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The Relationship Between Drinking to Cope and Comorbid Depression & Social Anxiety

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Social anxiety and depression are pervasive in the United States. According to the Anxiety & Depression Association of America (2012), 13 million Americans suffer from Social Anxiety Disorder (SAD), with many more experiencing less extreme forms of social phobia. Likewise, they report that depression in its most severe clinical form, Major Depressive Disorder (MDD), affects approximately 3-5 % of the U.S. population, and more than 17 % of people may face a Major Depressive Episode in their lifetime.

Both disorders severely impact an individual's life. Persons with SAD experience an overwhelming fear of interacting with strangers; socially anxious individuals fear that they will behave embarrassingly in unfamiliar social situations and are particularly concerned with others noticing their anxiety (APA, 2004). Thus, the National Institute of Mental Health (2012) indicates that socially anxious persons have a more difficult time initiating and maintaining friendships and meeting new people, and lack overall confidence in their social abilities. A diagnosis of MDD is dependent upon the occurrence of Major Depressive Episodes. During these periods, an individual's mood is significantly lowered, and the person either self-reports or exhibits feelings of emptiness, hopelessness, insignificance, and general disinterest. Physiological symptoms may also be present. Individuals might suffer through debilitating lethargy or extremely irregular sleep patterns, or experience significant weight fluctuations (APA, 2004). Depression is linked to a plethora of issues and has been positively correlated with suicidal ideation—an individual's contemplation of, or attempted suicide—in numerous studies (Chan, Maniam, & Shamsul, 2011). Anxiety disorders are often comorbid with mood disorders, and SAD has an especially high prevalence of comorbidity with MDD. In such cases, SAD usually precedes the development of depression (Stein et al., 2001; Yoon & Joormann, 2012). The problems associated with these disorders are plentiful, and there is evidence that they are exacerbated when mixed with the abuse of alcohol.

Research has shown that "alcohol problems" are correlated with both social anxiety and depression (Gonzalez, Reynolds, & Skewes, 2011; Terlecki, Buckner, Larimer, & Copeland, 2012). Alcohol problems do not result simply from the amount of alcohol an individual consumes, and they include issues such as short-term memory loss during drinking episodes, physical injuries, dangerous sexual experiences, driving while intoxicated, and violent behavior (Buscemi et al. 2010; Iwamoto, Takamatsu, Castellanos, 2012). These problems are particularly salient in the college student population, where social anxiety is especially troublesome (Schry, Roberson-Nay, & White, 2012), and levels of depression and alcohol use are alarming (Gonzalez, Reynolds, & Skewes, 2011; Denhardt & Murphy, 2011; Norberg, Norton, & Olivier, 2009). Recently, researchers have been specifically interested in discovering why these two disorders hold such a consistent relationship with alcohol problems, given that neither accurately predicts the actual amount one drinks. This indicates that other factors play a role in the relationship between the disorders and alcohol (Buckner & Heimberg, 2010; Gonzalez et al., 2011). Research has shown that one such factor may be one's use of "drinking to cope."

Drinking to cope has been shown to affect the relationships between social anxiety and alcohol problems, as well as between depression and alcohol problems (Buckner & Heimberg, 2010; Gonzalez et al., 2011). There are disparate definitions of drinking to cope when applying the phrase to one disorder or the other, and this may account for the dearth of research focused upon the relationship between drinking to cope and comorbid depression and social anxiety. In

their study of the relationship between drinking to cope and social anxiety, Buckner and Heimberg (2010) define the phenomenon as a means to deal with a "fear of being evaluated by others accompanied by social avoidance or enduring social situations with distress" (p. 641). Essentially, socially anxious individuals may use alcohol to benefit their social performance. Results showed that high social anxiety was significantly positively correlated with alcohol problems and with the amount that an individual reported drinking to cope.

