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The Role of Loneliness in the Relationship Between Social Anxiety and Substance Use

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THE ROLE OF LONELINESS IN THE RELATIONSHIP BETWEEN SOCIAL ANXIETY
AND SUBSTANCE USE

By

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ABSTRACT

Research has shown that social anxiety is associated with increased rates of cannabis and alcohol use, but the mechanisms underlying the relationship between social anxiety and substance use are still largely unknown. One individual difference that might play a role in this relationship is the experience of loneliness. Loneliness has been associated with both social anxiety and negative health behaviors (including substance use). More specifically, loneliness has been linked to increased rates of illicit substance use and decreased rates of alcohol use. Despite the links between these conditions, no research has specifically focused on the effect of loneliness on the relationship between social anxiety and substance use. The current study sought to investigate the role of loneliness in the relationship between social anxiety and substance use behaviors and to expand the current understanding of this relationship. Consistent with previous research we found loneliness was associated with an increase in social anxiety symptoms. However the relationship between loneliness and substance use varied across studies, as did the relationship between social anxiety and substance use.

INTRODUCTION

Social anxiety disorder (SAD) is the third most common psychological disorder after depression and alcohol use disorders (AUD; Kessler et al., 1994) and has an estimated lifetime prevalence rate between 7 and 16% (Wacker et al., 1992; Kessler et al., 1997). The prevalence of SAD is even greater within drug treatment centers and is estimated to be as high as 55% percent among illicit drug users (Tomasson & Vaglum, 1995). Comorbidity is associated with more severe symptomatology (Vollrath & Angst, 1998; Roy-Byrne et al., 2000), higher rates of Axis I diagnosis (Buckner, Timpano, Zvolensky, Sachs-Ericsson, & Schmidt, 2008), increased functional disability (Kessler & Frank, 1997; Roy-Buryne et al., 2000), and longer illness duration (Wittchen et al., 1991; Kessler et al., 1994; Merikangas et al., 2003) than either anxiety or substance use disorders individually.

A large body of evidence links SAD to AUD in particular (Morris et al., 2005; Kushner, Sher & Beitmen, 1990). Individuals with SAD have higher rates of comorbid alcohol use disorders relative to most other anxiety disorders (Kessler et al., 1997). The lifetime prevalence rate for AUD more than doubles among individuals with lifetime SAD diagnoses (Grant et al., 2005). Furthermore, among individuals presenting for alcohol related treatment, as many as 34% meet diagnostic criteria for SAD (Kushner et al., 1990; Schneier et al., 1989; Smail, Stockwell, Canter & Hodgson, 1984; Thomas et al., 1999). Recent research on adolescent anxiety disorders indicates that only SAD (and no other anxiety disorder) operates as a risk factor for adult alcohol dependence (Buckner et al., in press), suggesting that SAD presents a unique risk profile for alcohol related problems.

SAD is also associated with increased rates of cannabis use disorders (CUD; Argosti, Nunes, Levin, 2002; Lindquist, Lindsay & White, 1979; Lynskey et al., 2002) The lifetime prevalence rate of Cannabis dependence is 4.2% in the general populations and 29% among those with SAD (Agosti, et al., 2002). The rates of cannabis dependence are significantly higher in SAD populations relative to other anxiety disorders. For example, rates of cannabis dependence among SAD individuals are twice that of those with Panic disorder and generalized anxiety disorder (Agosti et al., 2002), suggesting there is a distinct relationship between SAD and cannabis use.

SAD is associated with increased risk for both AUD and CUD. This comorbidity is associated with significant societal cost and increased mental and physical impairment (Witchen, Feutsch, Sonntag, Muller, & Liebowits, 2000). Despite elevated rates of these substance use disorders among the socially anxious, the mechanisms underlying these relationships remain unclear. Individual differences in perceived loneliness may facilitate the understanding of these associations.

Loneliness

Loneliness is a complex set of feelings about unfulfilled social needs (Cacioppo et al., 2000). These feelings result from a discrepancy between the interpersonal relationships a person desires and those that they currently have (Pearlman & Peplau, 1982). Loneliness and negative affect are similar and correlated (Segrin, 1998) so much so that measures of negative affect often include questions about loneliness. However, loneliness and negative affect can be discriminated. A factor analysis of loneliness and negative affect measures found items uniquely loaded on separate loneliness and negative affect factors (Cacioppo et al., 2006). Item loading was directly correlated with the scale from which the item was derived and no item loaded on both factors.

Loneliness and depression are also correlated (Koenig & Abrams, 1999; Nolen-Hoeksema & Ahrens, 2002) and may have a common etiology (Weeks, Michela, Peplau, & Bragg, 1980; Dill & Anderson, 1999). However, based on confirmatory and factor analyses of a number of models, these conditions appear to be distinct (Anderson & Harvey, 1988). Depression is described as a global condition that spans multiple domains, whereas loneliness is limited to social domains (Boivin, Hymel, & Bukowski, 1995). Research has demonstrated that loneliness often precedes depression and may play a role in the development and maintenance of the disorder. For example, in a study of college students, Rich and Scovel (1987) found that the experience of loneliness early in the semester predicts depression at the end of the term. In the elderly, the experience of loneliness predicts depression three years later (Green et al., 1992) and in mid-adolescence loneliness predicts depression two and a half years later (Koenig & Abrams, 1999).

Everyone experiences transient feelings of loneliness and it is estimated that at any time about 20% of people report feeling lonely (Peplau & Pearlman, 1982). However, the experience of chronic loneliness appears to have negative implications for both physical and mental health (Perkins, 1991; Gupta & Korte, 1994; Ernst & Cacioppo, 1999). Chronic loneliness is a major

risk factor for psychological disturbances (Cacioppo et al., 2000) including anxiety (Mijuskovic, 1986) and social anxiety more specifically (Anderson & Harvey, 1988; Moore & Schultz, 1983). Lonely individuals have higher rates of social anxiety, public self consciousness, and reluctance to take social risks (Moore & Schultz, 1983). The correlation between loneliness and social anxiety is stronger than that of other factors related to loneliness including depression (Anderson & Harvey, 1988). The robust relationship between loneliness and SAD is not surprising given that individuals with SAD commonly avoid social situations limiting interpersonal interactions and relationships which in turn lead to feelings of loneliness.

Both SAD and loneliness are associated with substance use problems in adulthood (Kessler et al., 1994; Dewit, MacDonald & Offord, 1999). Initial research linked loneliness with increased alcohol consumption (Barretta, Dantzler, & Kayson, 1995; Page & Cole, 1991). Adults who reported heavier drinking patterns also reported increased feelings of loneliness (Barretta et al., 1995). The relationship between substance use and loneliness has also been explored among college students, however, in this population there appears to be a different pattern of findings. Cacioppo and colleagues (2000; 2002) found lonely students were less likely to consume alcohol than their non-lonely peers and were more likely to use other illicit substances including cannabis. These results suggest loneliness may act differently among college students than adults. Inconsistency in the effects of loneliness may be due to differences in “college culture” such as more opportunity to socialize and differential availability of drugs.

