighting the importance of understanding how ISs influence alcohol use in this population.

1.1. Current Study

The goals of the present study were to examine the nature of the associations between rejection and disagreements on the likelihood of drinking alcohol on a given day and whether these associations are moderated by the presence of a BPD diagnosis. It is a secondary data analysis of a larger study on alcohol use and affect in community volunteers and people with BPD (Lane et al., 2016). Our hypotheses were as follows:

Hypothesis 1: Consistent with theory positing that individuals drink to alleviate stress more generally (Conger, 1956; Marlatt, 1996), we predicted that rejections and

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disagreements would each display positive associations with alcohol use. The two ISs were entered as predictors in separate models to allow for the possibility that their associations with alcohol use may differ. An exploratory aim of this hypothesis was to examine whether effects of ISs differed if they were experienced immediately prior to drinking or if ISs accumulate throughout the day to influence alcohol use.

Hypothesis 2: BPD is characterized by heightened reactivity to external stressors (APA, 2013), especially ISs (see Lazarus et al., 2014 for a review). Moreover, individuals with features characteristic of BPD (e.g., emotional instability, neuroticism, Cluster B symptoms) report higher levels of coping motives (Simons et al., 2005; Stewart & Devine, 2000; Tragesser et al., 2007). Thus, we hypothesized that they would be more likely to seek out alcohol following ISs. Specifically, we predicted that the positive association between rejection/disagreements and alcohol use would be greater among individuals with BPD.

To replicate work using similar aggregate measures (Armeli et al., 2007; Todd et al., 2005;), we ran a supplemental analysis in which we explored the immediate and cumulative effects of aggregated rejection and disagreement (e.g., any interpersonal stress) and whether these effects were moderated by BPD diagnosis (see supplement).

2. Methods

2.1. Participants

The total sample included 113 participants (demographic information in Table 1). Participants were recruited from community and outpatient treatment clinics. Almost half of the sample (n=54) met criteria for BPD confirmed by structured diagnostic interviews. Participants with BPD were required to be in some form of outpatient treatment during the study. For comparison, individuals who reported drinking regularly and did not meet criteria for BPD nor endorse the affective instability criterion were recruited from the community (COM; n=59). Participants in the COM group were not excluded if they met diagnostic criteria for any disorder other than BPD. Eligible participants were between 18-45 years old, reported alcohol consumption at least once per week on average, were not currently enrolled in treatment for alcohol use, were not currently experiencing alcohol withdrawal symptoms, denied history of psychosis, intellectual disability, or head trauma, and denied pregnancy or plans to become pregnant. Participants provided informed consent, and study procedures were reviewed and approved by the University of Missouri, Columbia Institutional Review Board (Project #: 1133597).

The original sample included 116 participants, but three were excluded from our analyses for not reporting alcohol consumption during the study (n=2) and for extremely high values of reported standard drinks (n=1). Including these participants in the analyses did not significantly alter results.

2.2. Procedures

Psychiatric diagnoses were derived using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First et al., 1995) and the Structured Interview for DSM-IV Personality (SIDP; Pfohl et al., 1994). After completing diagnostic interviews, participants

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completed baseline self-report measures. They were then issued an electronic diary (ED; Palm Tungsten E2©) and trained on reporting standard alcoholic drinks. Participants were asked to carry the ED programmed with customized software for 21 days. Participants were paid weekly in accordance with their compliance: participants received $50 at each weekly visit for completing at least 80% of the previous week's random survey prompts, and payment was reduced by $10 for each 10% reduction in compliance.

2.3. EMA Protocol

Participants completed several EMA surveys. For this study, morning reports, random prompts, user-initiated initial drink reports, and drinking-follow-up prompts were analyzed, as these prompt styles contained our variables of interest (see Lane et al., 2016, for description of full EMA protocol). Participants completed morning reports (average compliance=92.68%, *SD*=15.89%, min=19.05%, max=100%) each day after waking and had until 12:00pm to complete them. Random prompts (average compliance=90.40%, *SD*=7.90%, min=58.75%, max=100%) prompted participants (starting after the completion of their morning report or 12:00pm, whichever came first) to complete surveys up to six times per day. Random prompts were scheduled to occur at least 60 minutes apart and would not occur within 30 minutes of any other prompt. Participants were also instructed to complete user-initiated drinking reports after they consumed their first drink of a drinking episode. Finally, drinking follow-up assessments were administered 30, 60, 120, and 180 minutes after logging the first drink in either a user-initiated drink report or a random prompt. If drinking was reported in a random prompt, participants did not receive subsequent random prompts and were instead administered drinking follow-up assessments. Follow-up assessments were extended 60 minutes for each subsequent drink logged.

