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Drinking Problems and Social Anxiety among Young Adults: The Roles of Drinking to Manage Negative and Positive Affect in Social Situations

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Abstract

Background: Socially anxious individuals seem to be at a high risk for alcohol-related problems because they drink to cope. Yet social anxiety is unique among the anxiety conditions in that it is characterized by lower positive affect (PA). It is unclear whether drinking to cope is related to drinking to decrease negative affect (NA) or increase PA.

Objectives: We tested whether social anxiety was related to more drinking problems via the sequential relations between affect (NA or PA), drinking to change affect (decrease NA or increase PA), and drinking quantity. We also tested whether the indirect effect of drinking to increase PA was significantly less than that of drinking to decrease NA.

Methods: Past-month drinkers with clinically elevated social anxiety ($n = 174$) and those with more normative or lower social anxiety ($n = 362$) completed an online survey.

Results: Social anxiety was indirectly related to drinking problems via the sequential effect of NA, drinking to decrease NA, and drinking quantity. Social anxiety was indirectly related to drinking problems via the sequential relations of PA and drinking quantity and of drinking to increase PA and drinking quantity. The indirect effect of drinking to increase PA did not significantly differ from drinking to decrease NA.

Conclusions/Importance: Socially anxious drinkers may drink not only to decrease NA but to increase PA in social situations. Both of these drinking motives appear to play important roles in socially anxious drinkers' experience of drinking-related problems.

Keywords

alcohol; alcohol-related problems; drinking motives; social anxiety; positive affect; negative affect

Alcohol-related impairment is often experienced by those with elevated social anxiety and social anxiety disorder (SAD; for reviews see Buckner, Heimberg, Ecker, & Vinci, 2013; Carrigan & Randall, 2003; Morris, Stewart, & Ham, 2005). Elevated social anxiety may be a

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Disclosure of interest

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risk factor for alcohol use disorders (AUD). SAD tends to onset prior to AUD among those with both SAD and AUD (Buckner, Timpano, Zvolensky, Sachs-Ericsson, & Schmidt, 2008; Randall, Johnson, et al., 2001; Randall, Thomas, & Thevos, 2001; Schneier, Martin, Liebowitz, Gorman, & Fyer, 1989). Prospectively, adolescents with SAD were five times more likely to meet criteria for alcohol dependence by age 30 (Buckner, Schmidt, et al., 2008). The relation between social anxiety and alcohol-related impairment may be unique. In the National Comorbidity Survey, SAD was associated with higher rates of AUD than most other anxiety disorders (Kessler et al., 1997) and remained related to AUD after controlling for other Axis I disorders (Buckner, Timpano, et al., 2008). SAD, but not other anxiety disorders or depression, remained significantly, prospectively related to AUD onset in multivariate analyses (Buckner, Schmidt, et al., 2008).

Thus, elucidation of factors associated with vulnerability to alcohol-related problems among socially anxious persons could have important implications for the treatment and prevention of alcohol-related problems in this high-risk group. It has been proposed that socially anxious persons may be vulnerable to drinking to not only decrease negative affect (NA), but to increase positive affect (PA; Buckner et al., 2013). This is because social anxiety is somewhat unique among the anxiety conditions in that it is characterized by both high NA and low PA (T. A. Brown, Chorpita, & Barlow, 1998; Kashdan & Collins, 2010). Thus, experiencing low PA may lead to a desire to increase PA, increasing vulnerability to drink in an attempt to increase PA. Reliance on alcohol to increase PA at the exclusion of other more adaptive coping strategies could increase drinking-related problem risk if individuals continue to drink to increase PA despite experiencing problems.