Despite the link between loneliness and substance use behaviors, there is a striking dearth of research on this relationship. Only a few studies have focused on loneliness as a mediator of substance use behavior and no research has investigated the role of loneliness in relation to specific substances (e.g., cannabis and alcohol). Loneliness is reported to mediate the relationship between social support and negative health outcomes, such that loneliness is associated with higher rates of negative health outcomes (e.g., substance use, obesity, medical conditions; Brown, Muhlenkamp, Fox, & Osborn, 1983; Mahon, Yarcheski, & Yarcheski, 1998). These results are compelling; however the breadth of outcomes within the category of negative health outcomes limits the inferences that can be made about the relationship between loneliness and substance use.

Taken together, this research suggests that both SAD and loneliness are related to substance use behavior. Yet, the nature of the relationship among these variables, particularly as

they relate to specific types of substances, has not been sufficiently evaluated. Empirical data suggest that loneliness may act as a vulnerability factor for cannabis use problems and protect against alcohol use problems (Cacioppo et al., 2000; Cacioppo et al., 2002). However, research is limited to only a few studies and methodological practices (i.e., grouping a variety of negative health outcomes together) limit the inferences which can be made about specific substances. The goal of the proposed study was to gain a better understanding of the relationship between SAD, loneliness, and substance use problems. This will be accomplished by investigating the role of loneliness in the association of SAD and cannabis and alcohol use problems.

The first hypothesis was that loneliness will moderate the relationship between social anxiety symptoms and cannabis and alcohol use problems in a college sample, such that socially anxious individuals who experience high levels of loneliness will be most vulnerable to cannabis problems and least vulnerable to alcohol problem. Loneliness has been identified as a possible moderator of the relationship between SAD and substance use for the following reasons: SAD is linked with both loneliness and substance use behavior, such that there are increased rates of loneliness and substance use among socially anxious individuals (Anderson & Harvey, 1988; Moore & Schultz, 1983; Dewit, MacDonald & Offord, 1999); Loneliness is linked to substance use behaviors and appears to have a differential relationship for alcohol and cannabis use, specifically lonely individuals have higher rates of illicit drug use including cannabis and lower rates of alcohol use compared to non-lonely peers (Cacioppo et al., 2000; Cacioppo et al., 2002).

The secondary hypothesis was that loneliness will mediate and thus to help to explain the relationship between SAD and cannabis use. Mediation requires the independent variable (SAD) predicts both the proposed mediator (loneliness) and the dependent variable (cannabis use); the mediator (loneliness) predicts the dependent variable (cannabis use); and the effect of the independent variable on the dependent variable is substantially reduced after the addition of the mediator to the model (Baron & Kenny, 1986). Previous research has demonstrated the first two requirements. That is, SAD is positively related to both loneliness and cannabis use problems, and loneliness has been linked to increased rates of cannabis use. The current study sought to test the final contingency of mediation, namely, when loneliness is controlled for statistically, the magnitude of the relationship between SAD and cannabis use will decrease.

CHAPTER 1

STUDY 1

In study 1 the role of loneliness in the relationship between social anxiety and substance use behaviors was investigated. First, loneliness was examined as a moderator of the relationship between social anxiety and both alcohol and marijuana related problems. Secondly, we evaluated loneliness as a mediator between social anxiety and substance related problems (alcohol and marijuana).

Method

Participants. Participants were 423 undergraduate students (71% female) from Florida State University who were recruited from undergraduate psychology courses in exchange for research credit. Participants ranged in age from 18 to 50 years ($M = 18.82$, $SD = 2.37$). The ethnicity of the group was representative of the Florida State University population, 70% Caucasian, 11% Hispanic/Latino, 11% African American, 4% Asian and 4% identified as other.

Measures. *Social Interaction Anxiety Scale.* The SIAS (Mattick & Clarke, 1998) is a 20-item questionnaire that measures fears of general social interactions. Each item is rated from 0 (not at all characteristic or true of me) to 4 (extremely characteristic or true of me). In a population of college students psychometric evaluations have reported a mean of 20 and a standard deviation of 14 (Heimberg, Muller, Holt, Hope, & Lebowitz, 1992). The test-retest reliability of the SAIS over a 4 week and 12 week period to be quite good ($r=.92$; Mattick & Clark, 1998). Chronbach's alpha ranged from .92 to .94 (Heimberg et al., 1992; Mattick & Clarke, 1998).

Revised UCLA Loneliness Scale. The RULS (Russell, Peplau, & Cutrona, 1980) is a 20-item self report questionnaire that measures loneliness. For each item, participants rate from 1 (never) to 4 (often) how much an item is consistent with the way they usually feel. Research has reported a mean of 36 and a standard deviation of 10 among college populations (Knight, Christholm, Marsh, & Godfrey, 1988). Russell, Peplau, & Cutrona (1980) reported sufficient test-retest reliability ($r=.72$) over a one year period. Knight et al. (1988) reported a Cronbach alpha value of .94.

Brief Young Adult Alcohol Consequences Questionnaire. The B-YAACQ (Kahler, Strong, & Read, 2005) is a 24-item measure of alcohol related consequences experiences in the past year. The B-YAACQ has demonstrated high internal consistency in college populations ($\alpha = .89$; Kahler et al., 2005).

Marijuana Problems Scale. The MPS (Stephens, Roffman, & Curtin, 2000) measures negative social, occupational, physical, and personal consequences associated with cannabis use. Participants were asked to rate problems they experienced as a result of smoking cannabis from 0 (none) to 2 (severe) problem in the past year. The MPS has demonstrated excellent internal consistency ($\alpha = .86$).

Beck Depression Inventory-II. The BDI (Beck, Steer, & Brown, 1996) is a 21-item measure that uses a 4-point scale to assess the severity of specific cognitive and somatic depressive symptoms have been experienced in the past two weeks. It has well documented reliability and validity (Beck, et al., 1996). The BDI score were entered as a covariate in the hierarchical regression analyses based on the strong correlation between loneliness and depression.

Procedure. All participants were informed that they would be asked about their emotions, behaviors, and self-perceptions. Informed consent was obtained prior to completing a series of self-report questionnaires. The experiment was conducted in a group setting. The students had minimal interaction with on another. Once the experimental session was completed participants were debriefed.

