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## Context-Specific Drinking and Social Anxiety: The Roles of Anticipatory Anxiety and Post-Event Processing

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### Abstract

Individuals with clinically elevated social anxiety are especially vulnerable to alcohol-related problems, despite not drinking more than those with less anxiety. It is therefore important to identify contexts in which socially anxious persons drink more to inform intervention efforts. This study tested whether social anxiety was related to greater drinking before, during, or after a social event and whether such drinking was related to the psychosocial factors anticipatory anxiety or post-event processing (PEP; review of the social event). Among past-month drinkers, those with clinically elevated or higher social anxiety (HSA;  $n = 212$ ) reported more anticipatory anxiety, more pre-event drinking to manage anxiety, and PEP than those with normative or lower social anxiety (LSA;  $n = 365$ ). There was a significant indirect effect of social anxiety on pre-drinking via anticipatory anxiety. Social anxiety was related to more drinking during the event indirectly via the serial effects of anticipatory anxiety and pre-drinking. Unexpectedly, PEP did not mediate or moderate the relation between social anxiety and post-event drinking. In sum, anticipatory anxiety was related to more drinking before, during, and after a social event and HSA drinkers were especially vulnerable to drinking more to manage this anxiety, which increased drinking before and during the event. This effect was specific to anticipatory anxiety and not evident for another social anxiety-specific risk factor, PEP. Thus, anticipatory anxiety may be an important therapeutic target for drinkers generally and may be especially important among HSA drinkers.

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Conflict of interest

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## Keywords

drinking contexts; drinking; alcohol; social anxiety; anticipatory anxiety; post-event processing

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## 1. Introduction

Individuals with clinically elevated social anxiety (social anxiety disorder [SAD]) are especially vulnerable to alcohol-related problems including alcohol use disorders (AUD). To illustrate, 48.2% of individuals with a lifetime diagnosis of SAD also met criteria for a lifetime diagnosis of an AUD<sup>1</sup>. There is some evidence of specificity in the relationship between social anxiety and alcohol with AUD associated with higher comorbid rates of SAD than most other anxiety disorders<sup>2</sup> and adolescents with SAD were four times more likely to have alcohol dependence in early adulthood, even after controlling for theoretically relevant variables (e.g., gender, depression;<sup>3</sup>). Further, elevated social anxiety in non-clinical samples has also been associated with greater alcohol-related problems (e.g.,<sup>4,5-7</sup>). The co-occurrence of social anxiety and alcohol-related problems is associated with greater impairment than either condition alone, including more severe SAD and AUD symptoms, greater psychiatric comorbidity, more health problems, lower occupational status, and greater deficits in interpersonal functioning<sup>1,8-11</sup>. Identification of factors related to drinking problems among socially anxious individuals could have important prevention and treatment implications. Yet, despite the high rates of alcohol-related problems among those with elevated social anxiety, social anxiety does not tend to be related to heavier drinking<sup>12</sup>. Discrepancies such as these have led to a call for the examination of social anxiety-specific factors that may play a role in risky drinking<sup>13,14</sup>.

Given that drinking often occurs in social contexts<sup>15</sup>, recent research has examined contextual factors that may predict heavier drinking among socially anxious persons. This emerging body of work indicates that although social anxiety does not tend to be related to heavier drinking in general<sup>12</sup> and in fact is related to less drinking in social situations<sup>16</sup>, it is associated with more drinking in specific contexts – when alone<sup>16</sup>, prior to social events<sup>17</sup>, and in situations characterized by negative emotions and those considered personal/intimate<sup>18</sup>. These patterns of drinking at least partially account for the relationship between social anxiety and drinking problems<sup>16-18</sup>. However, no known studies have identified cognitive vulnerability factors that play a role in heavier drinking in high-risk drinking situations among socially anxious people. Identification of these variables could inform treatment and prevention efforts.