There is indirect support for this conceptualization. PA is inversely correlated with substance use, and individuals with higher NA and lower PA use substances more frequently (Wills, Sandy, Shinar, & Yaeger, 1999). Further, among participants with SAD, compared to those who received a non-alcohol control beverage, those who received alcohol reported greater increases in positive thoughts (and decreases in negative thoughts) during public speaking tasks (Abrams, Kusher, & Reinertsen, 2002). Importantly, change in positive (but not negative) thoughts mediated the relationship between beverage group and state social anxiety. Interestingly, enhancement motives (i.e., drinking to increase positive affect generally) mediated the relationship between social anxiety and alcohol problems in two studies (Buckner, Eggleston, & Schmidt, 2006; Villarosa, Madson, Zeigler-Hill, Noble, & Mohn, 2014), although other studies find social anxiety to be unrelated to enhancement motives (e.g., Blumenthal, Leen-Feldner, Frala, Badour, & Ham, 2010; Stewart, Morris, Mellings, & Komar, 2006; Terlecki & Buckner, 2015). These mixed findings suggest that the relationship between social anxiety and enhancement motivated drinking may be due to other factors. For example, it may be that socially anxious persons are vulnerable to drinking to enhance PA specifically in social situations rather than to increase PA generally. Yet no known studies have directly tested whether socially anxious persons drink to increase PA specifically in social situations and whether doing so accounts for greater drinking or related problems after accounting for drinking to decrease NA in these situations.

Social anxiety is related to drinking to cope with NA (e.g., Blumenthal et al., 2010; Buckner & Shah, 2015; Clerkin & Barnett, 2012; Lewis et al., 2008; Stewart et al., 2006; Terlecki &

Buckner, 2015). Although coping-motivated drinking mediates the relation between social anxiety and drinking-related problems (e.g., Buckner & Shah, 2015; Lewis et al., 2008), this work does not address the question of why socially anxious persons in particular are so vulnerable to alcohol-related impairment. Thus, researchers have begun to examine the role of drinking to cope specifically in situations associated with social anxiety. Based on the finding that socially anxious persons report more drinking to cope in social situations (e.g., Thomas, Randall, & Carrigan, 2003), the *Drinking to Cope with Social Anxiety Scale* (DCSAS; Buckner & Heimberg, 2010) was designed to specifically assess drinking to cope in 24 social situations found in prior research to be anxiety-provoking among those with elevated social anxiety (Liebowitz, 1987). Individuals with clinically elevated social anxiety reported more drinking to cope in social situations than individuals with more normative levels of social anxiety. Importantly, drinking to cope in these situations mediated the relationship between social anxiety and alcohol-related problems. Although an important step, the DCSAS did not assess whether participants drink to reduce NA or increase PA in these situations.

Thus, the current study set out to elucidate the role of coping-motivated drinking among socially anxious drinkers in several ways. First, we tested the hypothesis that those with greater social anxiety would report more drinking to decrease NA and to increase PA. Second, we tested the hypothesis that the relation between social anxiety and drinking problems would occur via the sequential relations of greater NA, more drinking to decrease NA, and greater drinking quantity (Figure 1). Third, we tested the hypothesis that the relation between social anxiety and drinking problems would occur via the sequential relations of lower PA, more drinking to increase PA, and greater drinking quantity (Figure 2). These hypotheses were tested among college students given that college students experience greater alcohol impairment than non-college attending peers (Blanco et al., 2008; Johnston, O'Malley, Bachman, Schulenberg, & Patrick, 2013; Knight et al., 2002; Slutske, 2005) and social anxiety often increases during the transition to college (Spokas & Heimberg, 2009). A clinical analogue sample was used to compare those with clinically elevated social anxiety with those more normative levels of social anxiety in light of accumulating data that the size of the effect of social anxiety on substance-related problems is greater at clinically elevated levels (e.g., Buckner, Heimberg, Matthews, & Silgado, 2012; Terlecki, Ecker, & Buckner, 2014).

Method

Participants and Procedures

Participants were recruited through the psychology participant pool from at a large state university for a study on college substance use. All participants completed computerized self-report measures for course credit and received information regarding on-campus and local psychological outpatient services. The university's Institutional Review Board approved the study and all participants provided informed consent prior to data collection.

Of the 1,009 students who completed the survey, 779 endorsed past-month drinking and were eligible for the current study. Of those, 3 were excluded due to questionable validity of their responses (described below). Individuals scoring above the empirically supported

