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Alcohol stress-response dampening in social situations

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Drinking to cope with social anxiety is positively associated with greater alcohol-related consequences and symptoms of alcohol use disorders (AUDs; e.g., Carrigan, Ham, Thomas, & Randall, 2008; Thomas, Randall, & Carrigan, 2003), making this pattern of alcohol use an important public health concern. Social anxiety disorder (SAD; also referred to as social phobia), a condition characterized by an excessive fear of social and/or performance situations and subsequent negative evaluation (APA, 2000), is the fourth most common psychiatric disorder (lifetime prevalence = 12.1%; Kessler et al., 2005) and is highly comorbid with AUDs. According to epidemiological research, 48% of those with lifetime SAD also had a lifetime diagnosis of an AUD (Grant et al., 2005). Social anxiety, at both clinical and subclinical levels, appears to be a unique risk factor for subsequent AUDs (e.g., Buccheri et al., 2008; Crum & Pratt, 2001).

According to the Stress-Response Dampering (SRD; Sher & Levenson, 1982; Sher, 1987; see Morris, Stewart, & Ham, 2005) model, individuals with social anxiety disorder develop an AUD after repeatedly experiencing a reduction in the stress response from drinking to reduce anxiety in social situations. Results from laboratory-based studies examining the SRD effects in social situations have been mixed; however, a significant limitation of these studies is that the social stressor was presented only a public speaking-related task (e.g., Abrams, Kusnierz, & Reinertsen, 2002; Abrams, Kusnierz, Medina, & Voight, 2001; Hirme et al., 1999). The limited research available suggests socially anxious individuals are much more likely to drink to cope with social anxiety in social interaction contexts rather than in performance situations (Thomas et al., 2003). No study has examined how alcohol affects stress in interaction- and performance-based social stress manipulations. Thus, the present study tests the SRD model by exploring alcohol’s effects on social anxiety before and during two commonly feared social situations (i.e., public speaking and a conversation with an unfamiliar person) using behavioral analogue assessment. The study represents an initial investigation of alcohol’s effects on state social anxiety across contexts among a sample of social drinking undergraduates. It is hypothesized that participants in the alcohol consumption condition will experience less anxiety prior to and during the conversation than those in the placebo or control conditions. Prior to and during the speech condition, it is expected that those in the placebo condition will report greater anxiety than in alcohol or control conditions, due to concerns about alcohol impairing performance in the absence of alcohol’s physiological effects.

### Method
Participants were 33 undergraduate student volunteers (24% women; mean age = 22.56 SD = 2.1) attending the University of Arkansas. Approximately 82% of participants self-identified as Hispanic, 8% as Asian or American, and 9% as Black or African American. Eligible participants were social drinkers ages 21 or older with recent alcohol consumption at the level administered in the study (target Blood Alcohol Concentration [BAC] = 0.08 mg%). Exclusion criteria included history of a medical condition, psychiatric conditions, or medication use for which alcohol consumption is contraindicated. Participants were randomly assigned to one of three beverage conditions (see Table 1): placebo (BAC = 0 mg%; n = 9, placebo (n = 12), or control (n = 12). The Brief Michigan Alcohol Screen (SIAS) and Social Phobia Scale (SPS) are companion self-report instruments that assess both interpersonal and performance aspects of social anxiety, respectively (Mattick & Clarke, 1988).

#### Procedure
Upon determining eligibility based on a medical screening interview conducted by trained doctoral clinical psychology students, participants completed a questionnaire battery including measures of social anxiety and drinking behaviors. Next, participants consumed three sessions (based on sex and weight; of MacDonald, Stewart, Hudson, Ryno, & Loughlin, 2001) of the randomly assigned beverage in a bar-laboratory after providing a baseline alcohol breathalyser rating. After an absorption period, participants engaged in the two behavioral analogue assessment task conditions (described below) in counterbalanced order. SUDS were obtained at the beginning of a 5-min anticipation period (Anticipation 1), immediately before (Anticipation 2), and during (During) each task. Upon completing the tasks, participants were debriefed. Participants in the alcohol condition remained in the laboratory for detoxification until BAC was < 0.04 mg%.