Regarding this behavior's interaction with depression, Gonzalez and colleagues (2011) refer to drinking to cope as an individual's attempt to "…regulate, escape, or avoid negative affect" (p. 304). Their results revealed that depression was positively correlated with alcohol problems and with drinking to cope, and that alcohol problems showed a strong positive relationship to drinking to cope. They also found support for their hypothesis that drinking to cope partially mediated the relationship between alcohol problems and depression. In a previous study, Gonzalez and colleagues (2009) showed that suicidal ideation maintained a significant positive relationship with both depression levels and drinking to cope, and further, drinking to cope "completely statistically" (p. 449) mediated the relationship between suicidal ideation and alcohol problems. Both the positive relationship found between drinking to cope, depression, and suicidal tendencies, as well as the mediating role of drinking to cope, show the costly toll the behavior can have.

While both social anxiety and depression correlate positively with drinking to cope and with subsequent alcohol problems, little research has been performed on the relationship between comorbid social anxiety and depression and drinking to cope. As previously noted, the two disorders often occur simultaneously (Yoon & Jormann, 2012). Further, research has shown that individuals with comorbid SAD and MDD have a worse prognosis than persons with singular forms of depression (Stein et al., 2001). In 2001, researchers at the University of California, San Diego, analyzed statistics from a longitudinal study conducted in Munich, Germany, that had gathered information regarding mental disorders from a large sample of youth, ages 14-24. The UCSD researchers posited that SAD would in fact predict the "onset and severity" of future depression over a two year span (Stein et al., 2001, p. 251). Their findings were revealing. Socially anxious individuals were nearly twice as likely to develop depression as individuals without preexisting psychopathology. Further, persons with comorbid SAD and MDD at the "baseline" measurement reported significantly more "depressive symptoms," a significantly higher level of suicidal ideation, and more attempts on their life at a two year follow-up than individuals with depression alone (2001, p. 255). Given drinking to cope's potential involvement in depressed individuals' suicidal ideation, as well as socially anxious individuals' proneness to the behavior, their findings justify an investigation into the relationship between drinking to cope and comorbid social anxiety and depression.

This study sought to establish such a relationship. For my primary hypothesis, I posited that individuals who evidence cormorbid social anxiety and depression would score higher on drinking to cope measures than socially anxious individuals without comorbid depression, depressed individuals without comorbid social anxiety, or individuals with neither depression nor social anxiety. Further, based on research that has shown college-aged students to be particularly prone to alcohol problems related to depression and social anxiety, and subsequently to drinking to cope (Buckner & Heimberg, 2010; Gonzalez, Reynolds & Skewes, 2011), I hypothesized that

young adults (ages 18-25) would score higher on drinking to cope measures than adults (ages 26 and above).

Method

Participants

Participants were sampled online through the Guilford Buzz, a daily newsletter that appears in every student's inbox, and in person at two data collection sessions. Ultimately, 206 undergraduates at Guilford College in Greensboro, NC, participated in the study. Forty-two participants were omitted from the final data set for not providing sufficient responses to the surveys, and one was omitted for not meeting the study's age requirement. The remaining 163 participants were 124 (76 %) females, 37 (23 %) males, and two participants who did not report their sex. Participants ranged in age from 18 to 60, with a mean age of 24.7. Thirteen freshmen participated, 16 sophomores, 54 juniors, and 79 seniors. One hundred and eleven (68 %) were traditional, full-time students, while 51 (32 %) were continuing education students.

Materials

Social Anxiety & Depression: Two measures were used to determine the severity of participants' depressive and socially anxious symptoms. The Beck's Depression Inventory-II (BDI-II), a measure that has demonstrated "high test-retest reliability, criterion, and convergent validity" (Gonzalez, Reynolds, & Skewes, 2011, p. 306), was used to gauge depression. Beck's measure asks participants to rate how intensely they feel a certain depressive symptom (e.g., 1 = "I do not feel sad," 4 = "I am so sad and unhappy that I can't stand it") at the present moment. The measure includes 21 items, so the lowest possible total score for the BDI-II is 21 and the highest possible total score is 84. The Social Interaction Anxiety Scale (SIAS), a specific measure of social anxiety that has shown good "internal consistency" (Terlecki et al., 2012), was used to determine the severity of an individual's social anxiety. The SIAS includes 20 first person statements about social situations (e.g., "I am at ease meeting people at parties," "I have difficulty talking to attractive persons of the opposite sex") that participants respond to using an interval scale (1 = not at all, 5 = extremely). The lowest possible total score on the SIAS is 20, and the highest possible total score is 100. In the present study, participants were labeled "high depression" and "high social anxiety" if they scored in the upper third of the sample on the BDI-II, or in the upper third of the sample for the SIAS, respectively.

