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Alcohol Expectancies and Drinking Behavior in Adults with Social Anxiety Disorder and Dysthymia

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Abstract

Previous research has found a positive relationship between social anxiety disorder and alcoholism, and that certain alcohol outcome expectancies are related to drinking behaviors. The purpose of this study was to examine the relationship among drinking behaviors and alcohol expectancies in treatment-seeking individuals diagnosed with social anxiety disorder or dysthymia, as well as normal controls. No significant differences were found across the 3 groups in alcohol consumption. As expected, socially anxious participants had higher social assertiveness expectancies than both participants with dysthymia and normal controls. Participants with social anxiety disorder had greater tension reduction and global positive change expectancies than the normal controls but did not differ from participants with dysthymia. Additionally, the increased social assertiveness, tension reduction, and positive change expectancies were found to predict amount of drinking per month for socially anxious participants. Implications for understanding the relationship between social anxiety disorder and alcoholism are discussed.

Keywords: social anxiety, alcohol, expectancies, anxiety

Recent work has found social anxiety disorder to be the third most common psychiatric disorder with a lifetime prevalence of 13.3% (Kessler et al., 1994). The onset of social anxiety disorder is generally early, following a chronic course. Social anxiety disorder can cause

significant vocational, academic, and social impairment, and often occurs with other psychological problems (Davidson, Hughes, George, & Blazer, 1993; Sanderson, DiNardo, Rapee, & Barlow, 1990).

Alcoholism and social anxiety disorder appear to be related because many individuals diagnosed with social anxiety disorder have alcohol use or dependency problems or both. Most studies find higher prevalence rates among individuals diagnosed with social anxiety disorder than normal control groups or community samples. According to Kushner, Sher, and Beitman (1990) and Kushner, Abrams, and Borchardt (2000), individuals with social anxiety disorder are at least twice as likely to have had alcohol problems than a community sample. Several studies have found comorbid alcohol diagnoses in 16–36.4% of the individuals diagnosed with social anxiety disorder (Amies, Gelder, & Shaw, 1983; Davidson et al., 1993; Holle, Heimberg, Sweet, & Holt, 1995; Van Ameringen, Mancini, Styan, & Donison, 1991), compared with a lifetime prevalence of alcohol abuse or dependency alone for the general population of 11–16% (Van Ameringen et al., 1991). In a study of patients in an alcoholism treatment unit, 25% of the men and 17% of the women were diagnosed with social anxiety disorder (Mullaney & Trippett, 1979). Thirty-five percent of the men and 28% of the women were rated “borderline” for the diagnosis. Chambless, Cherney, Caputo, and Rheinstein (1987) found that 40% of inpatient alcoholics had a lifetime anxiety disorder, significantly higher than inpatient alcoholics diagnosed with the more widely recognized major depression.

The onset of social anxiety disorder typically precedes the onset of alcohol problems (Davidson et al., 1993; Kushner et al., 1990; Tran, Haaga, & Chambless, 1997). Kushner et al. (1990) found that, in those having these co-morbid diagnoses, the median age of onset of social anxiety disorder was 2 years before that of alcohol problems. The symptoms of social anxiety disorder usually predate the drinking problem among alcoholics (Liebowitz, Gorman, Fyer, & Klein, 1985). Because of this order of onset and the higher rates of prevalence among individuals diagnosed with social anxiety disorder, it seems that social anxiety disorder may be a risk factor for alcohol problems.

Expectancy Theory (Brown, Goldman, Inn, & Anderson, 1980) may help explain how social anxiety could be a risk factor for alcohol problems. Alcohol expectancies refer to the beliefs that people hold about the effects of consuming alcohol. According to expectancy theory, high positive outcome expectancies (expectations of positive reinforcement from consuming alcohol) regarding alcohol usage combined with low expectancies about negative effects (negative consequences that produce feelings of reservation or behavioral inhibition, such as cognitive/physical impairment or depressant effects) of alcohol will lead to excessive consumption (Burke & Stephens, 1999). At least six distinct positive expectancies have been identified (Brown et al., 1980): (1) relaxation and tension reduction; (2) global positive changes; (3) increased social assertiveness; (4) arousal and aggression; (5) physical and social pleasure; and (6) enhanced sexual performance and experience. Several studies have supported the relationship between expectancies and problematic drinking. For example, college students endorsing strong tension reduction outcome expectancies were at higher risk for problematic drinking (Hittner, 1995). Nondrinking adolescents with high

expectancies for social facilitation followed over a 2-year period began to drink and increased their alcohol consumption faster than adolescents with low expectancies for social facilitation (Smith, Goldman, Greenbaum, & Christiansen, 1995).