Results

Relation between demographics, social anxiety and substance use. Zero-order correlations were conducted to determine the associations among demographic variables, social anxiety and substance use behaviors. Male gender was correlated with increased cannabis related problems ($r = .19, p < .0001$). Social anxiety was correlated with loneliness ($r = .54, p < .0001$), depression ($r = .46, p < .0001$), and increased cannabis related problems ($r = .11, p < .05$) but was unrelated to alcohol problems ($r = .10, p < .10$). Loneliness was associated with alcohol problems ($r = .16, p < .001$) and depression ($r = .50, p < .0001$).

Moderational analyses: Alcohol use behaviors. The moderation of the relationship between social anxiety and alcohol use behaviors was tested using the procedure proposed by Baron and Kenny (1986). Alcohol related problems served as dependent variable. Predictive

variables were the main effects of loneliness (RULS) and social anxiety symptoms (SIAS) and the interaction of loneliness x social anxiety. For the regression, predictor variables were divided into three levels in the hierarchy: the covariates gender and depression were entered at level one, the main effects of each variable in the interaction were entered at level two, and each interaction term was entered at level three. This model ensured the observed effects for the interactions at level three cannot be contributed to shared variance with the variables at level one or two (Cohen & Cohen, 1983). Variables were centered to reduce the multicollinearity between SIAS scores and the interaction terms. None of the moderation analyses were significant (Table 4). When males and females were analyzed separately the moderation analyses remained insignificant (Tables 5 and 6).

Moderational analyses: Cannabis use behaviors. To test the moderational role of loneliness in the relationship between social anxiety and cannabis use behaviors, a hierarchical regression was conducted using the same method described above. Cannabis related problems served as dependent variable. Moderation requires that the interaction of the independent variable and the proposed moderator (Loneliness; RULS) significantly predicts the dependent variable (MPS). Hierarchical regression analyses indicated that the interaction between social anxiety and loneliness did not predict cannabis related problems, therefore there was no support for moderation (Table 4). When males and females were analyzed separately the moderational analyses remained insignificant (Tables 5 and 6).

Mediational analyses: Cannabis use behaviors. Mediation was tested using the strategies proposed by Baron and Kenny (1986). The first step of this method was to establish social anxiety as a significant predictor of cannabis use problems. As previously reported, analyses indicated that social anxiety (SIAS) was a significant predictor of cannabis use problems (MPS).

The second and third steps to test mediation require a relationship between the predictor variable (SIAS) and the proposed mediator (loneliness, RULS) as well as between the proposed mediator and the dependent variable (MPS). Social anxiety was a significant predictor of loneliness ($\beta = .40, P < .0001$) such that higher social anxiety symptoms were predictive of greater feelings of loneliness. Loneliness did not significantly predict cannabis related problems and therefore cannot serve as a mediator for this model (table 7).

When males and females were analyzed separately social anxiety scores were not significantly associated with alcohol or marijuana problems and thus meditational analyses could not be conducted.

CHAPTER 2

STUDY 2

In study 2 we expanded upon the first study investigating the role of loneliness in the relationship between social anxiety and substance use behavior. Different assessment measures for substance abuse including quantity and frequency were used to gain a more complete analysis of the relationships between these variables. As in study 1, loneliness was examined as a moderator of the relationship between social anxiety and both alcohol and marijuana related problems. Loneliness was also evaluated as a mediator between social anxiety and substance related problems (alcohol and marijuana).

Method

Participants. Participants were recruited from Florida State University undergraduate population ($n=472$). Students received research credit for their participation. The sample was predominantly female (66%) and relatively young (age $M=18.99$, $SD=1.7$). The ethnicity of the group was representative of the Florida State University population, 73% Caucasian, 10% Hispanic/Latino, 9% African American, 3% Asian and 5% identified as other.

Measures. Subjects completed the same measures of social anxiety (SIAS), loneliness (RULS), and depression (BDI-II) used in study 1.

Rutgers Alcohol Problems Index. The RAPI (White & Laboucie, 1989) is a 23-item questionnaire that assesses the frequency of alcohol use problems. To assess current alcohol-related problems, participants were asked to rate from 0 (never) to 3 (more than 5 times) the number of times they have experienced each problem in the past month. The RAPI has demonstrated excellent internal consistency with Cronbach's alpha ranging from .89 (Borsari & Carey, 2000) to .92 (White & Labouvie, 1989).

Marijuana Problems Index. The MPI (Simons & Carey, 2002) is a modified version of the RAPI (White & Labouce, 1989) that measures problems associated with marijuana use rather than alcohol. To assess current cannabis-related problems, participants were asked to rate from 0 (never) to 3 (more than 5 times) the number of times they have experienced each problem in the past month. The MPI has demonstrated excellent internal consistency with alphas ranging from .86 (Simons & Carey, 2002) to .91 (Simons, Gaher, Correia, Hansen, & Christopher, 2005)

Results

Relation between demographics, social anxiety and substance use. Zero-order correlations were conducted to evaluate relations among demographic variables, social anxiety and substance use behaviors (Table 8). Male gender was correlated with increased alcohol problems ($r = -.12, p < .01$), alcohol consumption ($r = -.21, p < .0001$), and cannabis problems ($r = -.09, p < .05$). Female gender was associated with increased symptoms of depression ($r = .12, p < .01$). Social anxiety was correlated with loneliness ($r = .52, p < .0001$), depression ($r = .40, p < .0001$), and decreased lifetime frequency of cannabis use ($r = -.10, p < .05$) but was unrelated to cannabis problems, alcohol problems, alcohol consumption (quantity, frequency and combined score) and past month cannabis use (all $r < .10, p < .025$). Loneliness was associated with alcohol problems ($r = .16, p < .0001$) and depression ($r = .46, p < .0001$).

Moderational analyses: Alcohol use behaviors. The moderation of the relationship between social anxiety and alcohol use behaviors was tested using the procedure proposed by Baron and Kenny (1986) and described in study 1. Alcohol quantity, alcohol frequency, a combined alcohol use quantity & frequency score, and alcohol related problems served as dependent variables. Predictive variables were the main effects of loneliness (RULS) and social anxiety symptoms (SIAS) and the interaction of loneliness x social anxiety. Separate regression equations were performed for each predictor paired with each of the four dependent variables. For each regression, predictor variables were divided into three levels in the hierarchy: the covariates gender and depression were entered at level one, the main effects of each variable in the interaction were entered at level two, and each interaction term was entered at level three. This model ensured the observed effects for the interactions at level three cannot be contributed to shared variance with the variables at level one or two (Cohen & Cohen, 1983). Variables were centered to reduce the multicollinearity between SIAS scores and the interaction terms. None of the moderation analyses were significant (Table 11).

