

ABSTRACT

Title of Thesis: THE RELATIONSHIP BETWEEN SOCIAL ANXIETY AND ALCOHOL USE IN A COLLEGE STUDENT SAMPLE

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Some individuals with social phobia frequently use alcohol, a behavior that may often result in the alleviation of anticipatory or performance anxiety in social situations. Reinforcement of drinking behavior may eventually lead to alcohol abuse or possibly the more severe condition of dependence. This study investigated the prevalence of alcohol use disorders in a sample of socially anxious college students. Quantity and frequency of drinking were measured and analyzed between high social anxiety participants (HSA) and low social anxiety participants (LSA). The HSA group included those with DSM-IV social phobia, as well as those who did not meet criteria for social phobia. Drinking motives were analyzed between the two groups to determine whether highly socially anxious drinkers differed from low socially anxious drinkers in reported reasons for drinking. Trait negative affect also was measured to explore the possibility that socially anxious drinkers experience a greater level of general, negative emotionality when compared to those with social anxiety who do not drink. Results indicated that low socially anxious participants had greater amounts of alcohol use on all drinking indices.

When drinking motives were used to predict actual amount of alcohol use, high social facilitation motives were best associated with actual drinking for LSA participants; whereas coping motives were most predictive for HSA drinkers. Therefore, among college students, where drinking is a social behavior, individuals with low social anxiety were more likely to drink. However, socially anxious individuals may be more likely to drink to cope with anxiety and depression, a style of drinking associated with drinking problems later in life.

THE RELATIONSHIP BETWEEN SOCIAL ANXIETY AND ALCOHOL USE IN A
COLLEGE STUDENT SAMPLE

by

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TABLE OF CONTENTS

List of Tables.....	iii
List of Figures.....	iv
Chapter I: Article	
Introduction.....	1
Methods	
Participants.....	4
Procedures.....	5
Assessment Instruments.....	7
Results	
Demographics.....	10
Diagnostic Characteristics.....	11
Correlations.....	12
Group Comparisons.....	13
Multivariate Analyses.....	16
Regression Analyses.....	17
Discussion.....	17
Chapter II: Literature Review	
I. The Co-occurrence of Social Phobia and Alcohol Use Disorders.....	21
II. Laboratory Studies Examining the Effect of Alcohol on Social Anxiety.....	26
III. Variables that may Influence the Relationship Between Social Phobia and Alcohol Use	
A. Social Learning Theory.....	28
B. Family History.....	32
C. Trait Negative Affect.....	33
IV. Treatment Studies.....	36
V. Conclusion.....	38
Chapter III: References.....	40

LIST OF TABLES

Table 1: Correlations between select measures.....	13
Table 2: Mean PANAS scores for HSA and LSA groups separated by gender.....	14
Table 3: Alcohol use data – <u>Quantity</u> of standard drinks (past 30 days).....	15
Table 4: Alcohol use data – <u>Frequency</u> of drinking days (past 30 days).....	15
Table 5: Multivariate analyses: gender and anxiety on drinking motives.....	16

LIST OF FIGURES

Figure 1: Prevalence of social phobia and alcohol use disorders.....	12
Figure 2: LSAS scores for HSA and LSA groups.....	14

CHAPTER I: ARTICLE

Introduction

Social phobia is a highly prevalent, disabling condition characterized by intense fear and avoidance of social situations. Despite the pervasive social fears experienced by those with severe social phobia, they desire friendships, romantic relationships, participation in peer activities, and occupational advancement. Anxiety interferes with these desires and goals, causing great personal distress, often leading to avoidance behavior (Beidel, Turner, & Morris, 1999). Avoidance behavior, reinforced by the non-occurrence of anxiety, further isolates the individual from potentially rewarding social contact. A subset of people with social phobia may find alcohol helps them cope with anxiety when they cannot, or choose not, to avoid social interaction. Psychological dependence on alcohol as a means of coping may lead to the occurrence of alcohol use disorders (i.e., abuse or dependence). Both clinical (Perugi, Frare, Madaro, Maremmani, & Akiskal, 2002; Thomas, Thevos, & Randall, 1999), and population studies (Magee, Eaton, Wittchen, McGonagle, & Kessler, 1996; Schneier, Johnson, Hornig, Liebowitz, & Wessman, 1992), have demonstrated that social phobia and alcohol use disorders co-occur more frequently than expected by chance. Although considerable variability exists across studies, those with social phobia are estimated to be more than twice as likely to have a co-existing lifetime diagnosis of alcohol dependence compared to others in the community (Magee et al., 1996).

Social phobia precedes the onset of alcohol problems in approximately 80% of cases (e.g., Sareen, Chartier, Kjernisted, & Stein, 2001), suggesting that social anxiety might be related to their development. However, clinical and epidemiologic studies are

unable to rule out alternative explanations, and the methodology of these investigations has been questioned (Schuckit & Hesselbrock, 1994). Social phobia often begins in childhood or early adolescence before most individuals can begin using alcohol (Beidel, 1998). Therefore, the early onset of social phobia combined with a delayed onset of normative drinking, which usually occurs later in adolescence, may explain their observed temporal relationship. On the other hand, it is possible that social phobia may promote, or maintain, drinking behavior through the negative reinforcement mechanism of short-term anxiety reduction.

Kushner and Sher (1993) found that university students diagnosed with social phobia were 1.7 times as likely also to be diagnosed with an alcohol use disorder compared to those who were not assigned the diagnosis (43% vs. 26%). However, considering social anxiety as a continuous variable, it is not known whether alcohol problems are more frequent among those with subthreshold social phobia—individuals with notable social fear or anxiety but who do not display significant distress or avoidance of social situations. Furthermore, although Kushner and Sher addressed the influence of gender and family history of alcoholism on both anxiety and alcohol diagnoses, they did not report results for social phobia in particular. Other studies similarly have examined factors that may interact with social anxiety and drinking, but these studies have largely not considered these factors in terms of the diagnostic categories of social phobia and alcohol abuse and dependence.

Many individual factors may influence the relationship between social phobia and drinking behavior because not everyone with social phobia drinks alcohol and most that do will never develop an alcohol use disorder. Major factors that have been investigated

in the literature include social learning variables (Burke & Stephens, 1999), gender (Cooper, Russell, Skinner, Frone, & Mudar, 1992), and family history (Sher, Walitzer, Wood, & Brent, 1991). One other factor, negative affectivity, or the tendency to experience adverse emotions with trait-like consistency, is a broad construct subsuming both anxious and depressive conditions (Watson, Clark, & Carey, 1988). High negative affect is associated with reports of drinking alcohol for coping reasons (Cooper, Frone, Russell, & Mudar, 1995), and thus may potentially differentiate social phobics who develop drinking problems from those who do not. Social anxiety may be related to drinking behavior for some individuals, but it is unknown whether these individuals experience greater levels of more general emotional distress (i.e., negative affect). Theoretically, these persons might be predicted to have insufficient alternative coping resources available to meet everyday life stressors and might more readily choose alcohol as a means of coping with social anxiety and relieving other negative emotions (Colder, 2001). For example, Tran and Haaga (2002) found that, compared to socially phobic participants without alcohol disorder, individuals with social phobia and alcohol abuse or dependence reported less problem-focused coping skills in past situations when alcohol was accessible to them.