Drinking to Cope: Two separate drinking to cope measures were used to discern the amount an individual drinks to cope with social anxiety and depression. First, the Drinking Motives Questionnaire—Revised Coping Motives (DMQ-R) subscale assesses the amount an individual drinks to cope with negative affect associated with depression, and has shown "good convergent and concurrent validity" (Gonzalez et al., 2011, p. 306). Participants using the DMQ-R rate how often they drink for specific motives (e.g., "Because it helps you to enjoy a party," "To cheer up when you're in a bad mood"), and responses are coded on an interval scale (1 = never, 5 = always). The lowest possible total score for the DMQ-R subscale is five, and the highest possible score is 25. Second, the Drinking to Cope (DTC) questionnaire introduced by Thomas, Randall, and Carrigan (2003), a measure with established "discriminant validity" (p.

1939), was used to determine the frequency and extent to which an individual drinks to cope with anxiety. The present study looked at three of the DTC's subscales which assess whether people drink to cope with anxiety before and/or during social situations, and if they avoid social situations where alcohol will be unavailable. First, individuals are asked whether or not they ever drink to cope before or during social situations. If respondents answer "yes," they are then asked how often they drink to cope before and during social situations, how many drinks are needed to feel comfortable, and how often they avoid social situations where alcohol is unavailable. After these initial questions, participants are then "asked about drinking to cope in specific social interaction and performance situations" (Thomas, Randall, & Carrigan, 2003, p. 1939). Participants respond with either "before," "during," or "never" to indicate if they have ever drank to cope with each of the situations (i.e., "Talking to people in authority," "Giving a party").

Procedure

Online Surveys: A message was submitted to the Guilford Buzz asking students if they had consumed an alcoholic beverage in the last six months and, if so, if they would participate in a survey. Prospective participants were taken to an informed consent page through which they were given a brief overview of the study and reassured that they could discontinue their participation at any time. After providing informed consent, participants were asked certain demographic questions, including their sex, age, class standing, and enrollment type (traditional or adult education).

Participants then completed the BDI-II and the SIAS, followed by the two measures of drinking to cope: Thomas, Randall, and Carrigan's (2003) Drinking to Cope questionnaire and the DMQ-R (Gonzalez, et al. 2011). After the completion of the four measures, participants were brought to a full debriefing page and provided with my contact information and the contact information for the professor who was supervising the project. The debriefing page also listed the telephone number for the National Suicide Prevention Lifeline and the National Hopeline Network.

In Person Surveys: Potential participants were taken to a separate room (a student and teacher's lounge) that was away from the rest of the data collection session. This was intended to help ensure the participant's anonymity and limit any potential social pressure confounds. After signing an informed consent sheet, each participant was given a packet containing a sheet requesting the aforementioned demographic information, followed by the four measures. Participants were granted as much time as needed to complete the survey. After completion, each measure and the informed consent sheets were placed directly into separate manila folders. Each participant was then given a sheet of paper that included the same full debriefing as the online participants. Most of the students participating in the data collection sessions received extra credit in courses they were taking.

Results

Scores on the Beck's Depression Inventory-II ranged from 21-59 and were slightly positively skewed (*M* = 29.16, *SD* = 7.29, *Skew* = 1.81[1]). Scores on the Social Interaction Anxiety Scale ranged from 20-94 and were normally distributed (*M* = 40.70, *SD* = 13.39, *Skew* = .91). Participants were split into three groups: the "comorbid" group (*n* = 34) consisted of participants who scored in the upper third of the sample on both measures; the "singular" group (*n* = 48) of participants who scored in the upper third of the sample on one measure but not on the other measure; and the "control" group (*n* = 77) of participants who scored below the upper third on both measures. It should be noted that these cut-off points were chosen to allow for sufficient numbers in each of the three groups; if I were to have categorized participants based upon established norms that suggest clinical levels of depression or social anxiety (Sprinkle et al., 2002; Rodebaugh et al., 2006), I would not have had enough participants in either the singular or the comorbid group to run effective analyses. Independent samples *t*-tests revealed no significant difference between men's and women's scores on either measure.