When males were analyzed separately all analyses remained insignificant (Table 12). Among females, an interaction was observed between loneliness and social anxiety, such that decreased levels of loneliness among individuals with low social anxiety were associated with decreased alcohol-related problems ($\beta = -.24, p < .01$; see Table 13 and Figure 1). No other significant results were observed.

Moderational analyses: Cannabis use behaviors. To test the moderational role of loneliness in the relationship between social anxiety and cannabis use behaviors, hierarchical regression was conducted using the same method described above. Cannabis use frequency (lifetime and past month) and cannabis related problems served as dependent variables. Moderation requires that the interaction of the independent variable and the proposed moderator (Loneliness; RULS) significantly predicts the dependent variable. Hierarchical regression analyses indicated that the interaction between social anxiety and loneliness did not predict cannabis related problems or frequency of use, therefore there was no support for moderation (Table 14). When males and females were analyzed separately the moderational analyses remained insignificant (Tables 15 and 16).

Mediational analyses: Cannabis use behaviors. Mediation was tested using the strategies proposed by Baron and Kenny (1986) and described in study 1. As previously reported, analyses indicated that social anxiety (SIAS) was a significant predictor of lifetime cannabis use. Cannabis use problems (MPI) were not included in subsequent analyses as the SIAS was not predictive of this variable.

The second and third steps to test mediation require a relationship between the predictor variable (SIAS) and the proposed mediator (loneliness) as well as between the proposed mediator and the dependent variable (cannabis use in the past month). Social anxiety was a significant predictor of loneliness ($\beta = .40, p < .0005$) such that higher social anxiety symptoms were predictive of greater feelings of loneliness. Loneliness did not significantly predict lifetime cannabis use and therefore cannot serve as a mediator for this model. When males were analyzed separately mediational analyses remained insignificant (Table 18).

DISCUSSION

Despite a large body of research linking social anxiety with increased rates of alcohol use disorders in adults, this relationship appears to be somewhat unclear among college age populations. The current study sought to clear up some of the inconsistencies in the current research examining the relationship between SAD and problematic substance use in college populations. To our knowledge the present study serves as the first investigation of the interplay between social anxiety, loneliness, and problematic substance use behaviors among college undergraduates. Although we found some evidence for a relationship between these variables our findings were variable across studies. Unfortunately, given the conflicting results, this study leaves us still wondering what mechanisms underlie this relationship.

Consistent with previous research we found loneliness was associated with increased social anxiety symptoms (Moore & Schultz, 1983; Anderson & Harvey, 1988). However, we were surprised to find the relationship between loneliness and substance use varied across studies given that previous literature suggests loneliness is associated with increased rates of both alcohol (Barretta et al., 1995, Page & Cole, 1991) and cannabis use (Cacioppo et al., 2000; 2002). Similarly, we were surprised to find a lack of support for a relationship between social anxiety and marijuana related problems given the existing body of literature (Agosti, et al., 2002; Lynskey et al., 2002). We found only limited support for a relationship between social anxiety and alcohol use behaviors. These conflicting results suggest this relationship may not be as previously described and there continues to be a lack of understanding of the connections between these variables.

Our primary goal was to examine the individual difference variable loneliness and its role in the relationship between social anxiety and substance use behavior. Contrary to expectation, in study 2 when males and females were analyzed separately, we found significant though small interactive effects for females. Women who reported high social anxiety symptoms and low feelings of loneliness reported greater alcohol related problems than women who reported low levels of social anxiety and loneliness. These results suggest that women who experience more social anxiety may be particularly vulnerable to alcohol related problems even if they experience low-levels of loneliness which appears to be protective among low socially anxious individuals. However, this result was not replicated in study 1 limiting the conclusions that may be drawn.

Overall it appears that loneliness does not play an integral in the relationship between social anxiety and substance use behavior.

We found individuals who reported high loneliness displayed more problematic alcohol use behaviors compared to those reporting low loneliness. This may be due to the situations in which lonely individuals consume alcohol. Drinking among college students frequently occurs in social gatherings. Students with high loneliness who find themselves in social situations may be more likely to consume alcohol to cope in those situations compared to non-lonely individuals. This is consistent with research by Cacioppo and colleagues (2000) which demonstrated risk factors associated with loneliness including substance use are particularly severe among socially embedded individuals. It is possible that lonely students who avoid social situations would report lower levels to substance use in contrast with those engaging in social situations. Future research is needed to assess alcohol consumption in specific situations for lonely individuals.

It is also possible that situations in which alcohol is consumed might play a role in disguising the relationship between SAD and substance use disorders. An individual with SAD may be more likely to consume alcohol to cope with their anxiety in social situations (Tran, Haaga, & Chambless, 1997) and thus appear to drink more. However, socially anxious individuals are more likely to avoid social situations. Since this is where drinking commonly occur in college, high socially anxious individuals may limit their drinking opportunities and may mask their tendency to use alcohol for anxiolytic effects. Investigation into situations in which drinking occurs might clarify some of the discrepancies in the present literature on college populations.

The existing literature in this area uses a number of different measures to evaluate the same group of symptoms and behaviors. Though the reliability and validity of these measures have been demonstrated some instruments may be more sensitive to different aspects of the constructs. Of particular concern is the definition of problematic substance use behavior. Assessment measures vary in the time period evaluated from as little as a month to over a year. Depending on the window of time considered a dramatically different depiction of substance use may be captured. Furthermore, within college populations some individuals are able to drink heavily without suffering negative consequences and these negative consequences are often subject to an individual's interpretation of what is problematic behavior. In a college setting where students are surrounded by others who engage in similar behaviors heavy substance use

may not be viewed as abnormal or problematic. Future research in this area should include comparison of the different assessment tools and time periods with the aim of coming to a consensus about the best ways to measure these experiences and behaviors. In the meantime it may be necessary to use multiple measures of the same constructs to get a more complete understanding of these complex relationships.

The overlap between depression and loneliness should be considered as a source of variable results. Though depression and loneliness are distinct constructs they are strongly correlated and several assessment items overlap. By using only one measure of both loneliness and depression we may have limited our ability to adequately tease apart these constructs. Additionally, given that transient loneliness is experienced by about 20% of people at any one time (Peplau & Pearlman, 1982) gathering data at multiple time points would allow researchers to parse out transient feelings of loneliness from chronic loneliness.

Like any study, the present investigation has a number of limitations that deserve comment and suggest future work in this area. First, the present study examined a non-referred group. It is possible that some discrepancy in the current literature is due to variability of symptoms severity across studies. Research is needed to examine whether the predicted relationships might be present in treatment seeking individuals. Second, our findings are with a relatively homogenous sample and may not generalize to more diverse populations. Our participants were similar in education, ethnicity, socioeconomic status, and men were under-represented. This homogeneity may affect the non-significant relationships in the current study in contrast to other investigations (Tran et al., 1997; Kidorf & Lang, 1999). It is also worth noting that while our subjects were all undergraduate students the average age was relatively young (approximately 19 years of age) and under the legal drinking age. Our results may not generalize to older undergraduate students who are of legal drinking age.