2.4. Measures

2.4.1. Interpersonal Stress—At each random prompt, participants rated whether they "had a disagreement" or "felt rejected" since the last prompt. Two dichotomous items indicating whether a rejection or disagreement occurred were evaluated separately.

2.4.2. Alcohol Use—In random prompts, user-initiated drink reports, and drinking follow-ups, participants indicated whether they had consumed any alcohol since the last prompt and, if yes, the number of standard drinks they consumed. For the present study, we were interested whether participants drank at all on a given day.

2.4.3. Social Context—Social context was included as a covariate (see 2.5.3. for additional information). In morning, random, initial drink, and drinking follow-up prompts, participants were asked "In the past 15 minutes, who have you been with?" Participants selected specific people (e.g., friend, roommate, etc.) but, as we were interested in whether participants were accompanied by anyone during their typical drinking times, we created a dichotomous variable that indicated whether participants were with *anyone* in the past 15 minutes.

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2.5. Analytic Method

2.5.1. Creation of Cumulative-Average Interpersonal Stressors Variables—

To test whether the effects of ISs on alcohol use were cumulative, we created two cumulative-average variables corresponding to rejection and disagreement (see Figure 1 for an illustration). Using timestamps from each EMA survey, we developed cutoffs for prompts occurring "pre-drinking" on both drinking and non-drinking days. Non-drinking days were included in the analyses to allow us to ascertain a participant's likelihood of drinking on a given day. On *drinking days*, prompts were considered to have occurred prior to drinking if they were reported before the prompt in which a participant registered their first drink. To create a cutoff for *non-drinking days*, we aggregated the time stamps of reported first drinks to create an "average first drink time" unique to each participant. All prompts on a given day that occurred prior to either the average first drink time on *non-drinking days* or the actual first drink time on *drinking days* were aggregated to create "pre-drinking" cumulative averages, reflecting the proportion of prompts containing ISs for that participant on that day.

2.5.2. Creation of Pre-Drink Prompt Interpersonal Stressor Variables—

To examine the immediate effects of interpersonal stress on alcohol use, we created two additional sets of predictors that allowed us to disaggregate the effect of an IS occurring in the prompt just prior to the first drink reported (e.g., the "pre-drink prompt") from the cumulative average of ISs experienced prior to the pre-drink prompt (i.e., a cumulative average excluding the pre-drink prompt). Cutoffs from the creation of the cumulative average variables were used to determine which prompts occurred immediately "pre-drinking." The pre-drink prompt variable included the prompt just prior to the participant's first drink report on *drinking days*, or the prompt immediately preceding a participant's average first drink time on *non-drinking days*. We controlled for the cumulative average of ISs experienced *prior to the pre-drink prompt* in these models. This allowed us to examine the unique effects of ISs reported immediately before drinking beyond those reported earlier in the day.

2.5.3. Creation of Post-Drink Social Context Variable—

Because drinking is regarded as a social behavior, we wanted to account for the possibility that participants were more likely to report drinking because of their social context at their usual drinking times, rather than IS experienced earlier that day. Therefore, we included a social context variable as a covariate to account for whether participants were in the company of at least one other person while drinking (or during their usual drinking times on non-drinking days) in each model. All prompts occurring on or after the cutoffs (see 2.5.1) were aggregated to create the *post-drinking social context* variable which represents the proportion of prompts participants reported being in the company of someone else (*Range*=0–1).

2.5.4. Generalized Estimating Equations—

We used generalized estimating equations (GEEs) with a logit link function in SAS PROC GENMOD. GEEs account for the nested structure of our data (days within person) and are robust to misspecifications of the covariance structure (Zeger et al., 1988). We conducted two sets of models to examine the cumulative and immediate effects of ISs on the likelihood of any alcohol use on a given day (i.e., a drinking day). The first set of models included cumulative-average ISs.