The present study investigated the association between social anxiety and alcohol use in a college sample, both on quantitative and categorical dimensions. Because of differences observed in clinical and community studies, it was hypothesized that HSA and LSA participants differed in quantity (i.e., total number of drinks), and frequency (i.e., number of drinking days) of alcohol use 30 days prior to the assessment. Although it is not possible to determine causal relationships with the present design, it was

expected that social avoidance would be negatively correlated with drinking behavior for socially anxious individuals if alcohol is used as an alternative means for coping with social anxiety when physical avoidance of situations is not undertaken.

The influence of negative affect also was investigated to explore the possibility that socially anxious individuals who report high or pathological levels of alcohol use also experience greater levels of general negative affectivity. Furthermore, it was predicted that the HSA group would report higher coping motives for drinking (i.e., to cope with negative affect). HSA individuals may experience negative emotion in domains broader than social functioning, and stressful life events may overwhelm available coping responses, leading them to drink in order to cope with emotional distress.

Methods

Participants

College students age 18-25, enrolled in introductory psychology for the Spring 2003 and Fall 2003 semesters were recruited for the study on the basis of their scores on the Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989), a self-report measure of social phobia. Students identified during screening as having very low or high social anxiety scores were e-mailed an authorization code that allowed them to sign up for participation on the electronic sign-up board maintained by the department of psychology. In return for participation in the assessment phase of the study, 1-2 research credit(s) toward the class research requirement was given. A total of

73 subjects were recruited for the study, which consisted of 35 low social anxiety subjects and 38 high social anxiety participants.

Procedure

The SPAI was distributed during the introductory psychology mass testing session to screen for participants who were eligible to participate in the remainder of the assessment. A cutoff score of 20 (SPAI Total Score) or less was used to identify a low social anxiety group and a score of 70 or greater was used to select students for the high social anxiety group.

Potential participants, who qualified based on SPAI Total Scores, were notified by e-mail about “a study on social anxiety and alcohol use” for which they could earn 1 or 2 credits toward their psychology course requirement. The e-mail included an authorization code that the participant used on the psychology experiments website maintained by the psychology department in order to sign up for the assessment.

The assessment session consisted of the Composite International Diagnostic Interview-Auto (CIDI-Auto, version 2.1; WHO, 1997), administration of an assisted, self-report, version of the Timeline Follow-Back procedure (TLFB; Sobell & Sobell, 1992), Drinking Motives Questionnaire – Revised (DMQ-R; Cooper, 1994), Liebowitz Social Anxiety Scale (LSAS, Liebowitz, 1987) and the Positive and Negative Affect Schedule (PANAS; Watson & Clark, 1988) (see below for descriptions). The CIDI identified whether the participant met criteria for any disorder during the previous 12-months; however, social phobia and alcohol abuse and dependence were the only diagnoses entered in the analyses. Participants meeting criteria for major depression and

post-traumatic stress disorder were excluded from the data analysis. Drinking behavior during the past 30 days was measured using the TLFB method. Drinking behavior, as defined in this study, consisted of the total number of drinks consumed (quantity index) and the number of drinking days (frequency index). Participants were instructed to give their report in terms of “standard” drinks (i.e., 12 oz. of beer = 8 oz. of wine = 1 oz. of liquor or one mixed drink). Using the TLFB method, the participants were asked to also indicate how many of the total drinks they reported were “social drinks”, defined as drinks consumed in the company of at least one friend or family member or drinking with the intention of soon engaging in a social activity. The LSAS-self report was used to examine performance and social interaction anxiety and the degree of avoidance associated with anxiety. Finally, the PANAS was used to measure how often the participant, in general, experienced negative affect. PANAS negative affect scores were used to control for general level of negative affect when looking at the relationship between coping motives for drinking and actual number of drinks consumed.

Informed consent was obtained prior to data collection. After completion of the tasks listed above, each participant was debriefed about the hypotheses of the assessment and any questions were answered. Any participant meeting criteria for a psychiatric diagnosis was informed at this time and offered services at the psychology clinic or referred to an appropriate clinical service.

Assessment Instruments

Social Phobia and Anxiety Inventory (SPAI)

The SPAI is a Likert type scale self-report instrument designed to assess the somatic, cognitive, and behavioral aspects of social phobia (Turner et al., 1989). The 45-item SPAI consists of a 32-item social phobia scale and a 13-item agoraphobia scale for the purpose of discriminating social anxiety from fear better explained by agoraphobia (i.e., having panic attacks or being unable to escape a public situation). A total SPAI score is produced by subtracting the agoraphobia scale from the social phobia scale, thus producing a purer measure of social phobia and addressing the overlap observed between the two disorders. The SPAI has shown high 2-week test-retest reliability with a college sample (.86), good internal consistency (Chronbach's alpha of .96 and .85 for the social phobia and agoraphobia scales, respectively), and can discriminate individuals with social phobia from those with panic (with or without agoraphobia) and obsessive-compulsive disorder (Turner et al., 1989). See appendix B.

Liebowitz Social Anxiety Scale (LSAS)

The LSAS is a 24-item interviewer rated scale that measures fear and avoidance (each on four point scales) reported in social interaction and performance situations (Liebowitz, 1987). The LSAS has demonstrated validity and reliability as a self-report measure. Separate indices can be calculated for fear and avoidance factors for both social interaction and performance. Reliability for the fear and avoidance subscales has ranged from .81 to .92 and from .83 to .92, respectively (Orsillo, 2001).

The LSAS has shown convergent validity with other social phobia measures, such as the Social Avoidance and Distress Scale, the Social Interaction Anxiety Scale, and the Social Phobia Scale (Heimberg et al., 1999). The social interaction and performance scales of the LSAS have demonstrated higher correlations with respective measures of social interaction and performance anxiety (Orsillo, 2001). See appendix C.

Positive and Negative Affect Schedule (PANAS)

The PANAS (Watson, Clark, & Tellegen, 1988) is a 20-item self-report instrument that measures both positive (PA; 10 items) and negative affect (NA; 10 items) using a 5-point response Likert scale. PANAS items were selected based on the theoretical position of Watson et al. that positive and negative affect are independent constructs. Therefore, the items of one scale do not load strongly on the opposing dimension. Different time periods for which subjects are asked to rate themselves on the PANAS have been examined—ranging from “present moment” to “in general”. Because trait negative affect is of interest to the present study, psychometric properties of the negative affect scale using the “in general” instruction will be reviewed. Using a student sample, Watson and colleagues demonstrated internal reliability of .87 and 8-week test-retest reliability of .71. When a larger set of mood descriptors was factor analyzed and correlated with the PANAS NA scale, the authors demonstrated convergent validity (.93 with items from negative affect factor) and discriminant validity (poor correlation with positive affect factor; i.e., -.12). The NA scale correlates very well with other affect scales, but shows the best overall convergent/discriminant pattern (Watson et al., 1988). See appendix D.