### 1.1 Drinking in Anticipation of Social Events

Social anxiety is related to more drinking prior to a social event in self-report<sup>17</sup> and experimental work<sup>19</sup>, presumably as a maladaptive attempt to manage anticipatory anxiety. Anticipatory anxiety includes catastrophic predictions of one's social performance and negative self-imagery, which may result in plans to avoid specific situations<sup>20</sup>. Anticipatory anxiety is theorized to be an integral maintenance factor for pathological social anxiety<sup>21</sup>. Compared with those with lower levels, individuals with high social anxiety endorsed greater anticipatory anxiety, including detailed review of what might happen in a feared

situation, recall of past perceived failures rather than successes, thoughts about how they might look to others, preparation for what they thought might happen, and thoughts about ways in which to avoid or escape the situation<sup>20</sup>. Further, prior to a speech task, engaging in anticipatory anxiety (compared to a distraction task) was associated with sustained elevated anticipatory anxiety and higher peak anxiety during the speech task regardless of level of social anxiety<sup>20</sup>. As such, the tendency to engage in maladaptive anticipatory cognitions may increase anxiety during social events and this may be especially so for those with elevated trait social anxiety. However, no known studies have tested whether anticipatory anxiety increases the likelihood of drinking prior to social events (i.e., pre-drinking) and whether this is especially the case for those with elevated social anxiety. Furthermore, although pre-drinking is related to more drinking problems<sup>17</sup>, whether it is related to (a) greater drinking during and/or after an anticipated social event and (b) whether this is especially true for those with greater trait social anxiety has not been tested.

## 1.2 Post-event processing

Post-event processing (PEP; i.e., detailed review of one's performance) following social events is another cognitive risk factor that may play an important role in drinking behaviors among socially anxious persons. Although most people engage in regular self-focused thought that can help evaluate one's behavior and attain one's goals, people with elevated social anxiety have recall biases toward negative information related to their social performance<sup>22</sup>. Individuals with elevated social anxiety engage in more PEP (for review see<sup>23</sup>) and PEP among socially anxious individuals does not appear to be a function of depressive rumination (e.g.,<sup>24</sup>). In fact, socially anxious people engage in more negative PEP than those with elevated trait anxiety, depression, or anxiety sensitivity<sup>25,26</sup>. PEP is theorized to maintain and even exacerbate social anxiety by perpetuating negative impressions of oneself, negative memories of one's performance during social events, and negative assumptions of future social events<sup>23</sup>. Thus, socially anxious people may drink after a social event in an attempt to manage the negative affect brought on by PEP following such events. In partial support of this hypothesis, individuals with social anxiety self-administered more alcohol following a social task than a neutral task<sup>27</sup>. Although greater alcohol use during a social event is related to more PEP following the event<sup>28</sup>, it is unknown whether this is especially the case for individuals with elevated social anxiety.

These relations are important to determine given that PEP is theorized to maintain or even exacerbate anticipatory anxiety<sup>23,29</sup>. Individuals with social anxiety may engage in PEP before an upcoming social situation (i.e., analyzing their past inadequate performances when anticipating their performance in the future event) and may worry that their poor past performance will be indicative of their upcoming social performance<sup>30</sup>. Socially anxious individuals randomly assigned to engage in a PEP-Imagery task reported greater anxiety when anticipating making a subsequent speech than socially anxious individuals in the control conditions<sup>30</sup>. If anticipatory anxiety is related to greater pre-drinking and to greater drinking during social events, it is important to determine the impact of drinking on PEP given its putative reciprocal relationship with anticipatory anxiety.