In studies of social anxiety and alcohol expectancies, social anxiety was positively related to social assertiveness expectancies (Brown & Munson, 1987; Burke & Stephen, 1997; O'Hare, 1990) and tension reduction expectancies (O'Hare, 1990) among college students. Socially anxious individuals who believe alcohol will decrease tension may "self-medicate" to help control their anxiety (Kushner et al., 1990; Tran et al., 1997). On the other hand, some socially anxious individuals may fear drinking if they hold the expectancy that alcohol will increase social assertiveness, resulting in negative evaluation for disinhibited behavior (Bruch et al., 1992). However, research indicating higher levels of drinking in socially anxious samples does not seem to support this finding.

In summary, previous research suggests that social anxiety disorder and alcohol abuse are related, with the social anxiety disorder generally pre-dating the alcohol problems. The majority of studies have found the prevalence of alcohol abuse among individuals diagnosed with social anxiety disorder to be greater than that of those not having the diagnosis or the general population. However, much of the research on social anxiety and alcohol expectancies has utilized college student samples. Differences between the drinking patterns of college students and older adults have been well documented (e.g., Leigh, 1989). Therefore, the current study assessed alcohol expectancies among a community sample of individuals seeking treatment for social anxiety disorder.

To help examine whether findings about the relationship between social anxiety and alcohol use and expectancies are specific to social anxiety disorder, the design includes both a matched normal control group and a psychiatric control group of individuals seeking treatment for dysthymia. Dysthymics were chosen as the psychiatric control group because social anxiety disorder and dysthymia are similar in many respects including age of onset, chronicity, and disruption of social functioning (American Psychiatric Association [APA], 1994). Additionally, there has been a high comorbidity of substance abuse in both social anxiety disorder and depression (Regier et al., 1990). However, a study consisting of male inpatient alcoholic participants found that the lifetime prevalence of social phobia (24.4%) was higher than that of dysthymics (6.1%; Lydiard, Brady, Ballenger, Howell, & Malcolm, 1992). It seems that the excessive use of alcohol in socially anxious individuals may be qualitatively different from that of dysthymics. For instance, it appears that the expectancies associated with increased alcohol consumption in the two populations are somewhat different. For socially anxious individuals, excessive drinking may occur in an attempt to reduce the tension and discomfort in social situations and increase social disinhibition, whereas for depressed individuals, excessive drinking may occur in an attempt to negate the depressed mood and replace with more positive mood. For example, Johnson and Gurin (1994) found that alcohol expectancies moderate the intensity of the relationship between depressed mood and drinking problems in Puerto Rican Americans in that alcohol was used to self-medicate. Alcohol use was related to the belief that one could elevate mood by consuming alcohol, similar to the concept underlying the AEQ global positive changes subscale. In this study, expectancies were assessed using four items related to mood-altering abilities of alcohol adapted from a Spanish version of the AEQ. These four

expectancy items were, "When I'm sad or depressed about the way things are going, a drink or two helps lift my spirits," "If I'm nervous or worried about something, a drink or two helps me relax," "When I'm drinking, I feel freer to be myself and do whatever I want," and "Alcohol makes it easier to forget bad feelings." Two of the four expectancies (first and fourth) are clearly related to the global positive changes expectancies subscale.