Drinking Motives Questionnaire-Revised (DMQ-R)

The 20-item DMQ-R consists of four factors of motives for drinking alcohol: social, enhancement, coping, and conformity (Cooper, 1994). This four-factor model has shown better fit to a college sample, for both males and females, over previous three and two factor models (MacLean & Lecci, 2000). Of these motives, drinking to cope (i.e., with negative affect) was most closely related to non-normative drinking (e.g., drinking alone at home) and drinking problems in an adolescent sample (Cooper, 1994). Coping and enhancement motives are significant predictors of heavy drinking and drinking problems. However, drinking problems are best predicted by coping motives ($\beta = .28$, after controlling for usual alcohol use) in an adolescent sample (Cooper, 1994). In comparison, the positive reinforcement motives (social and enhancement) were not significantly related to drinking problems after controlling for usual usage, suggesting that drinking to alleviate negative affect (anxiety and depression) represents a pathological, non-normative style of drinking, qualitatively different from drinking to experience positive reinforcement (Cooper, 1994). See appendix E.

Timeline Follow-Back Daily Drinking Estimation Method (TLFB)

The TLFB is a self-report measure to assess number of drinks consumed and frequency of drinking days for a specified time-period using a calendar to facilitate memory (Sobell & Sobell, 1992). This method has shown high test-retest reliability (greater than .87 with college students; Sobell & Sobell, 1992) and convergent

validity with traditional alcohol use measures and interviews (e.g., with the ADIS-R, .76-.81; Ham, Hope, White, & Rivers, 2002). The TLFB method can identify fluctuations in drinking pattern that are missed with other quantity-frequency estimation approaches. It has been used to assess drinking behavior for intervals ranging from 3 to 18 months (Sobell & Sobell, 1992). See appendix F.

Composite International Diagnostic Interview (CIDI-Auto; 12-month version)

The CIDI-Auto (12-month version) is a fully automated, self-administered form of the structured interview developed by the World Health Organization (WHO, 1990) that is used in major epidemiologic studies (e.g., the NCS; Kessler et al., 1994). Self-administered reliability has been found to range between .50 and .99, and adequate convergent validity estimates between the CIDI and clinician diagnoses (.73-.83) have been obtained (Wittchen, 1994).

Results

Demographics

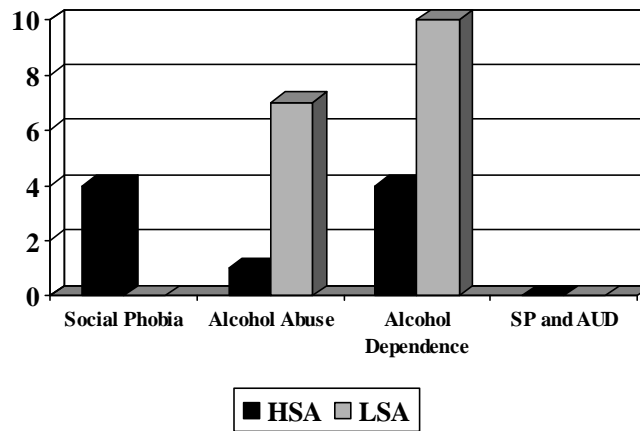
Fifty-three percent of the total sample (n= 73) were female (n= 39). Of the total sample, 69.9% were Caucasian (n= 51), 13.7% African American (n= 10), 11% Asian American (n= 8), 2.7% Latin American (n= 2), and 2.8% (n= 2) were of other ethnic identity. The mean age of the sample was 19.22 (standard deviation = 1.5).

Diagnostic Characteristics

Based on the CIDI-Auto, 15 participants were not included into the final sample of 73 on the basis of a depressive disorder during the previous 12-month period and did not complete the remainder of the assessment. Eleven (73%) of these subjects had a co-occurring condition (e.g., Generalized Anxiety Disorder, Substance Use Disorder, Panic Disorder, Post-Traumatic Stress Disorder). These participants received referrals to appropriate mental health services and were provided with the investigators' contact information if they needed further assistance locating treatment services.

Within the final sample (N=73), the presence of social phobia and alcohol use disorders was assessed. Figure 1 shows the prevalence of social phobia and alcohol use disorders across the total sample. Four participants in the HSA group met criteria for social phobia (3 female, 1 male). None of these four individuals met criteria for an alcohol use disorder. In the HSA group overall, 1 person met criteria for alcohol abuse (male) and 4 (2 female, 2 male) met criteria for alcohol dependence. Within the LSA group, 7 people met criteria for alcohol abuse (2 female, 5 male) and 10 for alcohol dependence (4 females, 6 males). It should be noted that the LSA group reported approximately twice as much overall alcohol use as the HSA group (mean 45 drinks vs. 19 drinks during the prior 30 days); $\chi^2(43, N = 73) = 195.2, p < .001$.

Figure 1
Prevalence of social phobia and alcohol use disorders.



Correlations

Table 1 shows correlations between the selected measures across the total sample, with asterisks indicating significant correlations ($p < .05$). Social avoidance on the LSAS correlated highly with both quantity and frequency of total drinking and social drinking, indicating that more alcohol was used when fewer social situations were avoided. Negative affect correlated strongly with social anxiety (.46 with SPAI and .55 with LSAS). Of the four coping motives, only social motives and enhancement motives (i.e., drinking for positive reinforcement) were significantly correlated with actual alcohol use (see Table 1).

Table 1
Correlations between select measures.

	LSAS social avoid.	pos. affec t	neg. affect	quant. drink.	freq. drink.	social mot.	coping motives	conf mot.	enhance. motives
SPAI	.71*	-.33*	.46*	-.32*	-.29*	-.11	.32*	.30*	-.28*
LSAS soc. avoid.		-.36*	.48*	-.33*	-.36*	-.03	.42*	.43*	-.21
pos. affect			-.07	.07	.06	-.13	-.25	-.19	.17
neg. affect				-.17	-.17	-.07	.25	.19	-.15
quant. drink					.88*	.45*	.07	.04	.43*
freq. drinking						.52*	.16	.06	.47*
social mot.							.28*	.33*	.62*
coping mot.								.42*	.29*
conf. mot.									.20

p < .05

Group Comparisons

ANOVAs were conducted to compare the 2 anxiety groups on anxiety measures, affect scores, and alcohol use data. To guard against Type I errors, an alpha of .01 was set as the criterion for significance within each family of comparisons (i.e., anxiety, affect, and alcohol use). As expected, the HSA group had significantly greater anxiety and avoidance scores on all subscales of the LSAS ($p < .01$; see Figure 2). HSA and LSA groups also differed significantly on PANAS positive and negative affect scales (see Table 2). When separated by gender, female anxiety groups differed significantly on both positive and negative scales. Male HSA and LSA groups differed only by negative affect scores, though positive affect scores approached significance [$F(1, 32) = 4.35, p = .045$].

Figure 2
LSAS scores for HSA and LSA groups.