### 1.3 The Current Study

The current study aimed to further understanding of the relations between social anxiety and context-specific drinking in several ways. First, we sought to identify cognitive factors related to pre-drinking<sup>17</sup> by testing whether those with clinically elevated social anxiety would report more pre-drinking indirectly via anticipatory anxiety. Second, to understand the impact of pre-drinking on subsequent drinking behaviors, we tested whether social anxiety was related to drinking and/or subjective intoxication during a social event indirectly via anticipatory anxiety and/or pre-drinking. Third, we sought to replicate the finding<sup>28</sup> that event-specific PEP would be related to more event-specific drinking. Fourth, we extended prior work on PEP and drinking in two ways by testing: (i) whether event-specific drinking would interact with social anxiety to predict event-specific PEP such that those with clinically elevated social anxiety who drank more during a social event would engage in more event-specific PEP; and (ii) whether event-specific PEP would be related to more post-event drinking, especially among those with elevated social anxiety. We tested these relations among those with clinically elevated social anxiety (compared to those with more normative levels) given that the size of the effect of social anxiety on substance use problems is greater at clinically elevated levels of social anxiety than normative levels of social anxiety<sup>31,32</sup>.

## 2. Method

### 2.1 Participants and Procedures

Participants were recruited through the psychology participant pool at a large state university in the southern United States for a study on college substance use (e.g.,<sup>33</sup>). The university's Institutional Review Board approved the study and all participants provided informed consent prior to data collection. For psychology course research credit, participants completed computerized self-report measures using an online data collection website ([surveymonkey.com](https://www.surveymonkey.com)). Participants also received referrals to psychological outpatient services upon completing the survey.

Of the 1148 who completed the survey, 832 endorsed past-month drinking and were eligible for the current study. Individuals who scored above the empirically supported clinical cutoff-scores<sup>34</sup> on the *Social Interaction Anxiety Scale* (SIAS;  $\geq 34$ ) or the *Social Phobia Scale* (SPS;  $\geq 24$ )<sup>35</sup> were included as the clinically elevated or high social anxiety group (HSA;  $n = 212$ ). Participants who scored below the community sample means<sup>34</sup> on the SIAS and SPS were included the lower social anxiety (LSA;  $n = 365$ ) group.

The racial/ethnic composition of the final sample of 577 (82.8% female) was 8.8% African American/Black, 3.1% Asian American, 80.6% Non-Hispanic/Latinx White, 2.9% Hispanic/Latinx White, 0.7% Native American, 2.6% multiracial, and 1.2% "other". The mean age was 20.07 ( $SD = 1.95$ , range = 18–38), with the majority (64.6%) of participants under the age of 21. Regarding drinking behaviors, 14.0% of participants endorsed drinking once in the past month, 36.7% drinking 2–3 times per month, 34.8% endorsed drinking 1–2 times per week, 12.1% endorsed drinking 3–4 times per week, and 1.6% endorsed drinking nearly every day. The mean number of standard drinks typically consumed in a week was 7.22 ( $SD = 7.64$ ).

The majority (77%) endorsed drinking during a social event in the past week, 45% endorsed pre-event drinking, and 15% endorsed post-event drinking.

## 2.2 Measures

The *Social Phobia Scale* (SPS) and the *Social Interaction Anxiety Scale* (SIAS)<sup>35</sup> were used to assess trait social anxiety. The SPS and the SIAS each consist of 20 items that assess social anxiety from 0 (*not at all*) to 4 (*extremely*). The SPS and SIAS are companion measures designed to assess various aspects of social anxiety (i.e., fear of scrutiny in performance situations and anxiety related to social interaction in groups). These measures have demonstrated good internal consistency in both community and undergraduate samples and have shown to be specific for social anxiety compared with other forms of anxiety (i.e., trait anxiety)<sup>36</sup>. The SIAS ( $\alpha=.95$ ) and the SPS ( $\alpha=.95$ ) demonstrated excellent internal consistencies in the current sample.

The *Social Event Questionnaire* (SEQ)<sup>28</sup> was used to assess consumption of alcohol during a specific social event in the past week. The SEQ assessed the type of social event the participant attended, whether they consumed alcohol during the event, and their subjective intoxication during the event from 0 (*not at all drunk*) to 7 (*blacked out*) and with 4 (*drunk*). There is a significant positive association between subjective intoxication and experiencing a blackout<sup>37</sup>. Participants were asked to estimate how many alcoholic drinks they consumed and over how many hours. For the current study, we also assessed how many drinks participants consumed after the event and over how many hours. As in prior work<sup>38</sup>, we calculated number of drinks per hour by dividing drinks consumed during and after the social event/number hours.