Hypotheses

It is expected that individuals diagnosed with social anxiety disorder will have higher levels of alcohol consumption per month than normal controls, consistent with prior research. Additionally, it is hypothesized that individuals diagnosed with social anxiety disorder will also have higher levels of alcohol consumption than the dysthymics, as there appears to be evidence of more socially anxious individuals in alcohol treatment than dysthymic individuals (Lydiard et al., 1992) as well as a higher rate of anxiety disorders in an inpatient alcoholic treatment center than the rate of depressed individuals typically found in inpatient alcohol treatment (Chambless et al., 1987).

It is expected that different alcohol-outcome-related expectancies will be found across socially anxious participants, dysthymic individuals, and normal controls. It is hypothesized that socially anxious participants will have higher social assertiveness expectancies and tension reduction expectancies than both normal controls and participants with dysthymia, but that participants with dysthymia will have higher global positive expectancies than socially anxious participants and normal controls. It seems that the use of alcohol to reduce tension and discomfort in social situations would be very relevant to socially anxious individuals, whereas this does not seem as relevant to dysthymic individuals. Socially anxious individuals using alcohol may wish to reduce this anxiety in social situations, whereas the dysthymic individual may use some alcohol to enhance their mood and may not drink excessively to avoid the depressant effects. It is also hypothesized that the increased social assertiveness and relaxation and tension reduction expectancies will predict alcohol consumption for individuals with social anxiety disorder.

Method

Participants

Fifty-four individuals with social anxiety disorder, 23 individuals with dysthymia, and 27 nondisordered individuals were recruited through radio, television, and print advertisements as a part of a larger study on the relationship between anxiety and depression. Of these participants, 34 were men and 69 were women. The mean age was 39.3 years (range = 20–64) and the diagnostic groups did not differ by age ($F(2, 100) = .994, ns$).

Respondents who appeared to meet the inclusion/exclusion criteria (described below) during brief phone interviews were administered both the Anxiety Disorders Interview Schedule—Revised (ADIS-R; DiNardo & Barlow, 1988) and the depression section of the Structured Clinical Interview for *DSM-III-R* (SCID; Spitzer, Williams, Gibbon, & First, 1989). The ADIS-R included a Clinician's Severity Rating (CSR) based on level of anxiety or depression and its degree of interference in functioning for each diagnosis. Those having

a primary diagnosis of social anxiety disorder or dysthymia according to the *DSM-III-R* (APA, 1985) criteria with a CSR greater than or equal to 4 on a 0–8 scale were invited to participate in the study. Participants in the normal comparison group did not meet criteria for any diagnosis at any level of severity on the CSR, with the exception of subclinical specific phobias. (Data collection was initiated before the publication of *DSM-IV* [APA, 1994] but a review of the diagnostic criteria for social anxiety disorder and dysthymia suggests the participants would have received the same diagnoses under *DSM-IV* criteria). Participants with comorbid anxiety and depression diagnoses were invited to participate as long as the social anxiety disorder or dysthymia was determined to be the primary diagnosis on the basis of the higher CSR.

Exclusion criteria for the larger study were a history of a psychotic disorder, mental retardation, suicidality requiring immediate intervention, and substance abuse or dependence disorder according to *DSM-III-R* criteria of clinical severity in the last 6 months. The latter criterion means that individuals with active substance disorders would be excluded from the study. Individuals who drank excessively or met partial *DSM-III-R* criteria for substance abuse were included. However, only one individual was excluded for receiving a substance abuse diagnosis, suggesting this exclusion criterion had little impact on the sample.

Diagnostic interviewers in this study met rigorous standards for reliability with a trained ADIS-R interviewer. Training included watching three interviews conducted by an experienced interviewer and then conducting at least five interviews under observation. The trainee must match an experienced interviewer on 4 of 5. Interviews were conducted by advanced doctoral students and a licensed psychologist. All cases were presented at staff meetings and diagnoses were reviewed until a consensus was achieved.

After participating in the research portion of the experiment, clinical participants received 12 weeks of free group treatment, and control participants received \$50 in exchange for their participation.

Measures

Symptom Measures

To assure that the diagnostic groups differed as expected in symptom presentation, all participants completed the Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983) and the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Both are commonly used measures to assess the core constructs of social anxiety and depression, respectively.