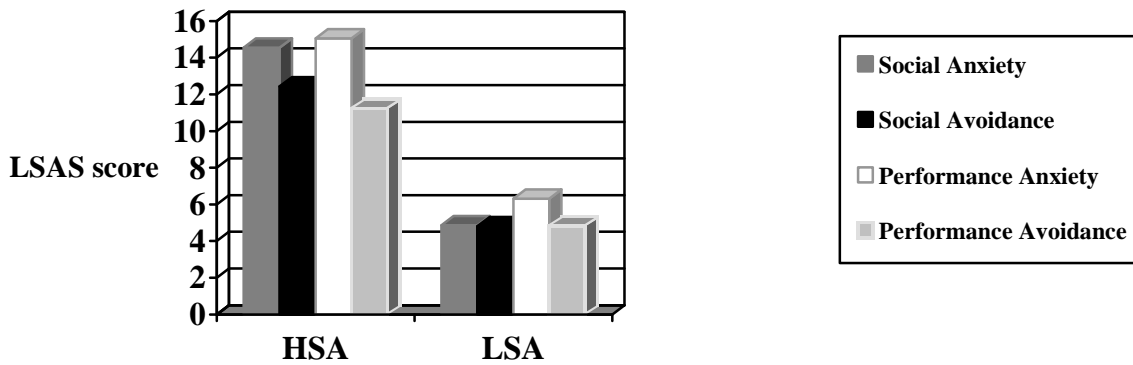


Table 2
Mean PANAS scores for HSA and LSA groups separated by gender.

	Negative Affect (SD)	Positive Affect (SD)
HSA males	2.0 ^a (.59)	3.4 (.43)
LSA males	1.6 ^a (.35)	3.7 (.45)
HSA females	2.0 ^b (.68)	3.1 ^c (.49)
LSA females	1.4 ^b (.42)	3.6 ^c (.61)
HSA total	2.0 ^d (.64)	3.2 ^e (.48)
LSA total	1.5 ^d (.38)	3.6 ^e (.52)

Common letter superscript indicates significant difference, $p < .01$.

Tables 3 and 4 show the quantity of standard drinks and the frequency of drinking days as assessed by the Timeline Follow-back procedure (TLFB). LSA participants reported approximately twice the quantity and frequency of drinking compared to the HSA group. However, due to a large degree of variance within each group, standard

ANOVA comparisons could not be made. Instead, a Mann-Whitney U non-parametric test was used to compare HSA and LSA groups. This test ranks data and therefore is less affected by extreme scores, or outliers. In terms of the quantity of total drinks, a significant difference was observed only at the .05 level of significance (Mann-Whitney U, $p = .048$). No significant difference in frequency of drinking was observed using the Mann-Whitney U test ($p = .068$). However, an approximate 2:1 ratio (LSA to HSA) was observed for both quantity and frequency between the two groups.

In addition to total drinks, social drinks also were analyzed. However, total drinks and social drinks were highly correlated (quantity $r = .99$, frequency $r = .95$), indicating most of the drinking reported was “social drinking”. The results did not change whether total drinks or social drinks were used as the dependent variable.

Table 3
Alcohol use data – Quantity of standard drinks(past 30 days).

	Mean (Std. Dev.)	Range	Median
HSA	19.29 (24.38)	0-91	10.0
LSA	44.99 (56.34)	0-202	20.5

Table 4
Alcohol use data – Frequency of drinking days (past 30 days).

	Mean (Std. Dev.)	Range	Median
HSA	3.92 (3.96)	0-12	3.0
LSA	6.31 (5.62)	0-18	5.0

Multivariate Analyses

A multivariate analysis of variance was conducted to determine if there was a gender x anxiety (i.e., HSA vs. LSA) interaction on reported drinking motives (social, enhancement, coping, and conformity). Two significant main effects and one interaction were observed (Table 5). HAS males and females reported significantly higher coping motives [$F(1,60)=5.9, p=.018$] and significantly higher conformity motives as well [$F(1,60)=5.4, p=.024$]. In terms of an interaction between gender and anxiety, LSA females endorsed significantly higher enhancement motives compared to HSA females [$F(1,60)=4.85, p=.032$].

Table 5
Multivariate analyses: gender and anxiety on drinking motives.

	DMQ subscale	df	F value	p value
Gender	Social	1	.130	.720
	Coping	1	.105	.747
	Enhancement	1	.229	.634
	Conformity	1	.047	.830
Anxiety Group	Social	1	.180	.673
	Coping	1	5.906	.018 *
	Enhancement	1	3.140	.082
	Conformity	1	5.356	.024 *
Gender x Anxiety	Social	1	.740	.393
	Coping	1	.265	.609
	Enhancement	1	4.852	.032 *
	Conformity	1	.418	.521

* $p < .05$

Regression Analyses

Regression was used to investigate whether social avoidance, social anxiety, or affect was predictive of drinking. Using a stepwise regression model that included LSAS social and performance anxiety and avoidance scores, and PANAS positive and negative affect scores, LSAS social avoidance remained the only significant predictor for the LSA group [$R^2 = .12$, $\beta = -.35$, $t(1, 33) = -2.14$, $p = .04$]. None of the above variables significantly predicted quantity of drinking for the HSA group.

A second regression model was created to examine the predictive power of drinking motives for actual alcohol use the past 30 days. The four drinking motives (social, enhancement, coping, and conformity) were entered into a stepwise regression equation to predict quantity of use. For the LSA group, social motives alone emerged as the best model to predict drinking [$R^2 = .26$, $\beta = .51$, $t(1, 30) = 3.21$, $p < .01$]. The best model for the HSA group, on the other hand, was coping motives [$R^2 = .36$, $\beta = .60$, $t(1, 26) = 3.84$, $p < .01$]. Contrary to expectations, negative affect was not associated with drinking in the HSA group [$t(1, 36) = -1.5$, $p = .15$] and partialling out negative affect in the relationship between coping motives and drinking had no effect. Furthermore, negative affect did not appear to be related to drinking in terms of the overall sample (See Table 1).

Discussion

From the correlations obtained across the entire sample, it was evident that the majority of total drinking reported was considered “social drinking”. Furthermore, the more likely a person was to have low social anxiety and more often engage in social

activity, the more likely he or she was to drink alcohol. People with high levels of social anxiety and social avoidance were less likely to drink alcohol. Therefore, the hypothesis that social avoidance would be related to drinking for only the HSA participants was not supported.

Carrigan and Randall (2003) reported at least four other studies that have found alcohol use to be higher in low, rather than high, social anxiety groups. These authors have speculated that this may result from the lack of friendships held by people with social anxiety and because drinking is a social activity, especially for young adults. Therefore, the correlations in the present study are not surprising given that social drinking is a large part of social life for college students and that few college students live alone. It should be expected that students who participate in college social life drink more compared to anxious students who avoid social gatherings. In fact, most of the sample was legally underage, and for these students to drink alcohol they would have likely engaged in some social behavior, whether it was actually going to a party or simply approaching someone of age to purchase it for them. These activities, by definition, are uncomfortable for those with social anxiety and would likely be avoided. In an older, more age representative sample, which included adults who regularly purchase alcohol themselves and who do not live in a social environment (such as a college dorm), less social drinking may have been observed in the non-anxious group.

