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Social discomfort moderates the relationship between drinking in response to negative affect and solitary drinking in underage drinkers

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HIGHLIGHTS

- Solitary drinkers report more social discomfort, alcohol use, and alcohol problems.
- Social discomfort moderates the link from negative affect drinking to drinking alone.
- Contrary to prediction, lower social discomfort strengthens this link.
- Findings are discussed in regard to negative interpersonal interactions.

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Solitary drinking
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ABSTRACT

Objective: Research shows that solitary drinking is associated with negative reinforcement motives (i.e., relieving negative affect). An untested hypothesis proposes that this association may be especially strong for individuals who experience social discomfort. This study aimed to 1) replicate findings linking solitary drinking to social discomfort (i.e., loneliness, social anxiety, and lack of perceived social support), alcohol problems, and drinking in response to negative affect (i.e., drinking to cope motives and inability to resist alcohol during negative affect), and 2) investigate whether greater social discomfort moderates the relationship between drinking in response to negative affect and solitary drinking in underage drinkers.

Method: Current alcohol drinkers ages 18 to 20 (N = 664) recruited from a TurkPrime panel reported the percentage of time they drank solitarily and completed measures assessing social discomfort, drinking in response to negative affect, and alcohol involvement. Structural equation modeling was used to test the moderation model.

Results: Results replicated prior literature supporting the first aim. For the second aim, analyses indicated a positive association between solitary drinking and drinking in response to negative affect across all individuals, but contrary to prediction, this relationship was stronger for individuals with lower, rather than higher, social discomfort.

Conclusion: Underage drinkers with lower, rather than higher, social discomfort appear to be at greater risk for drinking alone. These findings may inform our understanding of individuals at greatest risk for drinking alone and promote new avenues for intervention.

1. Introduction

Solitary drinking in youth is associated with numerous negative psychosocial outcomes including heavier and more frequent alcohol consumption (Creswell, Chung, Clark, & Martin, 2014; Gonzalez, Collins, & Bradizza, 2009; Tucker, Ellickson, Collins, & Klein, 2006) and is predictive of young adult alcohol problems above and beyond early alcohol use and problems (Creswell et al., 2014; Tucker et al., 2006). Additionally, young solitary drinkers report more legal and behavioral problems, and experience poorer physical health and academic outcomes than social-only drinkers (Christiansen, Vik, & Jarchow, 2002; Tucker et al., 2006). Thus, youth who engage in solitary drinking seem at risk for a wide array of negative consequences, suggesting that solitary drinking measures may be a useful addition to routine screening for alcohol problems.

Because solitary drinking is associated with various problems, it is important to identify why individuals drink alone and for whom this association may be particularly relevant. Research has found that youth

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Table 1
Correlations among study variables.

Variables	Solitary	AUDIT	YAACQ	DMQ-R	DRSE	ISEL-A	ISEL-B	SIAS	UCLA	Freq	Quant	Max F	Max Q	1st Drink	Intox
Solitary	–														
AUDIT	0.30***	–													
YAACQ	0.22***	0.68***	–												
DMQ-R	0.27***	0.46***	0.53***	–											
DRSE	− 0.35***	− 0.53***	− 0.51***	− 0.51***	–										
ISEL-A[a]	− 0.11**	− 0.15***	− 0.19***	− 0.13**	0.19***	–									
ISEL-B[a]	− 0.21***	− 0.07	− 0.06	− 0.15***	0.19***	0.41***	–								
SIAS[a]	0.15***	0.10*	0.12**	0.25***	− 0.14**	− 0.11*	− 0.47***	–							
UCLA[a]	0.14**	0.12**	0.15***	0.32***	− 0.24***	− 0.33***	− 0.58***	0.60***	–						
Freq[b]	− 0.19***	− 0.55***	− 0.49***	− 0.31***	0.33***	0.04	− 0.07	0.02	− 0.00	–					
Quant[b]	− 0.12**	− 0.56***	− 0.45***	− 0.33***	0.36***	0.13**	0.01	− 0.01	− 0.02	− 0.42***	–				
Max F[b]	− 0.15***	− 0.53***	− 0.40***	− 0.27***	0.40***	0.18***	0.08	− 0.00	− 0.06	0.51***	0.54***	–			
Max Q[b]	− 0.07	− 0.49***	− 0.46***	− 0.30***	0.25***	0.01	− 0.08	0.03	0.05	0.47***	0.66***	0.34***	–		
1st Drink	− 0.11**	− 0.14***	− 0.21***	− 0.17***	0.17***	0.09*	0.05	− 0.05	− 0.14**	0.11**	0.14***	0.12**	0.21***	–	
Intox	− 0.13**	− 0.18***	− 0.22***	− 0.14**	0.15***	0.13**	0.06	− 0.06	− 0.11*	0.10*	0.15***	0.20***	0.19***	0.71***	–
Mean	25.33	8.63	6.24	2.30	29.45	11.05	11.54	30.79	48.46	5.65	7.40	7.20	5.95	14.86	15.96
SD	28.34	6.44	5.81	1.06	8.41	1.89	2.78	15.90	11.97	1.96	2.00	2.11	1.91	3.09	2.50