Expectancies Measure

As a measure of the participants' beliefs concerning the effects of alcohol consumption, each participant completed the Alcohol Expectancy Questionnaire (AEQ; Brown et al., 1980). This is a 120-item self-report measure composed of statements in which the person must respond either true or false. The AEQ contains six distinct alcohol expectancy factors. These factors are global positive changes (AEQ-G; i.e., "Drinking makes it easier to concentrate on the good feelings I have at the time," "Alcohol seems like magic"), enhanced

sexual performance and experience (AEQ-ES; i.e., "I often feel sexier after I have had a few drinks," "After a few drinks, I am more sexually responsive"), physical and social pleasure (AEQ-PS; i.e., "Having a few drinks is a nice way to celebrate special occasions," "Some alcohol has a pleasant, cleansing, tingly taste"), increased social assertiveness (AEQ-IS; i.e., "Drinking gives me more confidence in myself," "A few drinks makes it easier to talk to people"), relaxation and tension reduction (AEQ-R; i.e., "Alcohol makes me worry less," "Alcohol enables me to fall asleep more easily"), and arousal and aggression (AEQ-A; i.e., "Drinking makes me feel flushed," "I feel powerful when I drink, as if I can really influence others to do as I want."). A higher score for a given factor indicates a stronger belief in that area of expectancies. Scores were determined by dividing the number of items in a particular subscale answered affirmatively by the total number of items, and then multiplying by the standardized item alpha (AEQ-G = .89, AEQ-ES = .90, AEQ-PS = .79, AEQ-IS = .92, AEQ-R = .80, and AEQ-A = .72). Internal consistency (range of coefficient alphas = .72-.92; mean coefficient = .84) and test-retest reliability with an 8-week interval (.64) have been demonstrated for this measure, as well as criterion and discriminant validity (Brown et al., 1980). Factor analyses revealed that the selected six-factor solution accounted for approximately 51.3% of the overall variance. Items with rotated factor loadings of .30 or greater were used to define the six factors.

Alcohol Consumption Measure

Alcohol consumption was assessed using the self-reported amount from the "Alcoholism and Drug Abuse" section of the ADIS-R. The participant was asked, "Currently, how much alcohol do you typically drink?" and the answer was coded into number of standard drinks consumed per month. The ADIS-R measure of alcohol consumption was highly correlated with the Timeline Follow-Back Daily Drinking Estimation Method (TLFB; Sobell & Sobell, 1992), completed by a subset of the participants (30 individuals with social anxiety disorder and 10 with dysthymia). The TLFB is a self-report measure that has shown high test-retest reliability ($> .83$) and strong convergent validity (Sobell & Sobell, 1992). The TLFB has four subscales: actual number of drinks per month, estimated number of drinks per month, actual number of days consumed alcohol per month, and estimated number of days consumed alcohol per month. For the current study, participants' answers from the ADIS-R were converted to the number of alcoholic beverages consumed per month to be similar to the actual drinks subscale of the TLFB. The ADIS-R measure of alcohol consumption correlated highly with the TLFB subscales (actual drinks $r = .77$; estimated drinks $r = .81$; actual days $r = .76$; estimated days $r = .81$). However, means for the TLFB were higher than the means for the ADIS-R (For individuals with social anxiety disorder: ADIS-R = 8.92, $SD = 14.42$; TLFB actual drinks = 17.69, $SD = 24.15$; TLFB estimated drinks = 17.17, $SD = 23.74$. For individuals with dysthymia: ADIS-R = 9.85, $SD = 20.43$; TLFB actual drinks = 13.80, $SD = 32.03$; TLFB estimated drinks = 15.05, $SD = 35.43$). This may be attributed to differences in the two methods, primarily that the ADIS-R is a verbal self-report, whereas the TLFB is a written self-report. Further, the TLFB includes a calendar of the last month in order to facilitate accuracy in memory, whereas the ADIS-R merely asks how much the individual typically drinks. Although these differences do exist, the participants are rank-ordered similarly on drinking level in both measures, which is sufficient for the analyses conducted.