Regression was used to determine which drinking motives could be used to predict actual drinking. Not surprisingly, for the LSA drinkers, characterized as having higher positive affect, social facilitation motives predicted actual use best, with other motives making non-significant contributions to the model. In other words, LSA drinkers

reported drinking to be sociable, to make gatherings more fun, and to get more enjoyment from parties and celebrations. For the HSA group, on the other hand, a similar positive reinforcement model was not observed. Coping motives reported by HSA drinkers were most predictive of actual use, with no other motives accounting for significant variance in the model. These drinkers reported they drank to forget about their problems, to forget their worries, to feel more confident or sure of themselves, and because it helps them when they are depressed or nervous. Given that DMQ-R coping motive items clearly represent drinking to cope with negative affect, it was somewhat surprising that negative affect on the PANAS was not significantly related to drinking in the HSA group. An explanation may be that PANAS scores are too general to be tied to drinking and are more indicative of distress associated with social anxiety.

Despite higher rates of drinking and alcohol use disorders in the LSA group, the finding that coping motives better predict drinking in the HSA group indicates that the HSA group may be the group more likely to experience future alcohol problems. As Cooper et al. (1994) have discussed, coping motives are more closely related to future problem drinking. Drinking for positive reinforcement (i.e., social or enhancement motives) may be a central characteristic of drinking in young adulthood. The higher prevalence of alcohol use disorders in the LSA group may be a by-product of the normal young-adult lifestyle and alcohol use disorders may prove to be transient. HSA participants, on the other hand, may be more likely to develop persistent alcohol use disorders in the future. Ultimately, a longitudinal study would be necessary to delineate “normal” college drinking from the pre-stages of alcohol dependence.

The present study suffered from important limitations. An alcohol use questionnaire that was specific to aspects of social anxiety would have provided valuable information on how and when alcohol is used by socially anxious participants. For instance, in addition to inquiring about social drinks, it would have been informative to know if alcohol was consumed before, during, or after the social event, how effective it was in relieving anxiety, and how often alcohol was deliberately used to cope with social anxiety. At the time of this study, a standardized questionnaire of this type did not exist. A future study will collect these data for more specific information on how alcohol is used by socially anxious participants. As Carrigan & Randall (2003) have reviewed, at present there is no conclusive evidence that alcohol is effective in reducing anxiety. Correlational studies have largely failed to investigate whether people with social anxiety report drinking to cope with anxiety and experimental studies aiming to collect objective behavioral data suffer from important problems of validity.

A second limitation was the inability to collect data on participants with DSM-IV social phobia. Only 4 participants met criteria for the disorder and this subsample was too small for separate data analysis. Future research may investigate clinical and community samples. Finally, although the present study was intended to investigate the relationship between social anxiety and alcohol use in college students, future research should include community-representative aged participants. It is likely that older participants differ in the amount and frequency of alcohol use, reasons for drinking, and in the relationship between alcohol use and social anxiety. Therefore, the findings from the present study may not generalize to non-student populations.

CHAPTER II: LITERATURE REVIEW

I. The Co-occurrence of Social Phobia and Alcohol Use Disorders

Approximately 25% of individuals with alcohol dependence in the community may meet criteria for social phobia, with females at greater risk for both conditions than males (30.3% and 19.3%, respectively; Kessler et al., 1997). Similar rates of co-existing, lifetime social phobia have been obtained from those seeking alcohol treatment (Thomas, Thevos, & Randall, 1999). When social phobia is reported as the index diagnosis, high prevalence rates of alcoholism (14% - 40%) have also been observed (Lepine & Pelissolo, 1998). About 22% of those with social phobia in the ECA community survey also met criteria for an alcohol use disorder (Himle & Hill, 1991), a figure more than 1.5 times greater than the base-rate of 13.8% for alcohol disorders in the ECA (Bucholtz, 1992). These consistent reports raise questions about the temporal relationship of social phobia and alcohol use disorders.

The onset of social phobia, with few exceptions, occurs much earlier than for that of alcohol dependence, with an estimated interim difference of approximately ten years (Chambless, Cherney, Caputo, & Rheinstein, 1987; Schneier, Martin, Liebowitz, Gorman, & Fyer, 1989). For example, in a community sample, Sareen, Chartier, Kjernisted, & Stein (2001) reported that 80% of social phobics with alcohol dependence reported that the onset of social phobia was prior to their alcohol use disorder. Comparatively, alcohol dependence is not as often preceded by other phobic conditions, such as simple phobia or agoraphobia (e.g., Sareen et al., 2001). However, the idea that social anxiety can lead to the use of alcohol as a means of self-medication should only be

considered a hypothesis in need of testing. Another possibility is that social phobia precedes alcohol use disorders simply because of its early age of onset (Beidel, 1998) and because most individuals do not have access to alcohol until later in adolescence or young adulthood when drinking becomes normative. That is, developmental differences in onset may explain the temporal relationship of these conditions. Therefore, the observation that one disorder consistently precedes a second must not be regarded as proof of a causal relationship.

An additional explanation for the high rates of co-occurrence between anxiety and alcohol use disorders is that symptoms related to alcohol dependence (i.e., withdrawal, effects of prolonged drinking, high dosages, or toxicity) or negative consequences (social, legal, or interpersonal) may induce anxiety disorder (Kushner, Abrams, Borchardt, 2000; Kushner et al., 1990). Thus, in a cyclical relationship, alcohol may act to alleviate anxiety in the short-term, but its prolonged use may be anxiogenic.

A final, and very plausible, explanation for high rates of co-occurrence between social phobia and alcohol disorder is that a predisposition or genetic vulnerability common to both conditions is the true etiological factor, and the presence of one condition (e.g., social phobia) does not directly influence the development of the other (e.g., alcoholism). Thus, a direct causal relationship may not, in fact, underlie the association of social phobia and alcohol use disorders in this particular subgroup. In their review, Kushner et al. (1990) cited various experimental and prospective findings and concluded that, although anxiety disorders and alcohol use disorders are indeed related, both causal association and respective predictive value between the disorders appears to be bi-directional, a testament to the etiological heterogeneity of these conditions.

Despite an inability to make causal inferences, many researchers and clinicians suspect that the social difficulties experienced by individuals with social phobia result in attempts to alleviate social anxiety through drinking because alcohol is commonly available and accepted in social settings, increasing the likelihood of future dependence (Marshall, 1994; Page & Andrews, 1996). However, whether a socially phobic drinker uses alcohol before, during, or after exposure to a social stressor may depend on the type of situation (e.g., whether it is a performance or social interaction). Abrams, Kushner, Medina, and Voight (2002) found that subjects with social phobia drank weaker alcohol-content drinks before a public-speaking task compared to a control task due to concern that the alcohol would impair their performances during the task. Interestingly, the public speaking group drank stronger drinks *after* they had finished the task. This finding is in contrast to prior research showing that subjects anticipating a social interaction will drink more than controls (Higgins & Marlatt, 1975). Therefore, the type of situation expected and one's evaluation of how alcohol will affect behavior (i.e., expecting it to facilitate an interaction or hinder a performance) may influence intake of alcohol before, during, and after a social task.

Drinking before or during a social task may serve to lessen tension or anxiety. However, this hypothesis is not supported unconditionally by available data. Volpicelli (1987) recommended abandonment of the assumption that alcohol reduces tension, and has offered a compelling explanation for why alcohol use, in humans and in lower animals, has been observed to increase following a stressor, rather than in anticipation of one (e.g., Abrams et al., 2002). When the body experiences an uncontrollable stressor, endogenous endorphins are released, stimulating opiate receptors. Following the removal

of the stressor, endorphin release decreases, creating a relative deficit of opiate receptor stimulation. Given that one has learned to use alcohol, drinking after the removal of the stressor acts as a compensatory response to the withdrawal of endorphins. According to Volpicelli's theory, it is the reduction of tension that elicits drinking, and not the other way around, as it is commonly assumed.