clinical cut-scores (Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992) on the *Social Interaction Anxiety Scale* or the *Social Phobia Scale* (Mattick & Clarke, 1998) comprised the clinically elevated or high social anxiety group (HSA; $n = 174$) given that each of these measures appears to assess unique aspects of social anxiety and each demonstrates specificity and sensitivity in identifying individuals with probable SAD (E. J. Brown et al., 1997). In the current sample, 82.8% of individuals who met the clinical cut-score on the SIAS also met it on the SPS and 87.8% of those that met on the SPS also met on the SIAS. To facilitate the comparison of those with clinically meaningful social anxiety, participants scoring below the Heimberg et al. (1992) SIAS and SPS community sample means were selected to comprise the lower social anxiety (LSA; $n = 362$) group. This method is a conservative method to identify SAD among college students (Rodebaugh, Woods, Heimberg, Liebowitz, & Schneier, 2006). The racial/ethnic composition of the final sample of 532 (82.5% female) was 8.8% non-Hispanic African American, 0.4% Hispanic African American, 2.6% Asian American, 78.5% Non-Hispanic White, 3.7% Hispanic White, 1.1% Native American, 2.2% multiracial, and 2.6% "other". The mean age was 20.3 ($SD = 2.0$) and the majority (60.3%) were under 21 years old.

Measures

Drinking to Cope with Social Anxiety Scale-Revised (DCSAS-R). The DCSAS is a self-report measure developed to assess drinking to cope with social situations as well as avoidance of social situations in the absence of alcohol (Buckner & Heimberg, 2010). Per Thomas et al. (2003), items were modified from the *Liebowitz Social Anxiety Scale* (LSAS; Liebowitz, 1987) to assess the degree to which participants use alcohol to cope in the 24 LSAS social situations (e.g., going to a party, meeting strangers) in the last week. The original DCSAS scales demonstrated adequate internal consistency (Buckner & Heimberg, 2010). In the current study, the DCSAS was modified to assess drinking to decrease NA in each situation (DCSAS-NA) by asking participants to rate the degree to which they "Drink to feel less nervous or depressed" in each social situation. Participants were also asked to rate the degree to which they drink to increase PA in each social situation (i.e., "Drink to feel good or have more fun"; DCSAS-PA). The LSAS avoidance scale ratings were used, asking participants to "Please base your ratings on the way the situations have affected you in the last week. Fill out the following scale with the most suitable answer": 0 (*Never*) to 3 (*Usually (68–100%)*). Internal consistencies were good for DCSAS-NA ($\alpha = .89$) and DCSAS-PA ($\alpha = .86$).

The *Daily Drinking Questionnaire* (DDQ; Collins et al., 1985) assessed past-month typical drinking quantity (number of drinks consumed on typical drinking occasions). Participants rated drinking quantity on a scale from 0 drinks to more than 30 drinks. The DDQ has demonstrated good convergent validity (R. L. Collins, Parks, & Marlatt, 1985) and test-retest reliability (S. E. Collins, Carey, & Sliwinski, 2002).

Alcohol problems were assessed with the past-month version of the 23-item *Rutgers Alcohol Problems Index* (RAPI; White & Labouvie, 1989). Both the original and the past-month versions of the RAPI have demonstrated adequate psychometric properties (Buckner et al., 2006; White & Labouvie, 1989). Consistent with prior work (e.g., Morean & Corbin,

2008), endorsed items were summed to provide a total count of alcohol-related problems and internal consistency using this method was good in the current sample ($\alpha=.86$).

The *Social Phobia Scale* (SPS) and the *Social Interaction Anxiety Scale* (SIAS; Mattick & Clarke, 1998) were used to assess trait social anxiety. These measures have demonstrated good internal consistency in both community and undergraduate samples and have been shown to be specific for social anxiety relative to other forms of anxiety (i.e., trait anxiety; E. J. Brown et al., 1997). Cut scores used correctly identify SAD 82% of the time using the SIAS and 73% of the time using the SPS (Heimberg et al., 1992). Internal consistencies were excellent for the SIAS ($\alpha=.94$) and the SPS ($\alpha=.95$) in the current sample.

The *Positive and Negative Affect Scale* (PANAS; Watson, Clark, & Tellegen, 1988) is a self-report measure consisting of trait positive and negative affect subscales each comprised of 10 emotions. Participants rate the extent to which they experience each of emotions from 1 (*very slightly or not at all*) to 5 (*extremely*). In the present study, internal consistency was good for the NA subscale (PANAS-NA; $\alpha=.89$) and excellent for the PA subscale (PANAS-PA; $\alpha=.90$).