Procedure

The questionnaires were included as part of a larger packet and completed at home following the diagnostic interview and acceptance into the larger study. The packets were returned at a subsequent assessment session. However, because of changes in data collection procedures, the AEQ measures were not administered to 14 individuals diagnosed with social anxiety disorder and two individuals diagnosed with dysthymia.

Results

Summary demographic data for each of the diagnostic groups are presented in Table I. There was no significant mean difference in age, nor a significant pattern of relationship among the diagnostic groups for gender, marital status, or level of education. However, normal controls and those diagnosed with social anxiety disorder tended to be employed full-time, whereas participants with dysthymia were equally employed full-time and less than full-time.

Table I. Demographics for Individuals with Social Anxiety Disorder, Dysthymia, and Normal Controls

	Social anxiety disorder (<i>N</i> = 54)	Dysthymia (<i>N</i> = 23)	Normal control (<i>N</i> = 27)	
Gender				
Men/women	22/32	4/19	9/18	$\chi^2(2) = 3.58, p = .17$
Percent women	60.4%	82.6%	66.7%	
Age <i>M</i> (<i>SD</i>)	39.3 (10.1)	41.7 (10.0)	37.4 (12.1)	$F(2, 100) = .994, p = .37$
Marital Status				$\chi^2(2) = 4.06, p = .13^a$
Married	15 (28.3%)	10 (43.5%)	16 (59.3%)	
Single	25 (47.2%)	6 (26.1%)	8 (29.6%)	
Divorced	7 (13.2%)	6 (26.1%)	3 (11.1%)	
Separated	3 (5.7%)	1 (4.3%)	0 (0.0%)	
Widowed	3 (5.7%)	0 (0.0%)	0 (0.0%)	
Employment				$\chi^2(2) = 6.93, p = .03^b$
Full-time	40 (75.5%)	13 (56.5%)	24 (88.9%)	
Part-time	3 (5.7%)	3 (13.0%)	0 (0.0%)	
Student	5 (9.4%)	4 (17.4%)	3 (11.1%)	
Homemaker	1 (1.9%)	1 (4.3%)	0 (0.0%)	
Unemployed	3 (5.7%)	2 (8.7%)	0 (0.0%)	
Retired	1 (1.9%)	0 (0.0%)	0 (0.0%)	
Education				$\chi^2(4) = 2.25, p = .69$
High school	10 (18.9%)	5 (21.7%)	4 (14.8%)	
College	36 (67.9%)	14 (60.9%)	16 (59.3%)	
Graduate school	7 (13.2%)	4 (17.4%)	7 (25.9%)	

a. Because of empty cells, single was compared to those who had ever been married.

b. Because of empty cells, full-time was compared to all others.

Preliminary Analyses

Scores on the BFNE and BDI were entered into separate one-way ANOVAs with diagnostic group (social anxiety disorder vs. dysthymia vs. normal control) as the independent variable. As expected, socially anxious individuals reported higher BFNE scores ($M = 48.21$, $SD = 7.86$) than either participants with dysthymia ($M = 40.86$, $SD = 0.86$) or normal controls ($M = 23.93$, $SD = 5.26$), $F(2, 89) = 75.62$, $p < .001$, $Mse = 65.12$. The latter two groups also differed. Similarly, individuals with dysthymia achieved higher BDI scores ($M = 23.96$, $SD = 11.24$) than either individuals with social anxiety ($M = 16.23$, $SD = 9.21$) or normal controls ($M = 2.48$, $SD = 2.53$), $F(2, 100) = 41.53$, $p < .001$, $Mse = 73.59$. Socially anxious participants also had higher BDI scores than the normal controls.

Alcohol Consumption

It was hypothesized that social phobics would consume more alcohol than both normal controls and dysthymics. A one-way ANOVA with diagnostic group as the independent variable and the ADIS-R alcohol consumption measure as the dependent variable did not yield significant differences, contrary to the hypothesis, $F(2, 99) = 2.09$, $p = .13$, $Mse = 206.74$, $ES = .02$, power $\sim .30$.¹ See Table II for means and standard deviations by diagnostic group.