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The second set included pre-drink prompt ISs. Both sets of models were run for rejection and disagreement separately to allow for the possibility that the two differed in relation to alcohol use. To examine group differences in the associations between ISs and alcohol use, we re-ran the four models interacting group membership (BPD vs. COM) with the interpersonal stress variable of interest.

The outcome in all models was a dichotomous variable indicating whether the participant drank alcohol that day. A person-level aggregate representing the person-mean of pre-drinking IS was centered on sample-means and included as a covariate. This allowed us to disaggregate within-versus between-person effects of ISs on alcohol use (Curran & Bauer, 2011). All models adjusted for age (sample-mean centered), sex, study day, weekend (Friday through Sunday), and group membership (BPD vs. COM).

3. Results

In total, ISs were reported in 9.01% of random prompts (n=613) prior to drinking. Rejection was reported in an average of 5.11% of random prompts (n=354) and disagreements were reported in 5.85% of random prompts (n=389; see Table 2). Participants sometimes reported experiencing both a disagreement and a rejection in the same prompt (n=130 prompts) prior to drinking. Across the 2,176 prompts recorded *immediately prior to drinking* (or typical drinking times), ISs were reported in 9.28% of prompts (n=202), rejection in 4.50% (n=98), and disagreements in 6.57% (n=143). In total, we analyzed data from 2,293 days.

3.1. Hypothesis 1: Rejection and Disagreement Will Show Positive Associations with Alcohol Use.

3.1.1. Rejection—Participants were less likely to drink on days with greater cumulative-average pre-drinking rejection (*OR*=0.56, *95%CI:* [0.32, 0.97], p<.040; Table 3). This effect was significant even when the models adjusted for post-drink social context. However, pre-drink prompt rejection did not significantly predict a drinking day (Table 4).

3.1.2. Disagreement—Cumulative-average pre-drink disagreements were not associated with whether participants reported a drinking day. However, reporting a disagreement in the prompt immediately preceding the first drink (or average drinking time for non-drinking days) was associated with a greater likelihood of drinking that day (*OR*=1.60, 9*5%CI:* [1.02, 2.50], p=.039). The effect of pre-drink prompt disagreements was significant even when models adjusted for the effect of disagreements occurring earlier in the day and being in others' company during typical drinking times.

3.2. Hypothesis 2: BPD diagnosis strengthens the association between Rejection or Disagreement and a Drinking Day

BPD diagnosis did not moderate the cumulative effects of rejection or disagreement on the likelihood of a drinking day (Table 5). Similarly, BPD diagnosis did not moderate the effect of rejection in the prompt before drinking on the likelihood of alcohol use (Table 6). However, BPD diagnosis *did* moderate the effect of pre-drink prompt disagreements on the likelihood of drinking alcohol that day (*OR*=2.56, *95%CI:* [1.13, 5,80], p=.025; see Figure

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2). Individuals with BPD were more likely to drink than those in the COM group when they experienced a disagreement in the prompt prior to drinking. As COM was coded as the reference group, the nonsignificant simple slope (*OR*=0.93, *95%CL* [0.48, 1.81], *p*=.837), indicates that this effect was only present for individuals with BPD.[1]

4. Discussion

We examined associations between rejection, disagreements, and the likelihood of alcohol use on a given day using EMA, using both cumulative (i.e., throughout the day) effects and effects of rejection and disagreement experienced in the prompt prior to drinking. We expected that rejections and disagreements would predict a higher likelihood of drinking that day. However, only the association between disagreements endorsed in the immediately preceding prompt and alcohol use was consistent with our hypotheses. Interestingly, we only saw this effect for disagreements that were reported in the prompt immediately prior to drinking, suggesting that disagreements experienced closer to a participant's typical drinking time were more important for the likelihood of drinking that day than the accumulation of disagreements experienced throughout the day.