The depression subscale of the *Depression Anxiety Stress Scale* (DASS; Lovibond & Lovibond, 1995) was used to assess depression. The seven item DASS-21 depression subscale has evidenced good internal consistency reliability, convergent and discriminant validity, and criterion-related validity (Antony, Bieling, Cox, Enns, & Swinson, 1998). Internal consistency in the present study was good ($\alpha=.88$).

The *Infrequency Scale* (IS; Chapman & Chapman, 1983) was used to identify random responders who provided random or grossly invalid responses. Four questions from the IS were included. Per prior online studies (e.g., A. Cohen, Iglesias, & Minor, 2009), individuals who endorsed three or more items were excluded ($n = 3$).

Data analytic strategy

As has occurred with similar drinking variables (e.g., Buckner & Terlecki, 2016; Keough, Battista, O'Connor, Sherry, & Stewart, 2016; Keough, O'Connor, Sherry, & Stewart, 2015), inspection of the data revealed that some variables were not normally distributed (skew > 3.0; kurtosis > 10; Kline, 2005). Thus, hypotheses were tested using bootstrapping, which is robust against violations of assumptions of normality (Erceg-Hurn & Miroseovich, 2008). Specifically, a series of mediator models was conducted to examine the impact of affect and DCSAS-R as mediators of the relation between social anxiety group and criterion outcomes. Models are presented in Figures 1–2. Hayes (2013, 2018) describes this type of model as a serial multiple mediator model, in which the independent variable can affect the criterion variable through four pathways: directly and/or indirectly via affect only, via DCSAS-R scale only, and/or via both sequentially, with affect impacting drinking to decrease NA/increase PA. These analyses were conducted using PROCESS, a conditional process modeling program utilized in SPSS that utilizes an ordinary least squares-based path analytical framework to test for both direct and indirect effects (Hayes, 2013, 2018). All specific and conditional indirect effects were subjected to follow-up bootstrap analyses with 10,000 resamples from which a 95% confidence interval (CI) was estimated (Hayes, 2009;

Preacher & Hayes, 2004, 2008). Contrasts between indirect effect pathways are reported to test whether the size of the effects of the indirect effect pathways were significantly different. Although mediational models are ideally tested using prospective data, theoretically driven mediational models can be tested cross-sectionally (Hayes, 2013, 2018). Depression was included as a covariate in all models¹ given its relation with social anxiety and alcohol problems (e.g., B. F. Grant et al., 2005; B. F. Grant et al., 2004).

Results

Means, standard deviations, and relations among study variables by social anxiety group appear in Table 1. Effect size estimates are considered small (.02), medium (.05), or large (.08) per Cohen (J. Cohen, 1988). Figures 1 and 2 present relations among study variables implicated in the tests of indirect effects. Social anxiety group was significantly, positively related to NA and, as hypothesized, positively related to DCSAS-NA. DCSAS-NA was significantly, positively related to drinking quantity and to drinking problems. NA was positively related to DCSAS-NA and drinking problems but was unrelated to drinking quantity. Social anxiety group was significantly, negatively related to PA and, as hypothesized, significantly, positively related to DCSAS-PA. DCSAS-PA was significantly, positively related to drinking quantity and drinking problems.

The indirect paths between social anxiety group and drinking problems via NA-related variables are presented in Table 2. As hypothesized, social anxiety group was indirectly related to more drinking-related problems via the sequential relation of NA, DCSAS-NA, and drinking quantity. Social anxiety was also indirectly related to drinking problems via NA alone, DCSAS-NA alone, the sequential relations of NA and DCSAS-NA, and the sequential relations of DCSAS-NA and drinking quantity. The strongest effect was for the effect of DCSAS-NA alone and this indirect effect was significantly greater than the sequential effect of NA, DCSAS-NA, and drinking quantity (Table 2, contrast 2–7).

The indirect paths between social anxiety and drinking problems via PA-related variables are presented in Table 3. Contrary to hypothesis, social anxiety group was not indirectly related to more drinking-related problems via the sequential relation of PA, DCSAS-PA, and drinking quantity. Social anxiety group was also not indirectly related to drinking problems via PA alone. Rather, social anxiety group was indirectly related to drinking problems via DCSAS-PA alone, the sequential effects of PA and drinking quantity, and the sequential effects of DCSAS-PA and drinking quantity. The strongest positive effect was for the effect of DCSAS-PA alone, and this indirect effect was significantly greater than the sequential effect of PA and drinking quantity (Table 3, contrast 5–6) and DCSAS-PA and drinking quantity (Table 3, contrast 2–6).