According to the ADIS-R, the number of reported drinks consumed per month ranged from 0–96. Thirty of the 102 participants (15 with social anxiety disorder, 5 with dysthymia, and 10 normal controls) reported that they typically did not drink at all in a month. There were no differences in the proportion of individuals who did not drink across diagnostic groups, $\chi^2(2) = 1.42$, $p = .49$.

Alcohol Expectancies

A MANOVA with diagnostic group (social anxiety disorder vs. dysthymia vs. normal control) as the independent variable and the six AEQ subscales as the dependent variables was conducted.² Means and standard deviations for the AEQ subscale scores are summarized in Table II. The multivariate effect of these subscales among the three diagnostic groups approached significance, Wilks's $\lambda = .78$, $F(12, 160) = 1.72$, $p = .068$. It was hypothesized that socially anxious participants would have higher social assertiveness and tension reduction expectancies on the AEQ than both normal controls and participants with dysthymia, and that participants with dysthymia will have higher global positive expectancies than participants with social anxiety disorder and normal controls. There was a significant effect found across diagnostic group for the increased social assertiveness expectancies, $F(2, 85) = 5.72$, $p < .01$, and the global positive change expectancies, $F(2, 85) = 5.88$, $p < .01$, and a trend for tension reduction expectancies, $F(2, 85) = 3.05$, $p = .052$. Follow-ups using the LSD procedure indicated partial support for the hypothesis, because socially anxious individuals had higher scores on the tension reduction and global positive change subscales than normal controls, but not significantly different from individuals with dysthymia. Contrary to the hypothesis, dysthymic individuals and normal controls did not differ significantly on the global positive change subscale. Individuals with social anxiety disorder had higher scores on the increased social assertiveness subscale than either of the other two diagnostic groups.

Table II. Means and Standard Deviations for Measures of Alcohol Consumption and Alcohol Expectancy Questionnaire Subscales for Social Phobics, Dysthymics, and Normal Controls

	Social phobics <i>M (SD)</i>	Dysthymics <i>M (SD)</i>	Normal controls <i>M (SD)</i>
ADIS-R/Number of drinks per month	8.92 (14.43)	9.85 (20.43)	2.67 (4.85)
AEQ subscales			
Aggression	.39 (.23)	.36 (.15)	.27 (.22)
Enhanced sexuality	.25 (.28)	.18 (.24)	.15 (.21)
Global positive change	.24 (.25) _a	.15 (.16) _{ab}	.08 (.11) _b
Increased social assertiveness	.55 (.37) _a	.34 (.32) _b	.29 (.32) _b
Physical/social pleasure	.59 (.26)	.55 (.26)	.49 (.22)
Tension reduction	.42 (.30) _a	.40 (.24) _{ab}	.27 (.24) _b

Note: ADIS-R: Anxiety Disorder Interview Schedule—Revised; AEQ: Alcohol Expectancy Questionnaire. For the ADIS-R measure of number of drinks per month, $N = 52$ for social phobics, $N = 23$ for dysthymics, and $N = 27$ for normal controls. For the AEQ subscales, $N = 40$ for social phobics, $N = 21$ for dysthymics, and $N = 27$ for normal controls. Means with differing subscripts differ at $p < .05$.

Expectancies and Consumption

It was also hypothesized that increased social assertiveness and tension reduction expectancies would predict alcohol consumption for participants with social anxiety disorder. Examination of the zero-order correlations between consumption and the AEQ subscales indicated that social assertiveness, $r(39) = .39$, $p = .014$, was positively associated with consumption. Correlations between consumption and the other AEQ subscales were not statistically significant; tension reduction: $r(39) = .26$, *ns*; global positive change: $r(39) = .04$, *ns*; arousal and aggression: $r(39) = .17$, *ns*; physical and social pleasure: $r(39) = .31$, *ns*; enhanced sexual performance and experience: $r(39) = .20$, *ns*.