Contrary to our hypotheses, we found a negative association between accumulated rejection and drinking likelihood. One possibility is that individuals self-isolated after experiencing rejection, thereby limiting the opportunity to drink. However, our results showed that rejection predicted reduced likelihood of drinking even when controlling for whether participants were with others at their typical drinking times, indicating that the negative association is not explained by isolation. Second, though BPD is associated with rejection sensitivity (Staebler et al., 2011), and in contrast to our hypotheses, BPD diagnostic group did not significantly interact with rejection to predict alcohol use. Nevertheless, our finding that rejection is negatively associated with likelihood of drinking is discrepant with Laws et al. (2017) who found a positive association between rejection and drinking days when the rejection occurred by someone close to the participant. However, we note that the discrepancy between Laws et al. (2017) and our own findings appears consistent with discrepancies found laboratory studies of rejection/exclusion and alcohol use which find both positive and negative associations between rejection and alcohol use (Bacon & Engerman, 2018; Bacon et al., 2015; Rabinovitz, 2014). Future studies may seek to examine whether there are additional moderating factors that lead to a reduced likelihood of drinking to clarify these discrepancies.

In partial support of our hypothesis that BPD diagnosis would strengthen the positive association between ISs and alcohol use, we found that the positive effect of disagreements immediately prior to drinking (or typical drinking times) was strengthened by having a BPD diagnosis, such that the effect was only present for individuals with BPD. This indicates that for people with BPD, disagreements experienced more proximally to drinking initiation may be most likely to lead to alcohol consumption. This may represent an important and proximal risk factor for alcohol use in people with BPD and highlights the importance

[1]The cumulative and acute effects of the combined IS variable were not significantly related to participants' odds of drinking that day (all predictors: $p > .340$), nor were these effects moderated by BPD diagnosis (all interactions: $p > .052$; see supplement).

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of examining associations between ISs and alcohol use among individuals who experience higher degrees of emotional distress (Tragesser et al., 2007).

Our comparison of rejection and disagreement was a novel aspect of the present study and differed from previous approaches. Some previous studies on ISs and drinking used aggregated measures of interpersonal stress (Armeli et al., 2007; Todd et al., 2005). This may have masked meaningful differences between ISs by conflating their differential associations with alcohol use and could explain previous null effects. To mirror previous studies, we ran a supplemental analysis examining rejections and disagreements together as one aggregate predictor. Consistent with previous studies (e.g., Armeli et al., 2007; Todd et al., 2005), the combined IS variable was not significantly associated with alcohol use (see Supplemental Material). Taken together, our results suggest differential effects of two types of ISs that may "cancel out" when included as one aggregate predictor, given that we found a negative effect of rejection versus a positive effect of disagreement. However, given discrepant findings of rejection's association with alcohol use, future studies may seek to elaborate the conditions under which this may occur. Further, we found that rejections and disagreements may operate on different time courses, given that we found a cumulative day-level effect of rejection versus a lag moment effect of disagreement. These differences may represent important methodological considerations in examining whether ISs are related to alcohol use in daily life.

4.1. Limitations

There are several limitations of the present study. First, we only assessed ISs at random prompts and not during user-initiated drink reports or drinking follow-up assessments. Further, because drinking follow-up prompts cancelled any scheduled random prompts, we were unable to assess whether ISs *during* drinking were associated with additional drinking, and we were not able to assess the reciprocal effect that alcohol use might have on later ISs. Future EMA studies of ISs and alcohol use should consider these questions to more thoroughly characterize their associations. In addition, the influence of IS may differ depending on the outcome measure used. Our study only examined ISs' effects on the likelihood of a drinking day, but future research may also examine the influence of types of ISs on other drinking behaviors such as heavy drinking and binge drinking[2].

Second, it was not possible to determine whether participants interpreted the same interpersonal event as both a disagreement and a rejection or if the rejection and disagreement were experienced as two separate events occurring at different time points within the same sampling window (i.e., since the last prompt). Events interpreted as both rejections and disagreements may differ characteristically from events that were interpreted as just a rejection or disagreement. For example, interpreting a single event as a rejection and disagreement could be an indicator of the event's importance or severity and confer different risks for alcohol use.