#### Analogue Assessment
The behavioral analogue assessment is a common method to assess social anxiety in treatment research settings (e.g., Norton & Hope, 2001). For each condition, the participant was informed of the task condition, given instructions, and left alone for five “preparation” minutes to induce anticipation. In between conditions, participants completed a 10-minute neutral task. In the conversation condition, participants were instructed to initiate and maintain a conversation with an individual they would be meeting for the first time. The conversation was trained to act in a neutral manner but reserved manner. In the speech condition, the participant was instructed to give a speech on a topic of their choosing for four minutes. The audience members (two confederates) were not allowed to ask or answer questions during the speech and were trained to react in a neutral manner.

### Results
The current study tested alcohol’s SRD effects in anticipation of and during two commonly feared social contexts. Consistent with the hypotheses, participants who had consumed alcohol had the lowest SRD in anticipation of the conversation with an unfamiliar individual (both Anticipation SRD measures). Consistent with the expectation that those in the placebo condition would experience greater increases in anxiety across each condition time points, the results indicate that the placebo group reported more anxiety than alcohol or control groups immediately prior to beginning the speech (but findings were consistent with SRD effects five minutes prior to the speech). Contrary to expectations, participants reported similar increases in anxiety from baseline during the conversation and the speech, regardless of condition. It is possible that social anxiety individuals may use alcohol as a “crutch” to approach new people or enter social gatherings. Though participants did not provide information about why or why not they experienced an increase in SUDS, it may be the case that participants in the alcohol condition became increasingly more anxious due to concerns about slurring words, forgetting what they wanted to say, or otherwise appearing intoxicated. It is possible that while some socially anxious individuals may use alcohol prior to a performance situation to reduce anticipatory anxiety, the ultimate effect of an increase in anxiety (perhaps due to concerns about the negative evaluations of others) may prevent most socially anxious individuals from using alcohol before social performance situations (e.g., Thomas et al., 2003).

As the SRD for both behavioral analogue task conditions was measured halfway through (i.e., 2 minutes) the task, it is possible that the participants (particularly those in the placebo and non-alcoholic control conditions) experience some level of habituation to anxiety by this point time. Consistent with exposure-based therapies for SAD, when faced with an anxiety-provoking social situation, social anxiety tends to decrease to a peak and then desists (Ott & Ohara, 2001). It has been acknowledged that alcohol and other anxiolytic substances interfere with the efficacy of exposures, which could explain the different patterns observed for the alcohol condition in comparison to placebo and control condition.

These preliminary findings suggest that SRD effects of alcohol might be more relevant to social interaction situations than public speaking situations. Though the current study cell sizes were small, the medium-to-large effect sizes indicate that the findings are likely to reach statistical significance with a larger sample. In addition, the current findings imply that alcohol’s effects on anticipatory anxiety might play an important role in developing and maintaining drinking behavior amongst socially anxious individuals. By providing relief from anticipatory anxiety, the socially anxious individual may use alcohol as a technique to approach new people or enter new social gatherings. Future research with a sample of individuals with social anxiety disorder is warranted. Further, it is recommended that studies include physiological measure of anxiety responding throughout the task, an “after” measurement point to determine if anxiety increases to increase the alcohol condition, and consideration of participants’ cognitions about alcohol’s effects.

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**Alcohol Stress-Response Dampening in Social Situations**

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**Figure 1.** Alcohol Beverage Condition for the Conversation Task.

**Figure 2.** SUDS by Beverage Condition for the Speech Task.

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**Table 1.** Demographic Summary by Condition (N = 33).

<table>
<thead>
<tr>
<th>Alcohol (BAC = 0 mg%)</th>
<th>Placebo (BAC = 0 mg%)</th>
<th>Control (BAC = 0 mg%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>22 (22.2%)</td>
<td>3 (25.0%)</td>
</tr>
<tr>
<td>Men</td>
<td>7 (77.8%)</td>
<td>7 (75.0%)</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White (non-Hispanic)</td>
<td>8 (88.9%)</td>
<td>10 (76.9%)</td>
</tr>
<tr>
<td>Black (non-Hispanic)</td>
<td>0 (0.0%)</td>
<td>1 (7.7%)</td>
</tr>
<tr>
<td>Asian</td>
<td>0 (0.0%)</td>
<td>1 (7.7%)</td>
</tr>
</tbody>
</table>

**Post**

Presented at the 55th annual Guze Symposium on Alcoholism, St. Louis, MO, February 19, 2009. For more information, please contact Lindsay Ham (Hlam@uark.edu).