ADIS-R alcohol consumption served as the criterion and the six AEQ subscales were entered as predictors in a stepwise multiple regression. As shown in Table III, the social assertiveness subscale of the AEQ entered the regression first, $R^2 = .15$, $F(1, 37) = 6.72$, $p = .014$. Next the global positive change subscale entered into the model, contributing significant additional variance, $R^2 = .24$, $F = 5.75$, $p = .007$, R^2 change = .09. Finally, the tension reduction subscale entered into the model with additional unique variance accounted for, $R^2 = .37$, $F(3, 35) = 6.75$, $p = .001$, R^2 change = .124). No other AEQ subscales made significant independent contributions to the model. An examination of the beta weights in Table III indicates that, when controlling for the other variables, the higher the social assertiveness or tension reduction expectancies, the greater the amount of drinking. Further, the higher the global positive expectancies, the less drinking when controlling for the other variables. A possible explanation for this result may be found in Brown et al. (1980) regarding drinking and general positive expectancies. Specifically, less exposure to alcohol and limited alcohol consumption was actually associated with greater scores on the global positive changes expectancy subscale. Thus, those who have more exposure to alcohol and higher alcohol consumption may have lower scores on the global positive change subscale.

Table III. Regression Weights, Significance, R^2 , and R^2 Change for the Forward Stepwise Regression Model for Individuals with Social Anxiety Disorder

AEQ subscale	Beta weight	Significance
First model: $R^2 = .15$		
Increased social assertiveness	.39	.014
Second model: $R^2 = .24$, R^2 change = .09		
Increased social assertiveness	.66	.002
Global positive change	-.40	.048
Third model: $R^2 = .37$, R^2 change = .124		
Global positive change	-.91	.002
Increased social assertiveness	.59	.003
Tension reduction	.66	.013

Note: AEQ: Alcohol Expectancy Questionnaire. $N = 39$.

Discussion

This study examined the rates of alcohol consumption and alcohol-related expectancies in individuals seeking treatment for social anxiety disorder or dysthymia and matched normal controls. This study was an extension of previous research that found significantly higher rates of alcohol consumption and alcoholism in socially anxious samples (Kushner et al., 1990). Additionally, previous literature has found that certain alcohol-related expectancies can predict drinking behaviors (Hittner, 1995; Smith et al., 1995). The goal of this study was to investigate alcohol expectancies among individuals with social anxiety disorder in order to identify expectancies that may contribute to the development of problematic drinking.

It was expected that individuals with social anxiety disorder would consume more alcohol than individuals with dysthymia and normal controls. Contrary to the hypothesis, there were no significant differences among the diagnostic groups in alcohol consumption. Nor did the groups differ on the number of people who did not drink at all. This result is not consistent with prior research that has found higher rates of problematic drinking among individuals with social anxiety disorder, relative to normal controls (e.g., Davidson et al., 1993) and dysthymics (Lydiard et al., 1992).

There are several possible reasons this study may not have found greater alcohol consumption among individuals with social anxiety disorder than those with dysthymia. First, this study excluded individuals with a current alcohol diagnosis meeting *DSM-III-R* criteria of clinical severity. Although only one individual was excluded for this reason, it is possible that active recruitment of individuals in other mental health services, including substance abuse treatment programs, would yield higher reported alcohol consumption. Clinical participants in this study received treatment in exchange for participation, likely resulting in an undersampling of potential participants already receiving mental health services. A second reason for the lack of support may be that the ADIS-R alcohol consumption measure assesses quantity, rather than frequency, of alcohol consumption. Perhaps these diagnostic groups might have differences in the frequency of drinking. However,

this seems unlikely given the high correlation between the TLFB frequency measures (actual days and estimated days) and the ADIS-R quantity measure ($r = .76$ and $.81$, respectively). Further, the lack of significance could be related to a small sample size, as this sample size seemed to yield insufficient power (power $\sim .30$, $\alpha = .05$). Although the group means appear different, the heterogeneity of variance violated the ANOVA assumptions. A number of follow-up analyses were performed to further explore the apparent group differences. In addition to an ANOVA with LSD follow-ups, nonparametric analysis, transformations, and outlier analysis all indicated that there were no significant group differences. An examination of the distribution of the sample revealed that in addition to a significant portion who did not drink at all there were outliers who drank substantially, which had an impact on the group means. Only when examining social phobics versus normal controls with pairwise comparisons, without cleaning up the data, was there a significant difference between the two groups. Therefore, the most reasonable interpretation is that there are no differences between the groups.