The causal relations between social anxiety and alcohol use are complex and difficult to specify. Alternatively, alcohol use may be maintained by social anxiety, regardless of whether social anxiety is responsible for the onset of an alcohol use disorder. The anxiolytic effects of alcohol may maintain drinking in social situations through negative reinforcement, if complete avoidance of the situations is not undertaken. Therefore, alcohol use may serve as a behavioral avoidance or coping strategy when physical avoidance from social situations is not undertaken.

Recently, data from two prospective epidemiological reports (Crum & Pratt, 2001; Merikangas, Avenevoli, Acharyya, Zhang, & Angst, 2002) suggest that alcohol use may be more excessive for those with significant social fears but without social phobia, and hence, without the avoidance behavior that would take them from anxiety provoking situations. Merikangas et al. reported an odds ratio for alcohol abuse or dependence of 3.2 among those with subthreshold social phobia (defined as one or more social anxiety symptoms with some avoidance) in comparison to those who had only symptoms and controls. However, among those with a social phobia diagnosis and greater severity (two or more symptoms with avoidance and significant subjective distress) the odds ratio for an alcohol use disorder was 1.9 in comparison with the other two groups in the social

phobia spectrum and controls. This suggests that there may not be an increasing risk for alcohol abuse or dependence associated with increasing severity of social anxiety.

Crum and Pratt (2001) examined social phobia as a risk factor for later episodes of alcohol abuse or dependence in the Baltimore ECA cohort. Baseline data were collected in 1981 and the follow-up interviews took place between the years 1993 and 1996. Those who endorsed an alcohol use disorder at baseline were excluded from this analysis. Of the 33 participants with social phobia at baseline remaining, none developed DSM-III-R alcohol abuse or dependence. Among a larger group of respondents with social fears, but without significant avoidance or impairment ($n = 84$), eight incident cases were identified (estimated cumulative incidence of 95 per 1,000). However, this study must be considered preliminary due to substantial flaws. First, because social phobics with baseline alcohol use disorders were excluded, it is likely that many of those who would have gone on to develop a drinking problem already had done so before the baseline interview. Crum and Pratt concluded that no significant differences in prevalence of social phobia were found between those without alcohol use disorders and those with such disorders (who were excluded) at baseline. Still, the fact that individuals with both disorders were excluded means that a zero incidence rate of alcohol use disorders in those with social phobia is likely to be inaccurate. Second, the number of participants with subthreshold social phobia was $2\frac{1}{2}$ times the size of the social phobia group. Third, the authors gave no indication of the chronicity or status of social phobia among those re-interviewed. Despite these problems, it is possible that people with social phobia avoid social situations and are therefore at decreased risk for the later development of DSM alcohol abuse or dependence resulting from a consistent pattern of

drinking behavior reinforced by anxiety reduction. On the other hand, those with social fears, but not social phobia, are about twice as likely to develop such disorders compared to those without social fears (estimated cumulative prevalence 52 per 1,000). The possibility that individuals who have social fears, but not social phobia, use alcohol to cope with anxiety provoking situations (e.g., social gatherings), and are therefore at greatest risk for alcohol use disorders clearly deserves further, more direct, research attention.

II. Laboratory Studies Examining the Effects of Alcohol on Social Anxiety.

In spite of the clinical and epidemiological data reviewed that suggest alcohol is common among a subgroup of people with social anxiety, there is no substantial evidence to indicate that alcohol *is* effective at relieving anxiety. The few studies that do exist suffer from problems of validity, making any conclusions difficult at the present time.

There are only two published studies using participants diagnosed with social phobia. The earlier study, conducted by Naftolowitz, Vaughn, Ranc, and Trancer (1994) required 9 socially phobic participants to give a 10 minute speech in front of 6-7 audience members after consuming a small amount of vodka with orange juice (1.25 ml/kg, 80 proof vodka) on day one of the experiment. On day two, the participants were given a placebo drink and asked to perform the task again. They found no effect of alcohol on anxiety. However, in addition to the low amount of alcohol administered, the two tasks were not counterbalanced, making interpretation of their results impossible.

Another study with social phobics, conducted by Himle et al. (1999), using a larger sample, also found that consuming alcohol had no effect on social anxiety before a speech task. In phase one of the study, forty subjects were given 45 minutes in which all subjects drank *placebo* beverages before a speech challenge (before 3 audience members wearing lab coats). Blood alcohol level was assessed with a breathalyzer test and anxiety was assessed using cognitive, behavioral, and physiological measures. In phase two, the process was repeated, however half of the subjects received alcohol drinks (vodka and grapefruit juice) and half continued to receive placebo. A main effect of lower anxiety during the second speech was observed, but the two groups (alcohol and placebo) did not differ on these measures. Small effects for participants who believed they had drunk alcohol were observed however. The authors discussed some of the limitations to the study. Subjects with drinking problems were excluded from participation for ethical reasons. However, these subjects may have been the ones that would have benefited most from using alcohol before the task. Secondly, the contrived speech task may not have been an appropriate behavioral task. Rather, a more naturalistic task such as a social gathering may have been more effective. On the other hand, another study using this type of naturalistic task did not find that non-clinical socially anxious participants drank more during the social interaction to ease their anxiety (Kidorf & Lang, 1999). Therefore the results of the study by Himle et al. (1999) do not provide support for the self-medication model of alcohol use by social phobics.

III. Variables that may Influence the Relationship Between Social Anxiety and Alcohol Use

A. Social Learning Theory

Social anxiety is not always associated with alcohol use, but rather, this relationship is only pertinent for a subset of socially anxious individuals. College samples have been studied frequently, for both convenience and because moderate to excessive alcohol use is commonplace in this population. Social learning theories have proposed moderating variables that may be important factors in determining why one socially anxious individual may develop an alcohol use disorder and why another may not (Burke & Stephens, 1999).

The most prominent of these constructs is alcohol expectancies (AEs; e.g., Hufford, 2001), based on Bandura's (1977) notion of outcome expectancies and social learning theory. It has been hypothesized that individuals who *expect* alcohol to relieve their anxiety (i.e., anticipation of negative reinforcement) or *expect* alcohol to improve social functioning (i.e., anticipation of positive reinforcement) will drink more, independent of alcohol's pharmacological effects. Placebo controlled studies with social phobics (Abrams, Kushner, Medina, & Voight, 2001; Himle et al., 1999) have demonstrated that groups believing they had drunk alcohol had reductions in anxiety comparable to groups that had actually consumed alcohol before a speech task. Specifically, if a person holds positive expectancies about the beneficial consequences of drinking, that person will drink more than a person who has negative or neutral expectations of alcohol use. Among the six factors of the AE questionnaire (AEQ) developed by Brown, Goldman, Inn, & Anderson (1980), global positive affect, social

assertiveness, and physical and social pleasure enhancement seem to be the most strongly associated with social anxiety (Burke & Stephens, 1999). Across two demographically different samples of males, Leonard and Blane (1988) found scores on the Social Avoidance and Distress Scale (SADS; Watson & Friend, 1969), the Fear of Negative Evaluation scale (FNE; Watson & Friend, 1969) and the Social Anxiety Subscale of the Self-Consciousness Scale (Fenigstein, Scheier, & Buss, 1975) to be positively correlated with global positive affect and social assertiveness AEs. Therefore, social anxiety appears to be related to positive reinforcement expectancies.