[2]We ran all models with drink quantity as the dependent variable. However, none of the associations between IS variables (e.g., cumulative and acute effects of rejection and disagreement) and drink quantity were significant (all: *p*s > 0. 069).

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Third, our study assessed ISs as dichotomous outcomes and did not include a measure of the severity of the interpersonal event (Grzywacz & Almeida, 2008). Participants may have experienced rejections and disagreements that vary in intensity. For example, our measure of whether a disagreement occurred may capture a broad range of events (e.g., disagreeing about favorite sports teams versus having a disagreement with one's boss about work performance). Individuals may be more prone to drink after experiencing an IS if its contents are perceived to be more important. Conversely, more minor disagreements (e.g., disagreeing about favorite sports teams) may have fewer implications for drinking.

Fourth, our study does not examine other factors known to influence the associations between IS and alcohol use (e.g., interpersonal closeness, motives, neuroticism, and alcohol outcome expectancies) and the influence of rejection and disagreements on the likelihood of drinking may differ in their presence.

Fifth, we only examined two types of ISs: rejections and Given that we found differential associations between ISs and alcohol use based on the type of IS, examination of additional types of ISs in the future might reveal additional patterns specific to type (see discussion of Armeli et al, 2007 and Todd et al., 2005 in section 1).

Lastly, approximately half of our sample had a BPD diagnosis. We viewed this as a strength, to examine the role of clinical diagnosis as an individual-level factor influencing interpersonal stress and drinking, but it may limit generalizability to non-clinical samples or individuals with different diagnoses. As discussed, the effect of disagreement on subsequent drinking was unique to participants with BPD. In contrast, group membership did not significantly moderate the association between cumulative pre-drink rejection and alcohol use. Nevertheless, future work is needed to examine whether associations among rejections, disagreements, and alcohol use are similar in samples experiencing lower levels or different types of psychopathology.

4.2. Conclusions

Our findings indicate that rejections and disagreements may have opposite associations with alcohol use and may operate on different timescales in predicting drinking. These are important methodological considerations for studies examining the effects of interpersonal stressors on alcohol use. Additionally, our finding that participants with BPD are more likely to drink when a disagreement is experienced shortly before typical drinking times may highlight an important risk factor for alcohol use for people with BPD.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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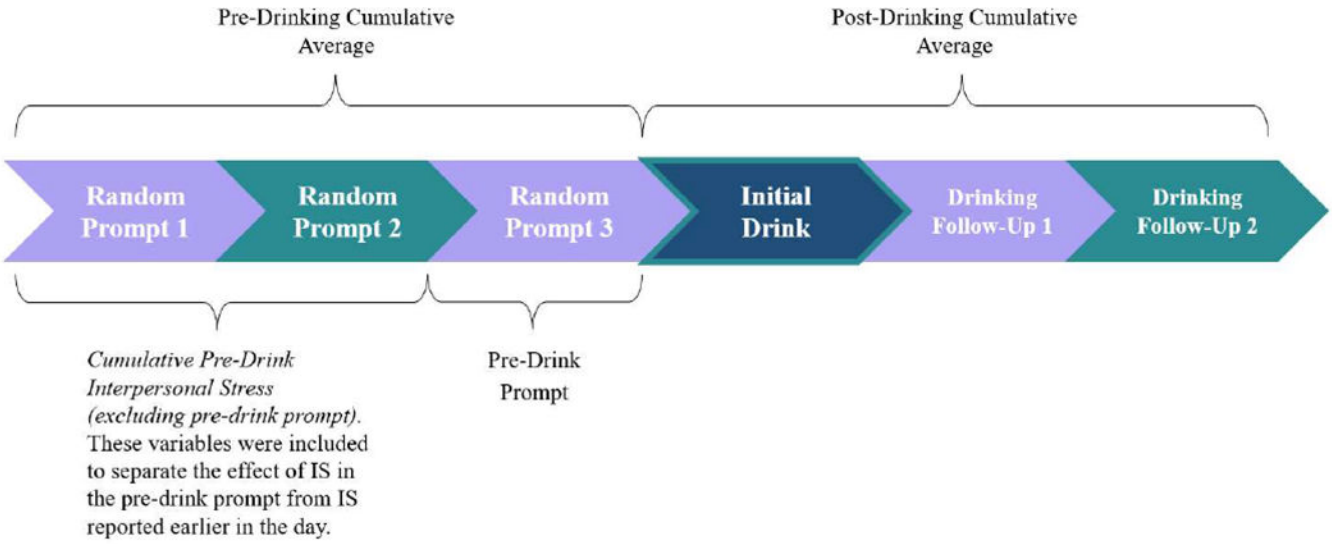

Figure 1.