Our results illustrate the complicated and somewhat illusive relationship between social anxiety symptoms and substance use behavior among college students. Despite the difficulty in understanding how these variables interact in college populations it remains an important area of research, particularly given the well documented comorbidity between SAD and substance use disorders in adulthood. Insight into the associations between SAD and SUD holds promise for the development of more effective interventions and treatments among at risk college populations, years before comorbid substance use disorders are commonly diagnosed.

APENDIX

TABLES AND FIGURES

Table 1: Correlations between study 1 measures.

Measure	1	2	3	4	5
SIAS	--				
RULS	.54**	--			
YAACQ	.08	.09	--		
MPS	.11*	.16**	.16**	--	
BDI	.46**	.50**	.12**	.29**	--

* $p < 0.05$, ** $p < 0.01$

Table 2. Correlations between study 1 measures for males.

Measure	1	2	3	4	5
SIAS	--				
RULS	.56**	--			
YAACQ	.08	.09	--		
MPS	-.03	.03	.50**	--	
BDI	.45**	.44**	.26**	.24**	--

* $p < 0.05$, ** $p < 0.01$

Table 3. Correlations between study 1 measures for females.

Measure	1	2	3	4	5
SIAS	--				
RULS	.51**	--			
YAACQ	.05	.20**	--		
MPS	-.02	.12*	.51**	--	
BDI	.39**	.49**	.27**	.13*	--

*p < 0.05, ** p < 0.01

Table 4. Individual Variable Contributions Predicting Substance related problems in Study 1.

	ΔR^2	t	β	p
Dependent Variable: Alcohol Related Problems				
Step 1: Covariates	0.02			<.05
Gender		-0.52	-0.03	ns
Depression		2.38	0.12	<.05
Step 2: Main Effects	0.002			ns
Social anxiety		0.19	0.01	ns
Loneliness		0.70	0.04	ns
Step 3: Interaction Effect	0.000			ns
Social anxiety X Loneliness		-0.05	-0.003	ns
Dependent Variable: Marijuana Related Problems				
Step 1: Covariates	0.124			<.0001
Gender		0.21	4.44	<.0001
Depression		0.31	6.61	<.0001
Step 2: Main Effects	0.001			ns
Social anxiety		-0.04	-0.73	ns
Loneliness		0.00	-0.001	ns
Step 3: Interaction Effect	0.000			ns
Social anxiety X Loneliness		-0.01	-0.20	ns

Table 5. Individual Variable Contributions Predicting Alcohol and Cannabis related problems in Study 1 for males.

	ΔR^2	t	β	p
Dependent Variable: Alcohol Related Problems				
Step 1: Covariates	0.05			<.05
Depression		2.50	0.23	<.05
Step 2: Main Effects	0.02			ns
Social anxiety		-0.61	-0.07	ns
Loneliness		0.18	0.18	ns
Step 3: Interaction Effect	0.01			ns
Social anxiety X Loneliness		-1.2	-.12	ns
Dependent Variable: Marijuana Related Problems				
Step 1: Covariates	0.19			<.0001
Depression		9.83	0.49	<.0001
Step 2: Main Effects	0.00			ns
Social anxiety		2.13	0.02	ns
Loneliness		2.47	0.03	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		0.60	0.06	ns

Table 6. Individual Variable Contributions Predicting Alcohol and Cannabis related problems in Study 1 for females.

	ΔR^2	t	β	p
Dependent Variable: Alcohol Related Problems				
Step 1: Covariates	0.01			ns
Depression		1.29	0.08	ns
Step 2: Main Effects	0.00			ns
Social anxiety		0.06	0.76	ns
Loneliness		-0.03	-0.37	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		0.05	0.70	ns
Dependent Variable: Marijuana Related Problems				
Step 1: Covariates	0.07			<.0001
Depression		4.58	0.26	<.0001
Step 2: Main Effects	0.01			ns
Social anxiety		-1.11	-0.08	ns
Loneliness		-0.42	-0.03	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		-1.18	-0.08	ns

Table 7. Study 1. Regression Analyses for Mediation: (1) Effects of Social Anxiety on Cannabis related problems, (2) Effects of social anxiety on loneliness, (3), Effects of loneliness on cannabis related Problems.

Dependent Variable	Independent Variable	β	F
Cannabis Model			
Cannabis-Related Problems	1. Social Anxiety	-0.04	0.66
Loneliness	2. Social Anxiety	0.40	82.37***
Cannabis-Related Problems	3. Loneliness	-0.01	0.03

* $p < 0.05$, ** $p < 0.01$. *** $p < 0.001$

Table 8. Correlations between study 2 measures.

Measure	1	2	3	4	5	6	7	8	9	10
SIAS	--									
RULS	.52**	--								
RAPI	.06	.12**	--							
Alcohol Frequency	-.06	-.02	.52**	--						
Alcohol Quantity	-.07	-.01	.50**	.72**	--					
Alcohol Use Composite	-.03	.02	.57**	.92**	.79**	--				
MPI	-.02	.08	.51**	.38**	.33**	.38**	--			
Marijuana Lifetime use	-.10	-.02	.40**	.47**	.43**	.45**	.77**	--		
Marijuana Past Month Use	-.07	.01	.29**	.29**	.29**	.32**	.72**	.71**	--	
BDI	.40**	.46**	.25**	.05	.09	.04	.15**	.07	.06	--

* $p < 0.05$, ** $p < 0.01$

Table 9. Correlations between study 2 measures for males.

Measure	1	2	3	4	5	6	7	8	9	10
SIAS	--									
RULS	.56**	--								
RAPI	.08	.09	--							
Alcohol Frequency	.01	-.00	.50**	--						
Alcohol Quantity	-.11	-.05	.47**	.71**	--					
Alcohol Use Composite	.00	.01	.53**	.94**	.77**	--				
MPI	-.03	.03	.50**	.34**	.28**	.33**	--			
Marijuana Lifetime use	-.19*	-.10	.41**	.48**	.44**	.45**	.75**	--		
Marijuana Past Month Use	-.05	-.05	.34**	.30**	.26**	.30**	.77**	.76**	--	
BDI	.45**	.44**	.26**	.11	.12	.08	.24**	.04	.10	--

* p < 0.05, ** p < 0.01

Table 10. Correlations between study 2 measures for females

Measure	1	2	3	4	5	6	7	8	9	10
SIAS	--									
RULS	.51**	--								
RAPI	.05	.20	--							
Alcohol Frequency	-.11	-.04	.52**	--						
Alcohol Quantity	-.06	-.01	.51**	.72**	--					
Alcohol Use Composite	-.07	.01	.59**	.92**	.79**	--				
MPI	-.02	.12*	.51**	.40**	.36**	.42**	--			
Marijuana Lifetime use	-.05	.03	.39**	.45**	.41**	.44**	.79**	--		
Marijuana Past Month Use	-.08	.04	.25**	.28**	.29**	.32**	.68**	.67**	--	
BDI	.39**	.49**	.27**	.05	.12*	.06	.13*	.10	.05	--

* $p < 0.05$, ** $p < 0.01$

Table 11. Individual Variable Contributions Predicting Alcohol related problems in Study 2.