The *Post-event Processing Questionnaire-Revised* (PEPQ-R)<sup>39</sup> is a 14-item self-report measure that was used to assess post-event processing since the social event assessed by the SEQ. Responses on each item range from 0 to 100. The PEPQ-R has demonstrated good internal consistency and construct validity<sup>39,40</sup>. In the current sample, the PEPQ-R demonstrated good internal consistency ( $\alpha=.84$ ).

The *Anticipatory Social Behaviours Questionnaire* (ASBQ)<sup>20</sup> is a 12-item self-report measure of the degree to which one experiences anticipatory anxiety from 0 (*never*) to 3 (*always*). For the current study, instructions were modified to ask participants to rate these experiences concerning the social event referenced in the SEQ. Internal consistency for this version was excellent for the ASBQ in the current sample ( $\alpha=.94$ ). An item was added to assess pre-event drinking (drinking alcohol to prepare for the event) from 0 (*never*) to 3 (*always*).

The *Daily Drinking Questionnaire* (DDQ)<sup>41</sup> assessed past-month heavy drinking quantity. Participants rated the number of drinks they consumed on the occasion they drank the most in the past month from 0 to more than 30 drinks. The DDQ has demonstrated good convergent validity<sup>41</sup> and test-retest reliability<sup>42</sup>.

The *Rutgers Alcohol Problems Index* (RAPI)<sup>43</sup> 23-tem version was used to assess past-month alcohol-related problems. The current version of the RAPI has demonstrated adequate

psychometric properties<sup>43</sup>. A total count of alcohol-related problems was calculated through the sum of all endorsed items, which is consistent with prior work<sup>44</sup>. Internal consistency in the current sample was good ( $\alpha=.86$ ).

The *Inventory of Depression and Anxiety Symptoms (IDAS)*<sup>45</sup> is a 64-item self-report measure of the degree to which one has experienced symptoms in the past two weeks from 1 (*not at all*) to 5 (*extremely*). The depression subscale (20 items; possible range 20–100) was used to assess depression in the current study. The IDAS has strong psychometric properties, including internal consistency, test-retest reliability, and convergent and discriminant validity<sup>45</sup>. Internal consistency was excellent for the depression subscale ( $\alpha=.92$ ) in the current sample.

### 2.3 Data analytic strategy

To examine both direct and indirect effects, analyses were conducted using PROCESS, a conditional process modeling program utilized in SPSS that utilizes an ordinary least squares-based path analytical framework<sup>46,47</sup>. All specific and conditional indirect effects were subjected to follow-up bootstrap analyses with 10,000 resamples in which a 95% confidence interval (CI) was estimated<sup>48</sup>. Even though mediational models should ideally be tested using prospective data, theoretically driven mediational models can be tested cross-sectionally<sup>46,49</sup>. In all models, depression and age were included as covariates given that the HSA group reported more depression and were more likely to be female than the LSA group (Table 1). Moderation analyses were also conducted using PROCESS to test for main and interaction effects<sup>49</sup>.

## 3. Results

### 3.1 Sample Characteristics

The most common social event settings were at a bar (33.4%), party (22.2%), dinner party (14.5%), organized event (13.1%), other (e.g., fishing trip, football game; 11.7%), and concert (5.0%). Participants most commonly attended events with friends (69.2%), family (11.9%), others (e.g., roommate; 3.4%), or coworkers (2.2%). Means, standard deviations, and differences between those with high vs normative social anxiety appear in Table 1. HSA participants were less likely to go to a bar than LSA participants but did not differ on attending events with friends. The HSA group reported more anticipatory anxiety, pre-event drinking, PEP, and drinking problems. The groups did not differ in terms of event-specific drinking, event-specific subjective intoxication, post-event drinking, post-event subjective intoxication, or past-month heavy drinking.