Illustration of variable creation. Three variables representing each of the pre-drinking time windows below were calculated for rejections and disagreements, respectively. A post-drinking cumulative average was calculated for the social context variable (e.g., post-drink company). Note: "Post-drinking" includes prompts with a participant's first reported drink and any prompts that followed it on the same day. On non-drinking days, this included all prompts recorded at or after a participant's typical drinking time.

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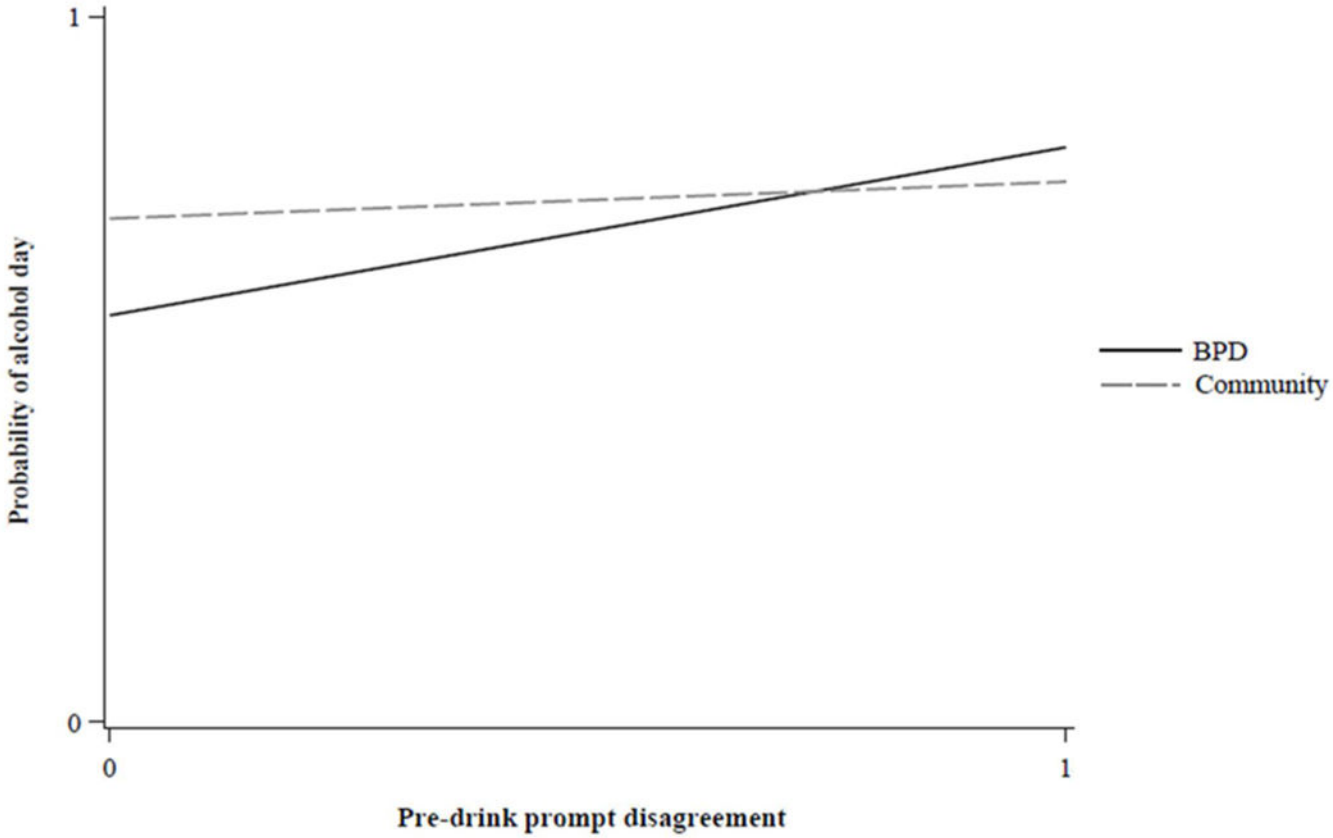

Figure 2.
Interaction of Group Membership and Pre-Drink Prompt Disagreement Predicting Alcohol Day

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Table 1.