Individuals with social anxiety disorder and dysthymia and normal controls did differ on their expectancies regarding alcohol consumption. Socially anxious participants had greater expectancies for global positive change and tension reduction with alcohol use than normal controls. Individuals with dysthymia did not differ from either group on the global positive change or tension reduction expectancies. An inspection of the means in Table II suggests all three groups might differ on the global positive change subscale with a larger sample size ($ES = .06$, needed $N = 120$ for power = $.80$, $\alpha = .05$). However, socially anxious and dysthymic individuals had nearly identical scores on expectancies for tension reduction. It seems likely that both socially anxious and chronically depressed individuals may drink to relax. In contrast, individuals with social anxiety disorder had greater expectancies for increased social assertiveness from drinking relative to individuals with dysthymia or normal controls.

The regression analyses indicate that alcohol may be used by socially anxious individuals to help them be more outgoing and more relaxed, and may not be used to create the overall positive feeling. Although Bruch et al. (1992) proposed that socially anxious individuals may worry about negative evaluation because of disinhibited behavior when drinking, in the present study individuals who expected alcohol to make them less inhibited were drinking more, not less, as Bruch et al. would predict.

To examine whether the entire relationship between social anxiety and alcohol consumption was mediated by alcohol expectancies, some exploratory regressions were conducted.³ These analyses indicated that the relationship between social anxiety and consumption is both direct and mediated by alcohol expectancies. Further research should explore the direct positive relationship between social anxiety and alcohol consumption. These analyses should also include an assessment of whether the expected outcome is a desired or undesired effect (valuation; Fromme, Stroot, & Kaplan, 1993). This may help clarify the conflicting findings regarding alcohol use and social assertiveness.

In conclusion, socially anxious individuals did not differ from a psychiatric control group or nondisorder individuals in their level of alcohol consumption. However, they did differ in their expectations about the effects of alcohol on their mood and behavior. If socially anxious individuals tend to use alcohol to help control their anxiety by increasing

social assertiveness and decreasing tension, then it will be important to address such expectancies when treating comorbid social anxiety and alcoholism. Research has found that using expectancy challenging techniques—in which the goal is to manipulate expectancy levels—was effective in reducing drinking (Darkes & Goldman, 1993; Jones-Madsen, Silvia-Young, & Richman, 1995). Perhaps addressing such expectancies directly and providing alternative strategies to control anxiety in social situations would improve the outcome of alcohol treatment for comorbid individuals.

Notes

1. An ANOVA with gender as the independent variable and the ADIS-R as the dependent variable indicated that socially anxious men ($M = 20.08$, $SD = 20.15$) reported drinking more per month than women ($M = 4.19$, $SD = 6.76$) on the ADIS-R, $F(1, 27) = 8.80$, $p = .006$, $Mse = 205.83$.
2. MANOVAs with gender as the independent variable and the AEQ subscales as the dependent variables were conducted for the entire sample and social phobics only. The multivariate effect of these measures between men and women for the entire sample approached significance, Wilks's $\lambda = .86$, $F(6, 81) = 2.19$, $p = .052$. Univariate follow-up analyses indicated that men had higher mean scores on the AEQ-G, $F(1, 86) = 6.50$, $p = .013$, $Mse = .04$, AEQ-IS, $F(1, 86) = 5.58$, $p = .02$, $Mse = .13$, and AEQ-R, $F(1, 86) = 10.88$, $p = .001$, $Mse = .07$, subscales than women. There was also a trend for men to have higher AEQ-A, $F(1, 86) = 3.21$, $p = .077$, $Mse = .06$, and AEQ-PS, $F(1, 86) = 3.91$, $p = .054$, $Mse = .06$, subscale scores than women.
3. The authors express their appreciation to an anonymous reviewer for this suggestion.

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