### 3.2 Relations among Study Variables

Means, standard deviations, and bivariate correlations among study variables appear in Table 2. Anticipatory anxiety was significantly positively related to pre-event drinking, post-event processing, past-month drinking problems, and depression. Pre-event drinking was positively related to number of drinks per hour during the event, PEP, post-event drinking, post-event subjective intoxication, past-month heavy drinking, drinking problems, and depression. PEP was positively related to subjective intoxication during and after the event,

drinking problems, and depression. Drinking during the event was also related to more post-event drinking, more heavy drinking, and more drinking problems.

### 3.3 Anticipatory Anxiety

The overall model testing the effect of social anxiety group on pre-drinking via anticipatory anxiety (with depression and gender as covariates) was significant,  $F(3, 573) = 101.58, p < .0001, R^2 = .35$ . Social anxiety group remained significantly related to pre-drinking after controlling for depression and gender,  $b = 0.28, SE = 0.10, p = .005$ . In the full model, anticipatory anxiety remained significantly related to pre-drinking,  $b = 0.02, SE = 0.01, p = .0001$ , but social anxiety group,  $b = 0.14, SE = 0.10, p = .155$ , gender,  $b = -0.02, SE = 0.10, p = .791$ , and depression,  $b = 0.00, SE = 0.00, p = .490$ , did not. There was a significant indirect effect of social anxiety group on pre-drinking via anticipatory anxiety,  $b = 0.13, SE = 0.04, 95\% CI [.06, .22]$ .

To test whether social anxiety group was related to more drinking during the social event indirectly via these pre-event variables, a serial multiple mediator model was conducted, in which the independent variable can affect the dependent variable through four pathways: directly and/or indirectly via anticipatory anxiety only, via pre-drinking only, and/or via both sequentially, with anticipatory anxiety affecting pre-drinking<sup>49</sup>. Figure 1 illustrates the pathways among predictors and drinks per hour during the event. The full model including all predictors significantly predicted drinking during the event,  $F(5, 571) = 13.05, p < .0001, R^2 = .10$ . Social anxiety group was related to more drinking during the event indirectly via the serial effects of anticipatory anxiety and pre-drinking,  $b = 0.05, SE = 0.02, 95\% CI [.02, .08]$ , but not via anticipatory anxiety,  $b = -0.04, SE = 0.03, 95\% CI [-.11, .02]$ , or pre-drinking,  $b = 0.05, SE = 0.04, 95\% CI [-.02, .13]$ , independently.

To test whether social anxiety group was related to greater subjective intoxication during the social event indirectly via pre-event variables, a second serial multiple mediator model was conducted. Figure 2 illustrates the pathways among predictors and subjective intoxication during the event. The full model including all predictors significantly predicted subjective intoxication during the event,  $F(5, 571) = 32.02, p < .0001, R^2 = .22$ . Social anxiety group was related to more subjective intoxication indirectly via the serial effects of anticipatory anxiety and pre-drinking,  $b = 0.09, SE = 0.03, 95\% CI [.04, .15]$ , but not via anticipatory anxiety,  $b = 0.04, SE = 0.05, 95\% CI [-.05, .14]$ , or pre-drinking,  $b = 0.10, SE = 0.07, 95\% CI [-.05, .25]$ , independently.

### 3.4 PEP

Given that PEP was unrelated to post-drinking (Table 1), the mediational role of PEP in the relationship between social anxiety group and post-event drinking could not be tested. Thus, we tested whether PEP interacted with social anxiety group such that HSA individuals who engaged in more PEP would show more post-event drinking; this interaction (with included depression and gender as covariates) was not significant,  $b = 0.00, SE = 0.00, p = .635$ . Further, after accounting for variance attributable to depression and gender, social anxiety group did not significantly interact with event drinks,  $b = -0.76, SE = .95, p = .427$ , or subjective intoxication,  $b = 0.51, SE = .88, p = .561$ , to predict PEP.