Demographics

	N	%
Sex		
Male	25	22.12
Female	88	77.88
Group		
Community	59	52.21
BPD	54	47.79
Ethnicity		
African American	6	5.31
White	96	84.96
Hispanic	3	2.65
Asian American	3	2.65
Other	5	4.42
Religion		
Protestant	21	18.58
Catholic	15	13.27
Jewish	4	3.54
Buddhist	2	1.77
None	41	36.28
Other	30	26.55
Relationship Status[a]		
Single	76	67.86
Married	23	20.54
Divorced	8	7.14
Separated	1	0.89
Cohabitating	4	3.57
Yearly Household Income[c]		
$0 to $25,000	65	57.52
$25,001 to $50,000	23	20.35
$50,001 to $75,000	7	6.19
$75,001 to $100,000	7	6.19
Above $100,000	11	9.73
Employment Status		
Unemployed	24	21.24
Employed	89	78.76
Number of Children[b]		
0	82	73.21
1	12	10.71
2	10	8.93

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	N	%
3	5	4.46
4	2	1.79
5	1	0.89

[a]One participant did not list their relationship status in our sample.

[b]One participant did not disclose their number of children in our sample.

[c]Our sample included several college students for whom it is unclear how they interpreted the question (i.e., some may have reported their personal income despite also being supported by family).

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Table 2.

Descriptive Statistics

Variables	M (SD)	Range
Alcohol use days per person during study period	8.01 (4.49)	1 - 20
Number of drinks on drinking days	3.38 (2.2)	1 - 12
IS reported per person during study period	6.99 (7.59)	0 - 50
Felt rejected	4.09 (5.74)	0 - 39
Disagreements	4.48 (5.15)	0 - 33

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Table 3.

Cumulative average of pre-drink interpersonal stressors predicting drinking day.

	Rejection[a]			Disagreement[a]		
	OR	**SE**	***p***	**OR**	**SE**	***p***
Day-Level						
Cumulative Pre-Drink Interpersonal Stress[b]	0.56	0.16	.040	1.75	0.58	.093
Post-Drink Social Context (Y/N)[b]	2.26	0.35	<.001	2.24	0.35	<.001
Study Day	0.97	0.01	<.001	0.97	0.01	<.001
Weekend	1.49	0.15	<.001	1.48	0.15	<.001
Person-Level						
Cumulative Pre-Drink Interpersonal Stress[c]	8.41	12.82	.162	15.63	20.38	.035
Sex (ref: male)	0.66	0.13	.041	0.72	0.14	.083
Group	0.54	0.11	.003	0.54	0.10	.001
Age[c]	1.01	0.01	.313	1.01	0.01	.445

Note. N = 113.

[a]Rejection and Disagreement refer to the interpersonal stressor that was included in predictors in the left-hand column.

[b]Day-level variables were centered on person-level means, such that coefficients at this level represent deviations from the average amount of interpersonal stress and general company reported by a given person.

[c]Person-level variables were centered on sample-level means, such that coefficients at this level represent deviations from the average amount of pre-drink interpersonal stress and post-drink social context reported by the sample.

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Table 4.

Effects of pre-drink prompt interpersonal stressors predicting drinking day.