To test whether DCSAS-PA adds unique understanding of the relation between social anxiety group and drinking problems, a third mediation model was tested with social anxiety group as the predictor, DCSAS-NA and DCSAS-PA entered simultaneously as mediators, and drinking quantity and depression as covariates. The total effect model was significant,

¹A similar pattern emerged when depression was not included as a covariate in mediation models.

$F(3, 534) = 47.90, p < .001$, accounting for 21.2% of the variance in drinking problems. The indirect effect was significant for DCSAS-NA, $b = .59, SE = .24, 95\% C.I. [.11, 1.06]$, and DCSAS-PA, $b = .33, SE = .18, 95\% C.I. [.07, .76]$. The magnitude of these indirect effects did not significantly differ from one another, $b = .26, SE = .34, 95\% C.I. [-.54, .85]$.

Discussion

As predicted, HSA participants reported drinking to decrease NA as well as to increase PA in social situations significantly more than their LSA peers, and these behaviors mediated the relation between social anxiety group and alcohol-related problems. Notably, although DCSAS-NA was significantly related to DCSAS-PA (Table 1), they share only 48% of the variance with one another, suggesting they are related yet distinct constructs. Further, when entered simultaneously, social anxiety group was indirectly related to drinking problems via both DCSAS-NA and DCSAS-PA and the magnitude of these indirect effects was not significantly different.

Regarding the role of NA-related variables, the strongest indirect effect was for the effect of DCSAS-NA alone. This is somewhat consistent with prior work finding social anxiety to be related to coping motivated drinking generally (e.g., Buckner & Shah, 2015; Lewis et al., 2008) and to drink to cope in social situations specifically (Buckner & Heimberg, 2010; Thomas et al., 2003). We extended prior work by determining that social anxiety is related to greater drinking specifically to decrease NA in social situations.

This is the first known test of the role of low PA in the relationship between social anxiety and alcohol-related problems. Regarding PA-related variables, the strongest indirect effect of the relations between social anxiety group and drinking problems was also via DCSAS (in this case, DCSAS-PA). That HSA participants reported more drinking to increase PA in social situations is somewhat consistent with work finding social anxiety to be related to enhancement motives (Buckner et al., 2006; Villarosa et al., 2014), although the size of the effect of social anxiety in those studies was small and most studies find social anxiety to be unrelated to enhancement motives (e.g., Blumenthal et al., 2010; Stewart et al., 2006; Terlecki & Buckner, 2015). Yet, the size of the effect of social anxiety on drinking to increase PA specifically in social situations was larger (in the medium range).

Interestingly, although the sequential effect of NA to DCSAS-NA did mediate the relations between social anxiety and drinking outcomes, the sequential relation of PA to DCSAS-PA did not. This may reflect that socially anxious persons are more concerned with increasing PA in social situations regardless of their trait levels of low PA, whereas low trait NA is related to more drinking to increase NA in social situations. Although the sequential effects of social anxiety, PA, and drinking quantity was related to drinking problems, this effect was significantly smaller than the sequential effects of social anxiety, PA, DCSAS-PA, and drinking quantity. This work suggests that for socially anxious persons, it may be drinking to increase PA in social situations that is the greater risk for risky drinking than the low PA in general. An important next step in this line of research will be to test whether low PA specifically in social situations is related to greater drinking to increase PA in those situations, resulting in greater drinking and drinking-related problems.

Although smaller effects, social anxiety group was also significantly related to drinking problems indirectly via the sequential effects of drinking to increase PA in social situations (or decrease NA in social situations) and heavy drinking quantity. Thus, although the extant literature suggests that social anxiety tends to be negatively related to drinking quantity (Schry & White, 2013), our findings indicate that social anxiety was related to greater drinking to increase PA/decrease NA in social situations which was related to heavier drinking, which in turn was related to more drinking problems. This finding is in line with emerging data highlighting the importance of drinking context when examining social anxiety and drinking. For instance, socially anxious persons tend to engage in more solitary drinking, more “pre-drinking”, and more drinking in situations characterized by negative affect (Buckner & Terlecki, 2016; Keough et al., 2016; Terlecki et al., 2014). Taken together, this emerging body of research indicates that it is important to consider drinking context and other individual difference variables when striving to understand social anxiety’s relation to drinking-related problems and AUD (Buckner et al., 2013).