## 5. Discussion

The current study extends prior work by identifying social event-specific cognitive vulnerability factors that may increase risk for heavier drinking among socially anxious people, a group at particular risk for alcohol-related problems (for review see<sup>14</sup>). Although prior work has examined factors related to drinking among individuals with elevated social anxiety, such as experiencing a same-day embarrassing event<sup>50</sup>, limited research elucidates factors that impact drinking before, during, or after social events. Our results support prior work that social anxiety is related to more pre-drinking<sup>17</sup> by determining that social anxiety is related to more pre-drinking to prepare for an upcoming social event. We also extended prior work by determining that social anxiety is indirectly related to more pre-drinking to prepare via anticipatory anxiety. Further, although the direct effect of social anxiety on drinks per hour and subjective intoxication during the event was not significant, social anxiety was indirectly related to more drinking during the event and greater event-specific subjective intoxication via the sequential relations of anticipatory anxiety and pre-drinking to prepare for the event. In other words, socially anxious persons were more likely to experience anticipatory anxiety which was related to greater pre-drinking. This sequence was related to more drinking during the social event and greater subjective intoxication during the event.

These findings add to a growing body of work indicating that although socially anxious persons do not drink more in general<sup>12</sup>, they do drink more in specific, high-risk situations. Specifically, these high-risk situations now include pre-drinking to prepare for a social event, general pre-drinking<sup>17</sup>, when alone<sup>16</sup>, and in situations characterized by negative emotions and those considered personal/ intimate<sup>18</sup>. Notably, social anxiety was not related to more post-event drinking and was only related to more drinking during the event indirectly via anticipatory anxiety and pre-drinking to manage that anxiety. Identification of specific high-risk drinking situations helps aid in understanding of the consistent finding that social anxiety is related to more drinking-related problems<sup>14</sup> given that these patterns of drinking at least partially account for the relationship between social anxiety and drinking problems<sup>16-18</sup>. In fact, in the current study, drinking problems were positively related to drinking to prepare for social events and anticipatory anxiety.

Unexpectedly, PEP was unrelated to post-event drinking, which may reflect that anticipatory anxiety, not PEP, plays an important role in drinking among HSA drinkers. However, lack of effect of PEP on post-event drinking may be due to failure to assess PEP directly following the event – rather our assessment of PEP was a general assessment that did not specify a timeframe; thus, participants may have engaged in PEP for several days after the event which may not have had an impact on drinking immediately after the social event, but may have impacted drinking behaviors in the longer-term. An important next step will be to test whether PEP directly following the event is related to post-event drinking as well as whether PEP that occurs in the days to weeks following a social event impact drinking behaviors on those days. It is notable that PEP is related to anticipatory anxiety for future social events<sup>30</sup>, which played a role in the relation between social anxiety and event drinking in the current study. In fact, anticipatory anxiety and PEP were significantly correlated in the current study. It is also notable that PEP was related to drinking problems in the current study and an



important next step will be to determine the temporal sequencing of this relation to determine whether PEP plays a role in the development to drinking problems or whether experiencing drinking problems increases PEP via embarrassment of problem-related behaviors.

Findings have implications for prevention and treatment. Both anticipatory anxiety and PEP are malleable and may be important targets for interventions geared toward decreasing risky drinking and/or social anxiety. To illustrate, individual cognitive therapy and group cognitive behavioral therapy for SAD have resulted in decreases in anticipatory anxiety<sup>51</sup> and individual cognitive therapy<sup>51</sup>, virtual reality exposure treatment<sup>51,52</sup>, and exposure-based group treatment for SAD<sup>52</sup> resulted in reductions in PEP. Given that anticipatory anxiety and PEP were both related to more drinking and drinking-related problems in the current study, regardless of level of social anxiety, clinicians may consider targeting PEP and anticipatory anxiety using cognitive behavioral techniques.