A longitudinal study (Smith, Goldman, Greenbaum, & Christiansen, 1995) reported that non-drinking teenagers with high social enhancement AEs had a faster rate of drinking increase over the following two years, compared to the rate of drinking of low expectancy participants. Individual differences in social enhancement AEs explained a significant proportion of the overall variability in the rate of drinking increase. The value of AEs in predicting drinking behavior is clear. In fact, AEs have been shown to have better predictive value of problem drinking than demographics, parental drinking habits, or attitudes toward drinking, and have continued to show predictive value after controlling for previous levels of consumption (Hufford, 2001).

Experimental manipulation of AEs has resulted in increased consumption of alcohol by young adult males (Darkes & Goldman, 1993; Sharkansky & Finn, 1998). Sharkansky and Finn demonstrated that manipulating subjects' expectations of how alcohol would affect their performance in a following cognitive task resulted in lower levels of drinking during the time that preceded the task for subjects that were led to believe it would impair their performances.

In Darkes and Goldman's study, male drinkers were randomized to three groups: expectancy challenge, traditional treatment, and no treatment. The participants that had their AEs challenged in treatment showed reductions in drinking at the end of the study, in comparison to both the traditional education group and the control group. A closer analysis revealed that this effect was due to changes among the heavy drinking half of the sample. Furthermore, although all groups held comparable social and sexual AEs at the pretest assessment, only the expectancy challenge group showed reductions of these beliefs at follow-up (as measured by the Expectancy/Context Questionnaire, designed to be sensitive to changes in expectancies over short time periods). No non-specific effects were observed (e.g., neither group reported feeling more pressure to change). Darkes and Goldman (1993) therefore demonstrated that undermining social expectancies led to changes in these beliefs that were accompanied by a reduction in the number of drinks per week consumed by heavy drinkers at a two-week follow-up. To conclude from the results presented by Darkes and Goldman, it is possible that AEs may mediate drinking behavior.

Positive alcohol expectancies are likely reciprocally related to drinking behavior in a positive feedback model (Smith et al., 1995). A person's past experiences with drinking may strengthen AEs and these expectancies may then continue drinking behavior. However, beliefs about the consequences of alcohol also may exist before a drinker ever takes his first drink, as social modeling may establish AEs at an early age. For example, in a cross-sectional study (Dunn & Goldman, 1998), children in the 3rd, 6th, 9th, and 12th grade reported AEs. The results of Dunn and Goldman indicate that AEs were present in very young children, many of whom had no direct experience with

drinking. Their results also suggest that, even in very young children, social modeling and peer influences may contribute to associations of alcohol with positive and arousing consequences. These findings complement the longitudinal study of Smith et al. (1995) reviewed above, which found positive social expectancies to be a risk factor for drinking the following two years.

Despite the general importance of AEs in predicting drinking behavior and anxiety reduction, positive AEs are not likely a blanket phenomenon that can be studied independent of person-variables. Research has shown that person-variables such as gender can affect the relationship between positive AEs and drinking behavior (Cooper, Russell, Skinner, Frone, & Mudar, 1992). For instance, increased drinking behavior of males has shown to be associated with social assertiveness AEs and high social anxiety, as measured by the SADS, in a self-disclosing stress procedure; whereas, social assertiveness AEs were not a predictor for increases in females' drinking (Kidorf & Lang, 1999).

In addition to positive alcohol expectancies, other constructs within the social learning framework have been studied. Negative expectancies related to undesirable outcomes of drinking, social influence (e.g. modeling, subjective norms), and avoidance self-efficacy (the ability to resist urges and pressures to drink) are three other constructs that, along with positive expectancies, are key elements of Bandura's social learning theory as it applies to drinking behavior (Dijkstra, Sweeney, Gebhardt, 2001). In a multiple regression analysis including the above variables, Dijkstra et al. confirmed the predictive value of alcohol expectancies (18% of the variance in drinking behavior) and also found that the additional factors nearly doubled the variance that could be explained,

with the full model explaining 35% of the variance. Social norms were discovered to be the single strongest predictive factor, even more so than positive expectancies.

B. Family History

Both anxiety disorders (Beidel & Turner, 1997) and alcoholism (Kushner & Sher, 1993) are transmitted through families. Using the family study method, Merikangas et al. (1998) tested whether the high degree of co-occurrence between these two conditions could be explained by a shared etiology or whether these conditions are genetically unrelated, but having one disorder predisposes an individual for the development of the second.

In this investigation, the two conditions appeared to aggregate independently, suggesting different genetic risk factors for each condition. Alcohol dependence in the proband was associated with alcohol dependence in relatives of the proband. Similarly, familial risk for both social phobia and panic disorder was observed. Further analysis showed that panic disorder shared some genetic risk with the development of alcohol dependence. This finding has been observed in other family studies (see Kushner, Abrams, & Borchardt, 2000). However, relatives of individuals with social phobia had increased rates of alcoholism only when they had co-occurring social phobia. That is, increased rates of alcoholism were not observed in the absence of social phobia. On the other hand, an earlier study using a large sample (Schneier, Martin, Liebowitz, Gorman, & Fyer, 1989) found a significantly higher rate of alcoholism among relatives of probands that had social phobia but not alcoholism (8.8%) compared to controls (3.6%). Therefore, small genetic overlap between social phobia and alcohol disorder may indeed

exist. However, in their 1994 literature review, Schuckit and Hesselbrock concluded that, while psychiatric symptoms occurred among children of alcoholics at higher than expected rates, diagnosable anxiety disorders did not. In addition, alcoholism did not occur more frequently among children of those with anxiety disorders, including social phobia patients.

The above data suggest that very little of the co-occurrence between social phobia and alcoholism can be explained by overlapping genetic risk or shared etiology by which either condition may manifest during life. Rather, the data of Merikangas et al. (1998) tend to support the viewpoint that alcohol misuse is often a consequence of social phobia. There are no data to suggest that a large degree of familial crossover exists between alcohol dependence and social phobia.

C. Trait Negative Affect

Negative affect (NA) broadly describes the tendency to react to life situations with negative emotionality. Although negative affect is often discussed as a characteristic of depression, it subsumes many specific mood states such as “anger, contempt, disgust, guilt, fear, and nervousness” (Watson, Clark, & Tellegen, 1988, p.1063) and is common to both anxiety and depression (Watson, Clark, Carey, 1988). Therefore, the construct of NA is much broader than social anxiety, and many individuals with social phobia may not experience NA in situations that are not of a social context. However, others may experience negative emotionality across many instances when confronted with stress and this response may be trait-like consistency. Moreover, negative affect roughly corresponds to the dimension of neuroticism (Watson, Clark, &

Carey, 1988), and higher levels of neuroticism have been found in generalized social phobia compared to specific social phobia, with specific social phobics having higher levels than those without the disorder (Stemberger, Turner, Beidel, & Calhoun, 1995).