Findings have important treatment implications. Socially anxious patients interested in AUD treatment could possibly benefit from learning more adaptive skills to help them manage both their NA and PA social situations. In fact, given that both DCSAS-NA and DCSAS-PA were related to drinking problems, clinicians may consider teaching patients in AUD treatment broadly (i.e., regardless of level of social anxiety) more adaptive ways to decrease NA as well as increase PA in social situations. Further, given that drinking to decrease NA and increase PA in social situations was related to greater drinking quantities generally as well as more problems, clinicians may consider teaching patients protective behavior strategies in these situations (e.g., arrange for alternative transportation home to avoid driving while intoxicated, strategies to slow drinking in these high-risk situations such as alternating alcoholic and nonalcoholic beverages).

Results should be interpreted in light of limitations. First, the sample was comprised of predominantly White, female undergraduates and additional work is necessary to test whether results generalize to more diverse samples of drinkers. Second, the study was cross-sectional in nature, permitting an initial test of mediation (Hayes, 2013, 2018), and prospective and experimental work will be an important next step. Third, data were retrospective self-report and future work utilizing multi-method (e.g., assessing motives during in vivo drinking) and/or multi-informant (e.g., collateral reports of drinking behaviors) approaches is necessary. Fourth, future work testing whether results generalize to treatment-seeking samples will be an important next step. Fifth, PA and NA were assessed broadly and additional research is necessary to test whether low PA and higher NA specifically in social situations plays a role in these relations. Similarly, drinking quantity and related problems were assessed broadly and future work testing whether drinking to manage affect results in greater context specific drinking and related problems will be an important next step. Sixth, the current study only examined drinking to cope during social situations. However, social anxiety is also related to more solitary drinking (Buckner & Terlecki, 2016; Keough et al., 2016) and an important next step will be to test whether they do so to decrease NA and/or increases PA in those contexts. Seventh, future work is necessary to further test the psychometric properties of the DCSAS-R including validity of the two subscales; to illustrate, the current study did not test whether DCSAS subscales

correlate with drinking motives questionnaires (e.g., Cooper, 1994; V. V. Grant, Stewart, O'Connor, Blackwell, & Conrod, 2007) and future work testing the incremental validity of DCSAS over the coping and enhancement motives scales could be useful. An important next step will also be to test the utility of the DCSAS-R in light of findings that drinking to manage depression (also characterized by low PA) mediated the relation between social avoidance and drinking problems (J.-L. Collins, Sherry, McKee, Thompson, & Stewart, 2019; J.-L. Collins, Thompson, Sherry, Glowacka, & Stewart, 2018)

Despite these limitations, this study provides novel data indicating that social anxiety is related to risky drinking both to decrease NA and increase PA in social situations, which was related to more drinking-related problems. Identification of drinking to increase PA as well as to decrease NA in social situations as putative risk factors for alcohol-related problems among this group can inform prevention and treatment efforts.

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Figure 1. Sequential mediation model of the indirect effects of social anxiety group status (0 = SAD-, 1 = SAD+) on drinking problems via negative affect (NA), drinking to decrease NA, and drinking quantity. Depression was included as a covariate.* $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 2. Sequential mediation model of the indirect effects of social anxiety group status (0 = SAD-, 1 = SAD+) on drinking problems via positive affect (PA), drinking to increase PA, and drinking quantity. Depression was included as a covariate. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 1

Means and Standard Deviations of Study Variables by Social Anxiety Group

Variables	HSA (<i>n</i> = 174)		LSA (<i>n</i> = 362)		<i>F</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Negative affect	24.78	6.69	16.28	5.07	358.11	<.001	1.75
Positive affect	30.18	6.26	35.29	8.21	73.05	<.001	.79
Drinking to decrease negative affect	8.20	7.78	2.56	3.95	123.86	<.001	1.02
Drinking to increase positive affect	10.26	7.67	6.68	6.20	33.50	<.001	.53
Heaviest drinking quantity	4.02	4.17	5.29	4.84	12.01	0.001	.32
Alcohol-related problems	4.71	4.62	3.30	3.75	14.17	<.001	.35
Depression	11.2	9.29	2.73	4.01	282.48	<.001	1.55