Note. $N = 660$.
Solitary = Percentage of drinking time spent alone; AUDIT = Alcohol Use Disorder Identification Task; YAACQ = Brief Young Adult Alcohol Consequences Questionnaire; DMQ-R = Drinking Motives Questionnaire-Revised Drinking to Cope subscale; DRSE = Drinking Refusal Self-Efficacy Emotional relief subscale; ISEL-12 = Interpersonal Support Evaluation List—A = Appraisal, B = Belonging; SIAS = Social Interaction Anxiety Scale; UCLA = UCLA Loneliness scale; Freq = Past year alcohol frequency, Quant = Past year alcohol quantity; Max F = Past year maximum drinking frequency; Max Q = Past year maximum drinking quantity; 1st drink = Age at first alcoholic drink; Intox = Age at first intoxication experience.
[a] As noted in the Discussion, the sample as a whole tended to report higher levels of loneliness and social anxiety, and lower levels of social support compared to other samples.
[b] Quantity and frequency variables were coded such that greater numbers correspond to lower frequency and fewer drinks per occasion (NIAAA, 2003). See Supplementary Material for response options and frequencies.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

may drink alone to relieve negative emotions (Creswell et al., 2014; Creswell et al., 2015; Tomlinson & Brown, 2012). For instance, solitary drinking is associated with drinking to cope motives (Cooper, 1994; Cooper, Russell, Skinner & Windle, 1992;Gonzalez et al., 2009; Gonzalez & Skewes, 2013; Williams, Vik, & Wong, 2015) and negative reinforcement expectancies for alcohol use (Tucker et al., 2006). Further, negative emotionality predicts solitary drinking in both adolescents and young adults (Christiansen et al., 2002; Creswell et al., 2015; Gonzalez et al., 2009; Tomlinson & Brown, 2012), and the inability to resist drinking while experiencing negative affect has been found to mediate the relationship between negative emotionality and solitary drinking (Creswell et al., 2015).

While negative reinforcement has been examined as a mechanism for solitary drinking, there may be individuals particularly vulnerable to this behavior. Indeed, individuals who report social discomfort like loneliness, social anxiety, and a lack of perceived social support might be especially likely to drink in response to negative affect. Partially supporting this, several studies have linked solitary drinking to social discomfort. Solitary drinking is associated with lower perceived social competence and greater loneliness in college students and young adults (Arpin, Mohr, & Brannan, 2015; Gonzalez & Skewes, 2013). In addition, social anxiety, which is robustly associated with drinking to cope motives (Blumenthal, Leen-Feldner, Frala, Badour, & Ham, 2010; Stewart, Morris, Mellings, & Komar, 2006; Thomas, Randall, & Carrigan, 2003; Windle & Windle, 2012) and problematic alcohol use (see Buckner, Heimberg, Ecker, & Vinci, 2013 for a review), is predictive of solitary drinking (Buckner & Terlecki, 2016) and solitary "pre-drinking" (i.e., drinking prior to going out; Keough, Battista, O'Connor, Sherry, & Stewart, 2016).

However, findings linking social factors to solitary drinking are somewhat inconsistent. Adolescent solitary drinkers report spending more time attending parties and dating than social-only drinkers (Tucker et al., 2006), and there were no social network size differences in solitary and social-only heavy drinking college students (Gonzalez & Skewes, 2013). Taken together, these results suggest that despite being socially active, solitary drinkers may experience more social discomfort than social-only drinkers (Gonzalez & Skewes, 2013). Prior studies have not tested whether perceived social discomfort strengthens the link between drinking in response to negative affect and solitary drinking. This test might help identify individuals more likely to engage in solitary drinking, and thus aid prevention and intervention programs aimed at targeting those most at risk.

The present study had two aims. The first was to replicate prior research indicating solitary drinking associations with greater social discomfort (i.e., higher levels of loneliness and social anxiety and lower perceived social support), greater endorsement of drinking in response to negative affect (i.e., drinking to cope motives and inability to resist alcohol during negative affect), greater consumption of alcohol (i.e., quantity and frequency), and more negative alcohol-related consequences in a sample of 664 underage drinkers (ages 18–20). The second aim was to investigate whether the relationship between drinking in response to negative affect and solitary drinking was moderated by social discomfort using structural equation modeling (SEM). We hypothesized that greater social discomfort would magnify this relationship.

2. Methods

2.1. Participants

Participants were recruited through an Amazon TurkPrime panel, which uses multiple websites to recruit interested individuals for research surveys (e.g., Amazon Mechanical Turk; see below for more details). Among 727 eligible individuals who were 18–20 years old and current alcohol drinkers residing in the United States, 703 completed at least one of the questionnaires within the survey (participants were able to skip items). Of these, 660 answered the solitary drinking question and were included in bivariate correlations in Table 1. SEM analyses included 664 participants ($M_{age} = 19.2$, $SD = 0.78$) due to the default in Mplus to estimate the model under missing data theory using all available data.

Most participants were female (87.2%), single (78.1%), and in