	ΔR^2	<i>t</i>	β	<i>p</i>
Dependent Variable: Alcohol Frequency				
Step 1: Covariates	0.02			< .005
Gender		-3.01	-0.14	< .005
Depression		1.41	0.07	ns
Step 2: Main Effects	0.01			ns
Social anxiety		-1.83	-0.10	ns
Loneliness		-0.50	-0.03	ns
Step 3: Interaction Effect	.002			ns
Social anxiety X Loneliness		-1.10	-0.06	ns
Dependent Variable: Alcohol Quantity				
Step 1: Covariates	0.06			< .0001
Gender		-5.31	-0.24	< .0001
Depression		2.51	0.11	< .05
Step 2: Main Effects	0.02			< .01
Social anxiety		-2.43	-0.13	< .05
Loneliness		-0.72	-0.04	ns
Step 3: Interaction Effect	0.004			ns
Social anxiety X Loneliness		-1.39	-0.07	ns
Dependent Variable: Composite Alcohol Quantity – Frequency Score				
Step 1: Covariates	0.05			< .0001
Gender		-4.88	-0.22	< .0001
Depression		1.39	0.06	ns
Step 2: Main Effects	0.01			ns
Social anxiety		-1.43	-0.08	ns
Loneliness		0.01	0.09	ns
Step 3: Interaction Effect	0.003			ns
Social anxiety X Loneliness		-1.43	-0.08	ns
Dependent Variable: Composite Alcohol Related Problems				
Step 1: Covariates	0.08			< .0001
Gender		-3.29	-0.15	< .001
Depression		5.86	0.26	< .0001
Step 2: Main Effects	0.01			ns
Social anxiety		-1.60	-0.09	ns
Loneliness		1.43	0.08	ns
Step 3: Interaction Effect	0.004			ns
Social anxiety X Loneliness		-1.33	-0.07	ns

Note. Depression was measured using the Beck Depression Inventory (BDI), alcohol related problems were measured with the Rutgers Alcohol Problems Index (RAPI), loneliness was measured using the Revised-UCLA Loneliness Scales (RULS) and social anxiety was measured using the Social Interaction Anxiety Scale (SIAS). B = standardized beta weight provided for multiple regression.

Table 12. Individual Variable Contributions Predicting Alcohol related problems in Study 2 for males

	ΔR^2	<i>t</i>	β	<i>p</i>
Dependent Variable: Alcohol Frequency				
Step 1: Covariates	0.00			ns
Depression		0.82	0.05	ns
Step 2: Main Effects	0.02			<.05
Social anxiety		-2.2	-0.15	<.05
Loneliness		-0.30	-0.02	ns
Step 3: Interaction Effect	0.01			ns
Social anxiety X Loneliness		-1.78	-0.11	ns
Dependent Variable: Alcohol Quantity				
Step 1: Covariates	0.01			< .05
Depression		2.04	0.12	< .05
Step 2: Main Effects	0.01			ns
Social anxiety		-2.43	-0.11	ns
Loneliness		-0.72	-0.03	ns
Step 3: Interaction Effect	0.01			ns
Social anxiety X Loneliness		-1.39	-0.09	ns
Dependent Variable: Composite Alcohol Quantity – Frequency Score				
Step 1: Covariates	0.00			ns
Depression		0.27	0.06	ns
Step 2: Main Effects	0.01			ns
Social anxiety		-1.63	-0.11	ns
Loneliness		0.24	0.02	ns
Step 3: Interaction Effect	0.01			ns
Social anxiety X Loneliness		-1.61	-0.10	ns
Dependent Variable: Composite Alcohol Related Problems				
Step 1: Covariates	0.07			< .0001
Depression		4.92	0.27	< .0001
Step 2: Main Effects	0.01			ns
Social anxiety		-1.73	-0.11	ns
Loneliness		-1.93	-0.13	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		-0.56	0-.03	ns

Note. Depression was measured using the Beck Depression Inventory (BDI), alcohol related problems were measured with the Rutgers Alcohol Problems Index (RAPI), loneliness was measured using the Revised-UCLA Loneliness Scales (RULS) and social anxiety was measured using the Social Interaction Anxiety Scale (SIAS). B = standardized beta weight provided for multiple regression.

Table 13. Individual Variable Contributions Predicting Alcohol related problems in Study 2 for females.

	ΔR^2	t	β	p
Dependent Variable: Alcohol Frequency				
Step 1: Covariates	0.01			ns
Depression		1.33	0.11	ns
Step 2: Main Effects	0.00			ns
Social anxiety		-0.27	-0.03	ns
Loneliness		-0.48	-0.05	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		0.47	0.04	ns
Dependent Variable: Alcohol Quantity				
Step 1: Covariates	0.02			ns
Depression		1.54	0.12	ns
Step 2: Main Effects	0.04			ns
Social anxiety		-1.91	-0.19	ns
Loneliness		-0.45	-0.04	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		-0.43	-0.04	ns
Dependent Variable: Composite Alcohol Quantity – Frequency Score				
Step 1: Covariates	0.01			ns
Depression		1.06	0.08	ns
Step 2: Main Effects	0.00			ns
Social anxiety		-0.43	-0.04	ns
Loneliness		-0.13	-0.01	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		-0.03	0.00	ns
Dependent Variable: Alcohol Related Problems				
Step 1: Covariates	0.07			< .001
Depression		3.35	0.26	< .001
Step 2: Main Effects	0.00			ns
Social anxiety		-0.48	-0.05	ns
Loneliness		-0.02	0.00	ns
Step 3: Interaction Effect	0.05			<.01
Social anxiety X Loneliness		-2.90	-0.24	<.01

Note. Depression was measured using the Beck Depression Inventory (BDI), alcohol related problems were measured with the Rutgers Alcohol Problems Index (RAPI), loneliness was measured using the Revised-UCLA Loneliness Scales (RULS) and social anxiety was measured using the Social Interaction Anxiety Scale (SIAS). B = standardized beta weight provided for multiple regression.

Table 14. Individual Variable Contributions Predicting Cannabis related problems in Study 2.