Table 2

Bootstrap estimates of the standard errors and 95% confidence intervals (CI) for the indirect effects of negative affect (NA)-related variables on drinking-related problems

Path #	Path description	<i>b</i>	<i>SE</i>	95% CI	
				Lower	Upper
1	Social anxiety->NA->drinking problems	.439	.187	.093	.834
2	social anxiety-> drinking to decrease NA-> drinking problems	.763	.208	.405	1.223
3	Social anxiety->drinking quantity->drinking problems	-.592	.171	-.948	-.276
4	Social anxiety->NA-> drinking to decrease NA-> drinking problems	.194	.072	.066	.348
5	Social anxiety->NA->drinking quantity->drinking problems	.043	.080	-.112	.207
6	Social anxiety-> drinking to decrease NA-> drinking quantity->drinking problems	.119	.049	.040	.231
7	Social anxiety->NA-> drinking to decrease NA-> drinking quantity->drinking problems	.030	.015	.007	.066
Indirect effect contrasts					
1-2		-.324	.263	-.845	.184
1-3		1.031	.267	.524	1.572
1-4		.246	.198	-.132	.655
1-5		.396	.204	.013	.814
1-6		.320	.190	-.038	.713
1-7		.409	.187	.063	.802
2-3		1.355	.277	.853	1.957
2-4		.569	.220	.193	1.068
2-5		.720	.222	.334	1.205
2-6		.644	.192	.311	1.067
2-7		.733	.211	.367	1.201
3-4		-.786	.186	-1.169	-.433
3-5		-.635	.219	-1.094	-.231
3-6		-.712	.188	-1.113	-.364
3-7		-.622	.174	-.982	-.301
4-5		.151	.108	-.059	.369
4-6		.074	.092	-.111	.257
4-7		.163	.064	.053	.302
5-6		-.076	.096	-.266	.111
5-7		.013	.082	-.148	.179
6-7		.089	.044	.022	.193

Note. Bolded values are statistically significant (i.e., 95% CI does not include zero).

Table 3

Bootstrap estimates of the standard errors and 95% confidence intervals (CI) for the indirect effects of positive affect (PA)-related variables on drinking-related problems

Path #	Path description	<i>b</i>	<i>SE</i>	95% CI	
				Lower	Upper
1	Social anxiety->PA->drinking problems	.137	.095	-.025	.352
2	social anxiety-> drinking to decrease PA-> drinking problems	.452	.204	.089	.890
3	Social anxiety->drinking quantity-> drinking problems	-.531	.139	-.816	-.271
4	Social anxiety-> PA -> drinking to decrease PA -> drinking problems	-.022	.024	-.070	.028
5	Social anxiety-> PA ->drinking quantity->drinking problems	.074	.036	.017	.158
6	Social anxiety-> drinking to decrease PA -> drinking quantity-> drinking problems	.102	.055	.017	.229
7	Social anxiety-> PA -> drinking to decrease PA -> drinking quantity-> drinking problems	-.005	.006	-.017	.006
Indirect effect contrasts					
1-2		-.315	.229	-.786	.106
1-3		.668	.152	.382	.979
1-4		.159	.099	-.009	.379
1-5		.063	.105	-.131	.287
1-6		.035	.117	-.188	.274
1-7		.142	.095	-.020	.357
2-3		.983	.254	.526	1.514
2-4		.474	.208	.105	.923
2-5		.378	.211	.002	.829
2-6		.350	.163	.070	.713
2-7		.457	.205	.093	.895
3-4		-.508	.141	-.796	-.243
3-5		-.605	.152	-.925	-.325
3-6		-.632	.160	-.976	-.344
3-7		-.526	.138	-.811	-.266
4-5		-.097	.045	-.194	-.018
4-6		-.124	.061	-.262	-.023
4-7		-.017	.019	-.055	.022
5-6		-.027	.067	-.169	.095
5-7		.079	.037	.019	.165
6-7		.107	.056	.019	.237

Note. Bolded values are statistically significant (i.e., 95% CI does not include zero).