Findings of the current study should be considered in light of limitations that can inform future work in this area. First, the sample was comprised of undergraduates and future work is necessary to determine if results generalize to other age/educational groups as well as to treatment-seeking individuals. Second, the sample was predominantly female. Although social anxiety tends to be related to more drinking problems among women<sup>53</sup>, an important next step will be to test for gender differences and/or whether results generalize to samples with more male participants. Similarly, the sample was predominantly White. Given that drinking-related behaviors can vary as a function of race (e.g.,<sup>54</sup>), an important next step will be to test whether results generalize to individuals from other racial/ethnic backgrounds. Fourth, data were cross-sectional self-report thereby permitting an initial test of proposed mediational relations<sup>49</sup>. However, the use of such data precludes our ability to test causation and future work would benefit from multi-method (e.g., longitudinal data collection, breathalyzer samples during pre-drinking and event drinking, ecological momentary assessment of drinking situations, alcohol administration studies to study drinking behavior in a controlled laboratory setting) and/or multi-informant (e.g., collateral reports of drinking behaviors in real-life situations) designs. Fifth, several of the event-specific drinking variables were created for the current study and were rated on different scales (0/never-3/always vs. # of drinks consumed); future work testing other psychometric properties of these scales and/or development of standardized measurements of event-specific drinking will be an important step. Sixth, the measure of pre-event drinking did not assess quantity consumed and future work testing whether social anxiety is related to greater pre-event drinking quantity is necessary. Seventh, the SEQ assesses subjective intoxication with “blacked out” as the highest level of subjective intoxication, yet blackout evaluations may depend upon one’s prior experience<sup>55</sup>. Thus, future work assessing subjective intoxication using other anchor descriptors (e.g., “extremely intoxicate”) may be useful.

Despite these limitations, this study serves as the first known identification of event-specific cognitive vulnerability factors that were related to event-specific drinking among all participants, and were especially relevant to those with HSA, a group at particular risk for drinking-related problems<sup>14</sup> and poorer alcohol-related treatment outcomes<sup>56</sup>.

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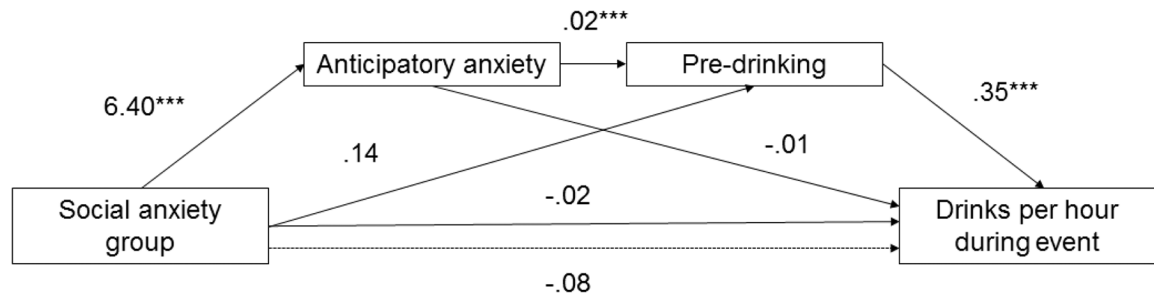
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### Highlights

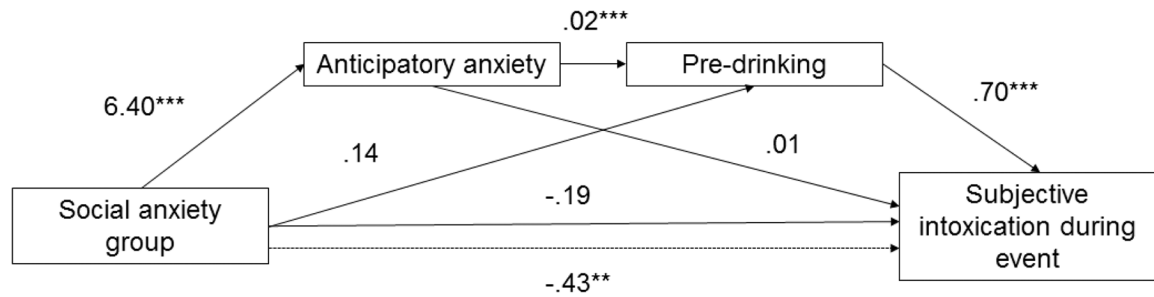
- Social anxiety is related to alcohol-related problems, despite less drinking
- Social anxiety is related to more context-specific drinking
- Social anxiety was related to pre-drinking via anticipatory anxiety
- Social anxiety was related to event drinking via anticipatory anxiety and pre-drinking



**Figure 1.**

A serial mediation model testing the direct and indirect (via the serial effects of anticipatory anxiety then pre-drinking quantity) effects of social anxiety group and drinking during a social event.