Scores on the DTC Questionnaire revealed that 101 (62 %) individuals reported drinking to cope during social situations. These participants reported drinking to cope with social anxiety during social situations an average of 47 % of the time (*SD* = 3.01, *Skew* = .29) when alcohol is available. Eighty-two (50 %) participants reported drinking to cope *before* social situations and reported doing so an average of 33 % of the time (*SD* = 2.03, *Skew* = .84) when alcohol is available. Both sets of scores were normally distributed. In the sample, DMQ-R subscale scores ranged from 5-24 and were slightly positively skewed (*M* = 9.45, *SD* = 4.15, *Skew* = 1.15). It should be noted that gender was looked at for possible correlations and as a potential predictor variable for drinking to cope, but given the shortage of males in the sample (n = 76), the results were too small to be meaningful.

Pearson correlation coefficients were calculated to examine the relationships between depression and social anxiety, depression and drinking to cope, and social anxiety and drinking to cope (see Table 1). First, BDI-II scores had a strong positive correlation with SIAS scores, $r = .56$, $p = <.001$. Second, BDI-II scores had a strong positive correlation with scores on the DMQ-R, $r = .25$, $p = .002$. The BDI-II also correlated significantly with one of the three subscales of the DTC: the higher respondents scored on the BDI-II, the more likely they were to report that they avoid social situations where alcohol is unavailable, $r = .29$, $p = .003$. No significant relationship was found between depression and the other two subscales of the DTC, drinking to cope with anxiety before or during social situations where alcohol is available.

[1] Skewness statistics were calculated using SPSS (IBM, 2012). A skewness statistic of 0 signifies a perfectly normal distribution; "a skewness statistic between 1 and -1 meets the criteria for normality", and "a skewness statistic between 2 and -2 suggests some skewness, but is still within the acceptable distribution range" (Lawrence, 2011, p. 45).

	1	2	3	4	5	6
1. BDI-II	1.0					
2. SIAS	.56***	1.0				
3. DMQ-R subscale	.25**	.08	1.0			
DTC Questionnaire:						
4. Drinking to cope with anxiety during social situations	.17	.24*	.52***	1.0		
5. Drinking to cope with anxiety before a social situation	-.02	-.02	.35***	.42***	1.0	
6. Avoiding social situations where alcohol is unavailable	.29**	.22*	.43***	.32**	.31**	1.0

*p = <.05. **p = <.01. ***p = <.001.

Table 1. Correlations among study variables.

Conversely, SIAS scores did not correlate significantly with the DMQ-R (r = .08) but did correlate significantly with two of the three subscales of the DTC: Those who scored high on the SIAS were more likely to report that they drink to cope with anxiety *during* social situations where alcohol is available, (r = .24, p = .02), and they are more likely to avoid social situations where alcohol is unavailable (r = .22, p < .05); there was no significant relationship between scores on the SIAS and reported amounts of drinking to cope *before* social situations.

Multiple analyses of variance were conducted. First, a one-way ANOVA was conducted to examine the mean DTC and DMQ-R scores of the comorbid, singular, and control groups. There was a significant difference in reported amounts of drinking to cope with anxiety during social situations where alcohol is available (1 = 10 % of the time, 10 = 100 % of the time; F [2, 97] = 3.95, $p = \eta^2$ = .07), with the comorbids scoring significantly higher (M = 6.35, SD = 3.15) on this subscale than the participants who scored in the upper third on one measure but not on the other measure ("singulars") (M = 4.23, SD = 2.94); the comorbids also scored higher than the participants who scored below the upper third on both measures ("controls") (M = 4.34, SD = 2.82). There was no significant difference between the singular and control groups (see Table 2). There was also no significant difference between group scores on the DMQ-R, nor on the reported amounts of drinking to cope before social situations.