	Rejection[a]			Disagreement[a]		
	OR	**SE**	***p***	**OR**	**SE**	***p***
Momentary-Level						
Pre-Drink Prompt Interpersonal stressor	0.75	0.21	.298	1.60	0.36	.039
Day-Level						
Cumulative Pre-Drink Interpersonal Stress (excluding pre-drink prompt)[b]	0.66	0.23	.225	1.79	0.57	.067
Post-Drink Social Context (Y/N)[b]	2.37	0.39	<.001	2.38	0.39	<.001
Study Day	0.97	0.01	<.001	0.97	0.01	<.001
Weekend	1.40	0.16	.005	1.38	0.16	.006
Person-Level						
Cumulative Pre-Drink Interpersonal Stress[c]	15.20	23.96	.084	7.59	11.16	.168
Sex (ref: male)	0.62	0.13	.023	0.66	0.13	.039
Group	0.54	0.12	.005	0.57	0.11	.005
Age[c]	1.01	0.01	.322	1.01	0.01	.479

Note. N = 113.

[a]Rejection and Disagreement refer to the interpersonal stressor that was included in predictors in the left-hand column.

[b]Day-level variables were centered on person-level means, such that coefficients at this level represent deviations from the average amount of interpersonal stress reported by a given person.

[c]Person-level variables were centered on sample-level means, such that coefficients at this level represent deviations from the average amount of pre-drink interpersonal stress and post-drink social context reported by the sample.

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Table 5.

Group X cumulative average of pre-drink interpersonal stressors predicting drinking day.

	Rejection[a]			Disagreement[a]		
	OR	**SE**	***p***	**OR**	**SE**	***p***
Day-Level						
Cumulative Pre-Drink Interpersonal Stress[b]	0.65	0.51	.586	1.70	1.04	.389
Post-Drink Social Context (Y/N)[b]	2.26	0.35	<.001	2.24	0.35	<.001
Study Day	0.97	0.01	<.001	0.97	0.01	<.001
Weekend	1.49	0.15	<.001	1.48	0.15	<.001
Person-Level						
Cumulative Pre-Drink Interpersonal Stress[c]	8.45	12.89	.162	15.62	20.38	.035
Sex (ref: male)	0.66	0.13	.041	0.72	0.14	.083
Group	0.54	0.11	.003	0.54	0.10	.001
Age[c]	1.01	0.01	.314	1.01	0.01	.445
Cross-Level Interactions						
Cumulative Pre-Drink Interpersonal Stress[b] x Group	0.82	0.69	.816	1.04	0.76	.954

Note. N = 113.

[a]Rejection and Disagreement refer to the interpersonal stressor that was included in predictors in the left-hand column.

[b]Day-level variables were centered on person-level means, such that coefficients at this level represent deviations from the average amount of interpersonal stress and general company reported by a given person.

[c]Person-level variables were centered on sample-level means, such that coefficients at this level represent deviations from the average amount of pre-drink interpersonal stress and post-drink social context reported by the sample.

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Table 6.

Group X effects of pre-drink prompt interpersonal stressors predicting drinking day.

	Rejection[a]			Disagreement[a]		
	OR	**SE**	***p***	**OR**	**SE**	***p***
Momentary-Level						
Pre-Drink Prompt Interpersonal stressor	0.73	0.36	.528	0.93	0.31	.837
Day-Level						
Cumulative Pre-Drink Interpersonal Stress (excluding pre-drink prompt)[b]	0.66	0.23	.228	1.79	0.57	.066
Post-Drink Social Context (Y/N)[b]	2.37	0.39	<.001	2.38	0.39	<.001
Study Day	0.97	0.01	<.001	0.97	0.01	<.001
Weekend	1.40	0.16	.005	1.37	0.16	.007
Person-Level						
Cumulative Pre-Drink Interpersonal Stress[c]	15.13	23.96	.086	7.37	11.01	.181
Sex (ref: male)	0.62	0.13	.023	0.66	0.13	.041
Group	0.54	0.12	.005	0.54	0.11	.002
Age[c]	1.01	0.01	.322	1.01	0.01	.440
Cross-Level Interactions						
Pre-Drink Prompt Interpersonal stressor x Group	1.03	0.62	.962	2.56	1.07	.025

Note. N = 113.

[a]Rejection and Disagreement refer to the interpersonal stressor that was included in predictors in the left-hand column.

[b]Day-level variables were centered on person-level means, such that coefficients at this level represent deviations from the average amount of interpersonal stress reported by a given person.

[c]Person-level variables were centered on sample-level means, such that coefficients at this level represent deviations from the average amount of pre-drink interpersonal stress and post-drink social context reported by the sample.