Individuals who experience greater levels of negative affect are thought to drink to regulate their negative emotions (Mulder, 2002). However, the relationship between alcohol use and negative affect may be non-linear and bi-directional. For instance, Rodgers et al. (2000) found that moderate drinkers reported less negative affect than low or heavy drinkers. Therefore, heavy drinkers may be unsuccessful in alleviating negative affect with alcohol, or their drinking may increase the negative emotion they experience. Despite problems of directionality, alcohol use is often reported as a means of regulating negative emotion, and researchers have described this as drinking to cope (Cooper, Frone, Russell, & Mudar, 1995). Cooper and her colleagues (1995) found that negative emotions predicted coping motives for drinking, and coping motives (rather than enhancement, social, or conformity motives) are significantly related to drinking problems (Cooper, 1994). This suggests that drinking to cope with negative emotionality (as measured by self-report) represents a distinct constellation of behaviors important in the development of alcohol use disorders.

Research into the relationship between affect and alcohol use has generally not supported a simple mechanism whereby negative affect precipitates drinking and is alleviated by the tension-reducing properties of alcohol (Hussong, Hicks, Levy, & Curran, 2001). Rather, individual characteristics are important determinants of whether an individual drinks to regulate NA. For example, this association may be stronger for males who lack alternative coping skills, expect drinking to regulate their mood, and are

motivated to drink for affect regulation (Cooper, Russell, Skinner, Frone, et al., 1992). Conversely, those who endorse enhancement motives for drinking and drink primarily to increase positive affect may have a greater dispositional tendency toward sensation seeking (Cooper et al., 1995); and these individuals may not drink to regulate NA. Drinking motives are conceptualized as being proximally related to the behavior of drinking, with more distal influences, such as personality characteristics, emotions, or expectancies influencing specific motives (Cooper et al., 1995).

A simple tension-reduction / self-medication model is, by itself, incomplete. Moderating variables and bi-directional relationships must be specified if self-medication theories of the relationship between affect and alcohol use are to be employed. Furthermore, the concept of NA may be overly broad. In support of this explanation, Hussong et al. (2001) found that NA subtypes of hostility and sadness, but not guilt and fear, significantly predicted drinking. Similarly, general self-report NA was not associated with drinking for coping reasons; however, physiological indices of emotional activity were associated with such drinking (Colder, 2001). Therefore, particular emotions under the NA construct may need identification and separate investigation.

Finally, as discussed in section 1 of this article, alcohol use may relieve anxiety during use, but worsen it long-term. This type of bi-directionality may exist between negative affect and alcohol use as well. Pharmacologically, alcohol acts as depressant and may facilitate the experience of negative emotion after use. In a prospective study (Hussong et al., 2001), negative affect (sadness, in particular) was found to precede drinking and to increase after periods of drinking for males. Additionally, the disastrous personal consequences of long-term alcohol dependence may result in depression, which

may be followed by continued drinking for affect regulation. Thus, both anxiety and NA may additively perpetuate a bi-directional cycle of alcohol use.

IV. Treatment Studies

Whether the co-occurrence of social phobia and alcohol use disorders has any significant implications for therapy is unknown. Prior to treatment, alcoholics with social phobia were discovered to have greater levels of dependence and to drink more for enhancement of functioning and sociability, but not to differ on measures of alcohol consumption, compared to alcoholics without social phobia (Thomas, Thevos, & Randall, 1999). Therefore, socially phobic and non-phobic subgroups among alcohol treatment-seekers may differ in terms of general level of psychological dependence on alcohol. If drinking for socially phobic alcoholics stems, in part, from social fears, then it can be expected that relapse rates for alcoholics receiving treatment will improve by addressing social phobia during treatment for this subgroup. Further, those with social fears may avoid many group-oriented programs that are supportive of those with drinking problems (e.g. Alcoholics Anonymous). Currently, few data exist on the benefits of combined treatment (social phobia-alcohol dependence) versus that of alcohol treatment alone.

One recent randomized clinical trial (Randall, Thomas, & Thevos, 2001) examined this issue with a sample of participants with current alcohol dependence that also had social phobia and reported using alcohol to cope with anxiety. Unexpectedly, the group receiving individual CBT therapy that included both an alcohol and a social anxiety component in each session showed *less* improvement at the end of the 12 -week

program and at 3-month follow-up compared to the group that received the alcohol-only sessions. Specifically, although both groups improved on drinking measures, the dual treatment group displayed a smaller percentage of days abstinent, and increased days of heavy drinking and total number of drinks consumed. On measures of social anxiety (i.e. SPAI, LSAS, FNE), both groups showed similar improvement (20%), though at the end of treatment both groups still endorsed levels of impairment.

These results must be considered preliminary, however. Because most social phobia treatment studies exclude patients with alcohol dependence, few comparisons between this study and others can be made, and the possibility that alcoholics respond differently to social phobia treatment exists. For example, continued use of alcohol during treatment could reduce the effectiveness of exposure and prohibit the extinction of social fears (Randall et al., 2001). In cognitive-behavioral treatment of social phobia, the cognitive effects of alcohol use (i.e. interference with self-awareness) may block efforts to change maladaptive cognitions or misconceptions. Also, habituation to anxious situations may be less likely to occur in exposure assignments if the patient is abusing alcohol (Marshall, 1994). More research is necessary to determine whether or not concurrent treatment for social anxiety can enhance therapeutic gains for alcoholics with social phobia. Moreover, treatment studies of persons with social phobia as the index diagnosis, who have concurrent alcohol dependence, are sorely needed.

V. Conclusion

The association between social phobia and alcohol use disorders is a frequently observed, reliable finding, in spite of the fact that laboratory studies have failed to show this relationship. To date, insufficient evidence exists to make firm conclusions about the implications for treatment of this subgroup of severely ill individuals. Despite clear associations, the causal relationships between these disorders may be more complicated (e.g. bi-directional) than the tension-reduction hypothesis or stress response dampening theory had proposed (Kushner et al., 1990). The existence of moderating variables in the relationship between social anxiety and drinking behavior has been well documented (Burke & Stephens, 1999), but few studies have attempted to integrate these concepts into a full model (Dijkstra et al., 2001).

In addition to clarifying the relation between these two conditions and specifying the effects of an assortment of moderators, it is of theoretical interest to determine whether or not people with subthreshold social phobia are at greater risk for the development of an alcohol use disorder compared to those with the diagnosis of social phobia who suffer significant impairment in social situations and avoid these interactions. Although Kushner and Sher (1993) found that college subjects who were diagnosed with social phobia had a significantly increased risk (odds ratio of 1.7) for alcohol abuse or dependence, it is currently unknown whether college students who are subthreshold on this dimension have a greater risk for this type of problem. The epidemiologic data reviewed above (Merikangas et al., 2002; Crum & Pratt, 2001) have hinted at such a relationship. Furthermore, though negative affect, or neuroticism, is related to social

phobia (Stemberger et al., 1995) and coping motives for drinking (Cooper et al., 1995), it is unclear whether socially phobic individuals who drink heavily, do so to cope with high levels of general negative affect.

CHAPTER III: REFERENCES

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