A one-way ANOVA also revealed a significant difference between the percentage of time participants reported avoiding a social situation if alcohol was unavailable (1 = 10 % of the time, 10 = 100 % of the time) for the same three groups, F (2, 98) = 4.33, p = .02, η^2 = .081. The comorbid group (M = 2.2, SD = .834) reported avoiding social situations where alcohol is unavailable significantly more than the singular group (M = 1.74, SD = .815) and the control group (M = 1.62, SD = .667). There was no significant difference between mean scores for the singular and control groups (see Table 2).

	Control (n = 77)	Singular (n = 48)	Comorbid (n = 34)	F	df	p
Drinking to cope with anxiety during social situations	4.34[a]	4.23[b]	6.35[ab]	3.95	2	.02
Avoiding social situations where alcohol is unavailable	1.62[a]	1.74[b]	2.20[ab]	4.33	2	.01
Suicidal ideation	1.02[ac]	1.21[bc]	1.56[abc]	19.84	2	<.001

[a]difference between control and comorbid groups, $p < .05$, using LSD; [b]difference between singular and comorbid groups, $p < .05$, using LSD; [c]difference between control and singular groups, using LSD.

Table 2. Mean scores and ANOVAS, drinking to cope for participants who reported high levels of social and depression (comorbid group), participants who reported high levels of one disorder but not the other (singular group), and participants who did not report high levels of either (control group).

Further, a one-way ANOVA was used to compare the scores on the single item on the BDI-II that assesses suicidal ideation. There was a significant difference among the groups, F (2, 156) = 19.94, p = >.001, η^2= .20. The comorbid group scored the highest (M = 1.56, SD = 1.61), significantly higher than either of the other two groups; the singular group (M = 1.21, SD = .4.60) scored significantly higher than the control group (M = 1.03, SD = 1.61). These results are included in Table 2.

Age was significantly related to certain variables. First, a Pearson's correlation coefficient revealed that age was significantly negatively correlated with drinking to cope with anxiety before social situations (r = -.27, p = .01) and with the DMQ-R (r = -.17, p = .04) yet was not significantly related to BDI-II and SIAS scores. Further, an independent samples t-test revealed significant differences between "young adults" (ages 18-25, n = 115) and "adults" (ages 26 and over, n = 46). Young adults (M = 3.56, SD = 2.03) reported drinking to cope before social situations significantly more often than adults (M = 1.55, SD = 1.04; t [80] = 5.113, p < .001, r_{pb}^2 = .114), and young adults (M = 9.90, SD = 4.37) also scored significantly higher on the DMQ-R than adults (M = 8.43, SD = 3.37; t [158] = 2.28, p = .02, r_{pb}^2 = .025). Unsurprisingly, there was no significant difference between group scores on the SIAS or on the BDI-II.

Discussion

As far as the researcher can tell, this study was one of the first to look at the relationship between comorbid depression and social anxiety and drinking to cope. Several of the study's findings support previous research. In line with research that has shown a high prevalence of comorbidity between depression and social anxiety, scores on the BDI-II and the SIAS were positively correlated (Yoon & Joormann, 2012). Also, supporting the findings of Gonzalez et al. (2009), participant scores on the BDI-II were positively correlated with scores on the DMQ-R subscale, while SIAS scores were positively correlated with scores on two of the DTC questionnaire's subscales, which match certain findings of Thomas, Randall, and Carrigan

(2003). Further, the comorbid group scored significantly higher on the BDI-II's suicidal ideation item than individuals in the singular and control groups, which might reflect Stein et al.'s (2001) statistical analysis that found individuals with depression and social anxiety to exhibit more extreme levels of suicidal ideation than individuals with depression alone. However, the validity of gauging suicidal ideation with a single item is admittedly questionable, and future studies should utilize a more comprehensive assessment technique to assess suicidal ideation.