	ΔR^2	t	β	p
Dependent Variable: Cannabis Related Problems				
Step 1: Covariates	0.04			< .0001
Gender		-2.41	-0.11	< .05
Depression		3.49	0.16	<.001
Step 2: Main Effects	0.01			ns
Social anxiety		-2.41	-0.13	< .05
Loneliness		1.03	0.06	ns
Step 3: Interaction Effect	0.01			ns
Social anxiety X Loneliness		-1.49	-0.08	ns
Dependent Variable: Past Month Cannabis Use Frequency				
Step 1: Covariates	0.01			ns
Gender		-1.67	-0.08	ns
Depression		1.39	0.07	ns
Step 2: Main Effects	0.01			ns
Social anxiety		-2.14	-0.12	< .05
Loneliness		0.32	0.02	ns
Step 3: Interaction Effect	0.003			ns
Social anxiety X Loneliness		-1.11	-0.06	ns
Dependent Variable: Lifetime Cannabis Use Frequency				
Step 1: Covariates	0.01			ns
Gender		-1.66	-0.08	ns
Depression		1.65	0.08	ns
Step 2: Main Effects	0.02			< .05
Social anxiety		-2.65	-0.15	< .01
Loneliness		-0.23	-0.01	ns
Step 3: Interaction Effect	0.002			ns
Social anxiety X Loneliness		-0.93	-0.05	ns

Note. Depression was measured using the Beck Depression Inventory (BDI), cannabis related problems were measured with the Marijuana Problems Scale (MPS), loneliness was measured using the Revised-UCLA Loneliness Scales (RULS) and social anxiety was measured using the Social Interaction Anxiety Scale (SIAS). B = standardized beta weight provided for multiple regression.

Table 15. Individual Variable Contributions Predicting Cannabis related problems in Study 2 for males

	ΔR^2	t	β	p
Dependent Variable: Cannabis Related Problems				
Step 1: Covariates	0.02			< .05
Depression		2.18	0.13	<.05
Step 2: Main Effects	0.02			ns
Social anxiety		-1.90	-0.13	ns
Loneliness		1.73	0.13	ns
Step 3: Interaction Effect	0.01			ns
Social anxiety X Loneliness		-1.22	-0.08	ns
Dependent Variable: Past Month Cannabis Use Frequency				
Step 1: Covariates	0.00			ns
Depression		0.88	0.05	ns
Step 2: Main Effects	0.02			ns
Social anxiety		-2.11	-0.14	< .05
Loneliness		1.08	0.08	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		-0.89	-0.06	ns
Dependent Variable: Lifetime Cannabis Use Frequency				
Step 1: Covariates	0.01			ns
Depression		1.69	0.10	ns
Step 2: Main Effects	0.01			ns
Social anxiety		-1.6	-0.11	ns
Loneliness		0.22	0.02	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		-1.18	0.08	ns

Note. Depression was measured using the Beck Depression Inventory (BDI), cannabis related problems were measured with the Marijuana Problems Scale (MPS), loneliness was measured using the Revised-UCLA Loneliness Scales (RULS) and social anxiety was measured using the Social Interaction Anxiety Scale (SIAS). B = standardized beta weight provided for multiple regression.

Table 16. Individual Variable Contributions Predicting Cannabis related problems in Study 2 for females.

	ΔR^2	t	β	p
Dependent Variable: Cannabis Related Problems				
Step 1: Covariates	0.06			< .01
Depression		3.09	0.24	<.01
Step 2: Main Effects	0.03			ns
Social anxiety		-1.77	-0.17	ns
Loneliness		-0.15	-0.01	ns
Step 3: Interaction Effect	0.01			ns
Social anxiety X Loneliness		-0.87	-0.07	ns
Dependent Variable: Past Month Cannabis Use Frequency				
Step 1: Covariates	0.00			ns
Depression		1.20	0.09	ns
Step 2: Main Effects	0.02			ns
Social anxiety		-0.89	-0.09	ns
Loneliness		-0.74	-0.07	ns
Step 3: Interaction Effect	0.00			ns
Social anxiety X Loneliness		-0.71	-0.06	ns
Dependent Variable: Lifetime Cannabis Use Frequency				
Step 1: Covariates	0.00			ns
Depression		0.46	0.04	ns
Step 2: Main Effects	0.05			<.05
Social anxiety		-2.44	-0.24	<.05
Loneliness		-0.40	-0.04	ns
Step 3: Interaction Effect	0.03			ns
Social anxiety X Loneliness		0.16	0.01	ns

Note. Depression was measured using the Beck Depression Inventory (BDI), cannabis related problems were measured with the Marijuana Problems Scale (MPS), loneliness was measured using the Revised-UCLA Loneliness Scales (RULS) and social anxiety was measured using the Social Interaction Anxiety Scale (SIAS). B = standardized beta weight provided for multiple regression.

Table 17. Study 2. Regression Analyses for Mediation: (1) Effects of Social Anxiety on lifetime cannabis use, (2) Effects of social anxiety on loneliness, (3), Effects of loneliness on lifetime cannabis use.

Dependent Variable	Independent Variable	β	F
Cannabis Model			
Lifetime Cannabis Use	1. Social Anxiety	-.15	9.24**
Loneliness	2. Social Anxiety	.40	95.53***
Lifetime Cannabis Use	3. Loneliness	-.08	.02

Note. Social Anxiety was measured using the Social Interaction Anxiety Scale (SIAS) and loneliness was measured using the Revised UCLA Loneliness Scale (RULS). B = standardized beta weight provided for multiple regression.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 18. Study 2 Regression Analyses for Mediation: (1) Effects of Social Anxiety on lifetime cannabis use, (2) Effects of social anxiety on loneliness, (3), Effects of loneliness on lifetime cannabis use for males.