*Note:* paths to pre-drinking control for shared variance between social anxiety group and anticipatory anxiety; paths to drinks per hour control for shared variance among all predictors. Depression and gender were included as covariates. \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure 2.**

A serial mediation model testing the direct and indirect (via the serial effects of anticipatory anxiety then pre-drinking quantity) effects of social anxiety group and subjective intoxication during a social event.

*Note:* paths to pre-drinking control for shared variance between social anxiety group and anticipatory anxiety; paths to subjective intoxication control for shared variance among all predictors. Depression and gender were included as covariates. \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Table 1**

Means, standard deviations, and relations among study variables by social anxiety group

	HSA (n=212)		LSA (n=365)		F or $\chi^2$	d or Cramer's V
	M or %	SD	M or %	SD		
Go to bar (%)	23.60		40.30		16.61**	0.17
Attending events with friends (%)	67.50		73.40		2.33	0.06
Anticipatory anxiety	16.74	9.31	6.76	6.98	213.12**	1.21
Pre-event drinking to prepare for event	0.93	1.06	0.62	0.85	14.95**	0.32
Number of drinks per hour during the event	0.96	1.71	0.98	1.00	0.02	0.01
Subjective level of intoxication during event	2.36	1.43	2.56	1.41	2.56	0.14
Post-event processing	378.92	251.82	230.19	180.65	67.53**	0.68
Post-event drinking	0.18	0.56	0.20	0.70	0.08	0.03
Post-event subjective intoxication	1.98	1.44	2.07	1.38	0.62	0.06
Past-month heavy drinking	6.56	3.93	7.20	4.44	3.02	0.15
Alcohol-related problems	3.98	4.74	2.35	2.85	26.54**	0.42
Depression	51.58	13.52	35.70	9.62	269.23**	1.42
Age	20.03	2.17	20.10	1.81	0.18	0.05
Gender (% female)	87.3%		80.3%		4.61*	0.09

Note. HSA = higher or clinically elevated social anxiety; LSA = lower social anxiety.

\*  $p < .05$ ,

\*\*  $p < .01$

Table 2

Means, standard deviations, and bivariate correlations among study variables (N=577)

	1	2	3	4	5	6	7	8	9	10	Min.	Max	M	SD
1. Anticipatory anxiety											0.00	36.00	10.42	9.26
2. Pre-event drinking	.22**										0.00	3.00	0.73	0.94
3. Number of drinks per hour during the event	.02	.25**									0.00	22.50	0.97	1.31
4. Subjective level of intoxication (event)	.06	.45**	.42**								1.00	7.00	2.49	1.42
5. Post-event processing	.50**	.24**	.00	.17**							0.00	1120.00	284.84	221.37
6. Post-event drinking	.00	.12**	.28**	.17**	.01						0.00	10.00	0.19	0.65
7. Post-event subjective intoxication	.10*	.37**	.34**	.74**	.14**	.35**					1.00	7.00	2.04	1.40
8. Past-month heavy drinking	.04	.26**	.38**	.39**	.05	.20**	.37**				1.00	31.00	6.97	4.27
9. Alcohol-related problems	.24**	.31**	.27**	.26**	.26**	.15**	.28**	.26**			0.00	23.00	2.95	3.74
1. Depression	.52**	.11**	.02	-.04	.34**	-.04	-.03	-.01	.25**		21.00	92.00	41.53	13.57

\*\*  
 $p < .01$