The study's primary hypothesis—that individuals with comorbid social anxiety and depression would drink to cope more than individuals with singular forms of either disorder—was partially supported. Participants with high levels of social anxiety and depression—defined as scoring in the upper third of the sample on both the BDI-II and the SIAS—reported drinking to cope with anxiety during social situations where alcohol is available significantly more than participants with singularly high levels of depression or singularly high levels of social anxiety, and more than the control group. The comorbid group also reported avoiding social situations where alcohol was unavailable significantly more than the singular and control groups. Such findings suggest a high rate of drinking to cope when social anxiety and depression are comorbid. Interestingly, the comorbid group did not differ significantly from the singular group on the DMQ-R or in how often they drink to cope before social situations where alcohol is available. Further, BDI-II scores showed a strong, positive correlation with how often participants avoided social situations where alcohol is unavailable, a distinct characteristic of drinking to cope with social anxiety, yet there was no significant relationship between BDI-II scores and how often participants drink to cope with anxiety before or during social situations.

Such inconsistencies hint at perhaps the study's biggest limitation and suggest directions for future research. To better measure and analyze drinking to cope behaviors in individuals struggling with depression and social anxiety in the future, it will be important for researchers to examine this relationship more carefully. This could be accomplished through a more in depth look at distinct reasons participants give for drinking and possibly by analyzing participants' scores on specific items of the Drinking Motives Questionnaire. Previous research has shown that "conformity" and "social motives" affect the relationship between drinking to cope and depression and social anxiety differently (Grant, Stewart, & Mohr, 2009, p. 235), and it's then likely that their relationship to the comorbid group's drinking to cope behavior is complex. If the comorbid group is in fact drinking to cope at a higher rate than the singular group, therapy will need to be specially tailored to fit their needs, and analyzing these specific differences in drinking motives could be crucial for clinical directions. Moreover, to fully determine the behavior's severity, future researchers should look at "alcohol problems" in relation to drinking to cope with social anxiety and depression (Gonzalez, Reynolds, & Skewes, 2011; Terlecki, Buckner, Copeland, 2012).

The study's second hypothesis—that young adults (ages 18-25) would report drinking to cope more often than adults (ages 26 and above)—was also partially supported. Interestingly, despite age being unrelated to BDI-II and SIAS scores, age was negatively correlated with several drinking to cope behaviors, and young adults reported drinking to cope *before* social situations more often than adults and also scored significantly higher on the DMQ-R than adults. Regarding the former, drinking is substantial among young adults and adolescents in general (Denhardt & Murphy, 2011; Norberg, Norton, & Olivier, 2009), and this finding might reflect

the "pregaming" practices common among college and university students. Pregaming refers to the practice of drinking prior to a social event, and researchers are now examining the relationships between pregaming, binge drinking, and alcohol-related problems (Barnett, Orchowski, Read, & Kahler, 2013). Young adults' significantly higher DMQ-R scores are theoretically more perplexing, especially given that there was no difference in BDI-II scores between young adults and adults. However, it seems plausible that as young adults tend to drink more exorbitantly than other age groups in general, they are thus more likely to drink to cope with negative moods even if they are not significantly depressed. Ultimately, these results further highlight the relevance of drinking to cope research in the young adult and college student population, and researchers should continue to focus upon this age group in future work.

Several factors limited the study. The decision to define high levels of depression and social anxiety as scores in the upper third on the BDI-II and the SIAS was somewhat arbitrary. As noted above, these scores do not reflect individuals with clinical levels of depression or social anxiety (Sprinkle et al., 2002; Rodebaugh et al., 2006); they simply reflect the individuals with the most extreme cases in the present sample. To maximize statistical power and external validity, future studies should collect more participants from a more diverse population. This would also ensure a greater number of clinically depressed or socially anxious individuals. Future studies could also screen participants for social anxiety or depression when sampling.

Further, attention should be paid to including more males in future samples. It's possible that gender was an accurate predictor of depression, social anxiety, or drinking to cope, and the results in the present study may have been heavily influenced by the disproportionate number of female participants. Additionally, researchers could collect personal and familial history of psychopathology diagnoses. One of the study's participants' pointed out to the researcher that she had been diagnosed with depression and social anxiety and was sure that her BDI-II and SIAS scores were affected by medications that diminish her symptoms. Thus, future researchers should ask anonymous participants for any previous diagnoses, about any received treatment or counseling, and about the current use of medications.

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