Dependent Variable	Independent Variable	β	F
Cannabis Model			
Lifetime Cannabis Use	1. Social Anxiety	-.10	2.81
Loneliness	2. Social Anxiety	.38	85.47***
Lifetime Cannabis Use	3. Loneliness	-.03	1.53

Note. Social Anxiety was measured using the Social Interaction Anxiety Scale (SIAS) and loneliness was measured using the Revised UCLA Loneliness Scale (RULS). B = standardized beta weight provided for multiple regression.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

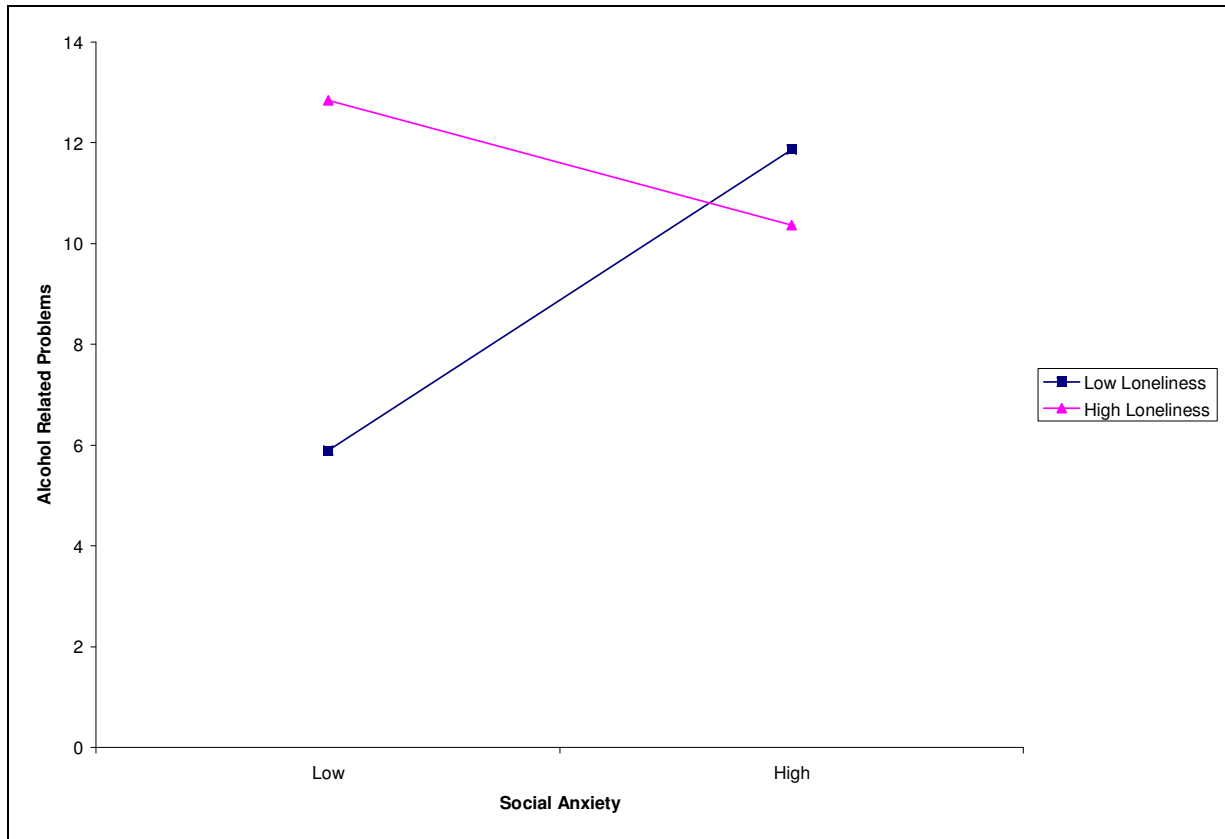


Figure 1. Relationship between social anxiety symptoms and alcohol-related problems for females with high and low loneliness.

Note. Alcohol-related problems were measured with the Rutgers Alcohol Problems Index (RAPI), loneliness was measured using the Revised-UCLA Loneliness Scales (RULS) and social anxiety was measured using the Social Interaction Anxiety Scale (SIAS).



Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8633 FAX (850) 644-4392

REAPPROVAL MEMORANDUM

Date: 9/28/2007

To:
Kiara Cromer
MC 1270

Dept.: **PSYCHOLOGY DEPARTMENT**

From: **Thomas L. Jacobson, Chair**

A handwritten signature in black ink, appearing to read "Thomas Jacobson", written over a horizontal line.

Re: **Reapproval of Use of Human subjects in Research:
Personality and Behavior Assessment**

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 9/11/2008 please request renewed approval.

You are reminded that a change in protocol in this project must be approved by resubmission of the project to the Committee for approval. Also, the principal investigator must report to the Chair promptly, and in writing, any unanticipated problems involving risks to subjects or others.

By copy of this memorandum, the Chairman of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols of such investigations as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc:
HSC No. 2007.715-R

INFORMED CONSENT FORM

I freely and voluntarily and without element of force or coercion, consent to be a participant in the research project entitled "*Personality and Behavior Assessment*." This research is being conducted by N. Bradley Schmidt, Ph.D. Professor of Psychology at Florida State University, and Kiara R. Cromer a Clinical Psychology Graduate student. I understand that the purpose of this research project is to understand how certain aspects of people's personalities and behavior are related. I understand that if I participate in this project, I may be asked to think about situations that cause a certain emotional reaction. I will also answer questions about some of my beliefs, attitudes, and behaviors.

I understand that I must be at least 18 years of age in order to participate. The total time commitment would be about 60 minutes and I will be compensated by receiving course credit for my time. I understand that my participation is totally voluntary and I may stop participation at anytime. If I decide to stop participation, I will still be entitled to the course credit. All my answers to the questions will be confidential to the extent allowed by law – my answers will be assigned a code number, which will not be linked to my name or other identifying information. In addition, my name will not appear on any of the results. No individual responses will be reported. Only group findings will be reported. Data will be kept in a locked filing cabinet inside a locked data storage facility in the laboratory offices. The files which match name and code number will be kept in a separate location, also in a locked filing cabinet. Computerized data will utilize only code numbers, and not the names of participants.

I understand that there is a possibility of a minimal level of risk involved if I agree to participate in this study. I might experience anxiety when completing some of the questionnaires. The research assistant will be available to talk with me about any emotional discomfort I may experience while participating. If I do report any symptoms indicative of self-harm, I understand that the research assistants will be required to refer me to the FSU Psychology Clinic or Counseling Center. I am also able to stop my participation at any time I wish.

I understand that there are benefits for participating in this research project. First, I may gain insight into how and why I think and behave in particular ways. Also, I will be providing researchers with valuable insight into these issues.

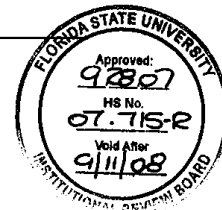
I understand that this consent may be withdrawn at any time without prejudice, penalty, or loss of benefits to which I am otherwise entitled. I have been given the right to ask and have answered any inquiry concerning the study. Questions, if any, have been answered to my satisfaction.

I understand that I may contact Kiara Cromer or Dr. Brad Schmidt, Florida State University, Department of Psychology, 645 – 1766, for answers to questions about this research or my rights. Group results will be sent to me upon my request. If I have questions about my rights as a subject/participant in this research, or if I feel I have been placed at risk, I can contact the Chair of the Human Subjects Committee, Institutional Review Board, through the Office of the Vice President for Research, at (850) 644-8633.

I have read and understand this consent form.

(Participant Signature)

(Date)



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BIOGRAPHICAL SKETCH

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